4.3 AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND ENERGY

4.3.1 INTRODUCTION

The Air Quality, Greenhouse Gas Emissions, and Energy chapter of the EIR describes the potential impacts of the proposed project on local and regional air quality emissions, potential impacts related to greenhouse gas (GHG) emissions and climate change, and potential impacts related to energy. The chapter includes a discussion of the existing air quality, GHG, and energy setting, the existing regulatory setting, as well as potential air quality, GHG, and energy impacts resulting from implementation of the project.

Potential direct and indirect impacts from project-related activities are considered on both a local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts are discussed within the chapter. This chapter is based on the information, guidance, and analysis protocol provided by the Northern Sierra Air Quality Management District's (NSAQMD's) *Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects*,[1] as well as the *Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Idaho Maryland Mine Project Nevada County, California*[2] and the *Health Risk Assessment Report for the Idaho-Maryland Mine Project, Nevada County, California*[3] which were prepared by Dudek for the proposed project and are included as Appendix E.1 to the EIR. In addition, this chapter uses information obtained from the Nevada County General Plan[4] and associated EIR.[5]

4.3.2 EXISTING ENVIRONMENTAL SETTING

The following information provides an overview of the existing environmental setting in relation to air quality within the proposed project area. Air basin characteristics, ambient air quality standards (AAQS), attainment status and regional air quality plans, local air quality monitoring, odors, and sensitive receptors are discussed. In addition to the information pertaining to air quality, information related to climate change, GHGs, and energy is provided as well.

Air Basin Characteristics

The proposed project is located in the western portion of Nevada County, which is within the Mountain Counties Air Basin (MCAB). The MCAB includes portions of Amador, Calaveras, El Dorado, Mariposa, Nevada, Placer, Plumas, Sierra, and Tuolumne Counties and is composed of seven air districts. The project sites, along with the remainder of Nevada County, as well as Plumas and Sierra County, are within the jurisdictional boundaries of the NSAQMD.

The Air Quality Element of the Nevada County General Plan describes the meteorological and topographical characteristics of Nevada County as follows:

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1 Northern Sierra Air Quality Management District. *Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects*. Draft Revised March 2021.
2 Dudek. *Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Idaho Maryland Mine Project Nevada County, California*. November 2021.
3 Dudek. *Health Risk Assessment Report for the Idaho-Maryland Mine Project, Nevada County, California*. November 2021.
4 Nevada County. *Nevada County General Plan.* Updated 2014.
5 Nevada County. *Nevada County General Plan, Final Environmental Impact Report.* March 1995.

> Nevada County exhibits large variations in terrain and consequently exhibits large variations in climate, both of which affect air quality. The western portions of the County slope relatively gradually with deep river canyons running from southwest to northeast towards the crest of the Sierra Nevada Range. East of the divide, the slope of the Sierra is steeper, but river canyons are relatively shallow. The warmest areas within the County are found at the lower elevations along the west side of the County, while the coldest average temperatures are found at the highest elevations.
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> The prevailing wind direction over the County is westerly. However, the terrain of the area has a great influence on local winds, so that wide variability in wind direction can be expected. Afternoon winds are generally channeled up-canyon, while nighttime winds generally flow down-canyon. Winds are, in general, stronger in spring and summer and lower in fall and winter. Periods of calm winds and clear skies in fall and winter often result in strong, ground-based inversions forming in mountain valleys. These layers of very stable air restrict the dispersal of pollutants, trapping these pollutants near the ground, representing the worst conditions for local air pollution occurring in the County.[6]

Air quality in the project vicinity is influenced by both local and distant emission sources. Air pollutant sources in the project area include emissions from vehicle traffic on nearby paved and unpaved roadways, emissions from planes operating at the Nevada County Airport, stationary sources such as generators or industrial processes, and fireplaces/wood stoves. In addition, local air quality is also influenced by the transportation of emissions from the Sacramento metropolitan area to the mountainous areas north and east of the Sacramento area.

Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. The federal standards are divided into primary standards, which are designed to protect the public health, and secondary standards, which are designed to protect the public welfare. The AAQS for each contaminant represent safe levels that avoid specific adverse health effects. Pollutants for which AAQS have been established are called “criteria” pollutants. Table 4.3-1 identifies the major pollutants, characteristics, health effects and typical sources. The federal and California AAQS (NAAQS and CAAQS, respectively) are summarized in Table 4.3-2.

The NAAQS and CAAQS were developed independently with differing purposes and methods. As a result, the federal and State standards differ in some cases. In general, the State of California standards are more stringent than the federal standards, particularly for ozone and particulate matter (PM). A description of each criteria pollutant and its potential health effects is provided in the following section.

Ozone

Ozone is a reactive gas consisting of three oxygen atoms. In the troposphere, ozone is a product of the photochemical process involving the sun's energy, and is a secondary pollutant formed as a result of a complex chemical reaction between reactive organic gases (ROG) and oxides of nitrogen (NO_X) emissions in the presence of sunlight. As such, unlike other pollutants, ozone is not released directly into the atmosphere from any sources. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation.

[6] Nevada County. *Nevada County General Plan* [pg. 14-1]. Updated 2014.

Table 4.3-1
Summary of Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive gas produced by the photochemical process involving a chemical reaction between the sun's energy and other pollutant emissions. Often called photochemical smog.	• Eye irritation • Wheezing, chest pain, dry throat, headache, or nausea • Aggravated respiratory disease such as emphysema, bronchitis, and asthma	Combustion sources such as factories, automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless, highly toxic gas that is formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream • Impaired vision, reduced alertness, chest pain, and headaches • Can be fatal in the case of very high concentrations	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	A reddish-brown gas that discolors the air and is formed during combustion of fossil fuels under high temperature and pressure.	• Lung irrigation and damage • Increased risk of acute and chronic respiratory disease	Automobile and diesel truck exhaust, industrial processes, and fossil-fueled power plants.
Sulfur Dioxide	A colorless, irritating gas with a rotten egg odor formed by combustion of sulfur-containing fossil fuels.	• Aggravation of chronic obstruction lung disease • Increased risk of acute and chronic respiratory disease	Diesel vehicle exhaust, oil-powered power plants, and industrial processes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	A complex mixture of extremely small particles and liquid droplets that can easily pass through the throat and nose and enter the lungs.	• Aggravation of chronic respiratory disease • Heart and lung disease • Coughing • Bronchitis • Chronic respiratory disease in children • Irregular heartbeat • Nonfatal heart attacks	Combustion sources such as automobiles, power generation, industrial processes, and wood burning. Also from unpaved roads, farming activities, and fugitive windblown dust.
Lead	A metal found naturally in the environment as well as in manufactured products.	• Loss of appetite, weakness, apathy, and miscarriage • Lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract	Industrial sources and combustion of leaded aviation gasoline.

Sources:

- ***California Air Resources Board. California Ambient Air Quality Standards (CAAQS). Available at: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm. Accessed November 2020.***
- ***Sacramento Metropolitan, El Dorado, Feather River, Placer, and Yolo-Solano Air Districts, Spare the Air website. Air Quality Information for the Sacramento Region. Available at: http://www.sparetheair.com/health.cfm?page=healthoverall. Accessed November 2020.***
- ***California Air Resources Board. Glossary of Air Pollution Terms. Available at: http://www.arb.ca.gov/html/gloss.htm. Accessed May 2019.***

Table 4.3-2
Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm	-	Same as primary
	8 Hour	0.070 ppm	0.070 ppm	
Carbon Monoxide	8 Hour	9 ppm	9 ppm	None
	1 Hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Mean	0.030 ppm	53 ppb	Same as primary
	1 Hour	0.18 ppm	100 ppb	
Sulfur Dioxide	24 Hour	0.04 ppm	-	-
	3 Hour	-	-	0.5 ppm
	1 Hour	0.25 ppm	75 ppb	-
Respirable Particulate Matter (PM_{10})	Annual Mean	20 ug/m^3	-	Same as primary
	24 Hour	50 ug/m^3	150 ug/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 ug/m^3	12 ug/m^3	15 ug/m^3
	24 Hour	-	35 ug/m^3	Same as primary
Lead	30 Day Average	1.5 ug/m^3	-	-
	Calendar Quarter	-	1.5 ug/m^3	Same as primary
	Rolling 3-month Average	-	0.15 ug/m^3	
Sulfates	24 Hour	25 ug/m^3	-	-
Hydrogen Sulfide	1 Hour	0.03 ppm	-	-
Vinyl Chloride	24 Hour	0.010 ppm	-	-
Visibility Reducing Particles	8 Hour	see note below	-	-

ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter

Note: Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: California Air Resources Board. Ambient Air Quality Standards. May 4, 2016. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed November 2020.

The primary source of ozone precursors is mobile sources, including cars, trucks, buses, construction equipment, and agricultural equipment. Ground-level ozone reaches the highest level during the afternoon and early evening hours. High levels occur most often during the summer months. Ground-level ozone is a strong irritant that could cause constriction of the airways, forcing the respiratory system to work harder in order to provide oxygen. Ozone at the Earth's surface causes numerous adverse health effects and is a major component of smog. High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments.

Reactive Organic Gas

ROG is a reactive chemical gas composed of hydrocarbon compounds typically found in paints and solvents that contributes to the formation of smog and ozone by involvement in atmospheric

chemical reactions. A separate health standard does not exist for ROG. However, some compounds that make up ROG are toxic, such as the carcinogen benzene.

Oxides of Nitrogen

NO_X are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that discolors the air and is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of NO_X. NO_X reacts with ROG to form smog, which could result in adverse impacts to human health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage and can cause increased risk of acute and chronic respiratory disease.

Nitrogen Dioxide

A particular oxide of nitrogen that is of concern to human health is nitrogen dioxide (NO_2). NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas.

A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. The strongest health evidence, and the health basis for the AAQS for NO_2, results from controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics. In addition, several epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher compared to lower levels of exposure. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. When CO enters the body, the CO combines with chemicals in the body, which prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to CO can result in chest pain, headaches, reduced mental alertness, and death at high concentrations.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas with a rotten egg odor formed primarily by the combustion of sulfur-containing fossil fuels from mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Similar to airborne NO_X, suspended sulfur oxide

particles contribute to poor visibility. Sulfur oxide particles are also a component of PM_{10} (discussed below).

Sulfates

Sulfates are the fully oxidized ionic form of sulfur and are colorless gases. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. The sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The sulfates standard established by CARB is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations, especially in enclosed spaces (800 parts per million [ppm] can cause death).

Particulate Matter

Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of several components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health impacts. The USEPA is concerned about particles that are 10 micrometers in diameter or smaller (PM_{10}) because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, the particles could affect the heart and lungs and cause serious health effects. USEPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles ($PM_{2.5-10}$)," which are found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic[7] region of the lungs.
- "Fine particles ($PM_{2.5}$)," which are found in smoke and haze, are 2.5 micrometers in diameter and smaller. $PM_{2.5}$ particles could be directly emitted from sources such as forest fires, or could form when gases emitted from power plants, industries, and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- “Ultrafine particles (UFP),” are very, very small particles (less than 0.1 micrometers in diameter) largely resulting from the combustion of fossil fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area, deep lung penetration, and transfer into the bloodstream could result in disproportionate health impacts relative to their mass. UFP is not currently regulated separately but is analyzed as part of $PM_{2.5}$.

[7] The thoracic region of the lungs includes the trachea and main bronchi.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants, which are emitted directly to the atmosphere and secondary pollutants, which are formed in the atmosphere by chemical reactions among precursors. Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include the same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust. Long-term PM pollution, especially fine particles, could result in significant health problems including, but not limited to, the following: increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing; decreased lung function; aggravated asthma; development of chronic respiratory disease in children; development of chronic bronchitis or obstructive lung disease; irregular heartbeat; heart attacks; and increased blood pressure.

Lead

Lead is a relatively soft and chemically resistant metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, and, thus, essentially persists forever. Lead forms compounds with both organic and inorganic substances. As an air pollutant, lead is present in small particles. Sources of lead emissions in California include a variety of industrial activities. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. However, because lead was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) as a result of airborne dispersion and could become re-suspended into the air.

Because lead is only slowly excreted by the human body, exposures to small amounts of lead from a variety of sources could accumulate to harmful levels. Effects from inhalation of lead above the level of the ambient air quality standard may include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms could include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children. Lead also causes cancer.

Vinyl Chloride

Vinyl chloride (C_2H_3Cl, also known as VCM) is a colorless gas that does not occur naturally, but is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Visibility Reducing Particles

Visibility Reducing Particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are also a category of environmental concern. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a

TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a variety of sources, including stationary sources, such as dry cleaners, gas stations, diesel back-up generators, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) basis.

Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90 percent of DPM is less than 1 micrometer in diameter (about $1/70^{th}$ the diameter of a human hair), and thus is a subset of $PM_{2.5}$. DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including more than 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM; 17 California Code of Regulations [CCR] 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, cars, and off-road diesel engines, including locomotives, marine vessels, heavy-duty construction equipment, stationary diesel back-up generators, among others. Approximately 70 percent of all airborne cancer risk in California is associated with DPM. To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000. Because DPM is a part of $PM_{2.5}$, DPM also contributes to the same noncancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies. Those most vulnerable to noncancer health effects are children, whose lungs are still developing, and older adults, who often have chronic health problems.

Asbestos

Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers, with principal forms including chrysotile, crocidolite, amosite, tremolite, actinolite, and anthophyllite. Naturally occurring asbestos is found in some areas throughout California, most commonly where ultramafic rock or serpentinite rock is present. When construction activities occur in areas with naturally occurring asbestos in the soils or rock, the asbestos fibers can become airborne and may be inhaled, which can cause

chronic local inflammation and disrupt orderly cell division, both of which can facilitate the development of asbestosis (a noncancerous lung disease involving fibrotic scarring of the lungs) and cancer.

Crystalline Silica

In February 2005, the California Office of Environmental Health Hazard Assessment (OEHHA) added a chronic reference exposure level for crystalline silica (quartz, cristobalite, tridymite) of respirable size (defined as 4 micrometer particle aerodynamic diameter). Crystalline silica is a hazardous substance when inhaled, and the airborne dust particles that are formed when the material containing the silica is broken, crushed, or sawn pose potential risks. Silicosis results from chronic exposure; silicosis is characterized by the presence of histologically unique silicotic nodules and by fibrotic scarring of the lung. Chronic exposure to respirable silica dust is also associated with the development of tuberculosis/silicotuberculosis, chronic bronchitis, small airways disease, emphysema, and has been implicated in some autoimmune disorders and kidney disease.

Attainment Status and Regional Air Quality Plans

Pursuant to the 1990 federal Clean Air Act amendments, EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on CAAQS rather than the NAAQS.

The NSAQMD prepared and submitted the Ozone Attainment Plan Western Nevada County – State Implementation Plan for the 2008 Primary Federal 8-Hour Ozone Standard of 0.075 ppm (Ozone Attainment Plan) (NSAQMD 2018) to the EPA to request voluntary reclassification as a "Serious" nonattainment area, and revise the attainment date to December 31, 2021. On August 23, 2019, the EPA re-designated the western portion of Nevada County from "Moderate" nonattainment to "Serious" nonattainment for the federal 8-hour O_3 standard. Additionally, CARB has designated Nevada County as a nonattainment area for the state O_3 (with a finding of overwhelming transport from the Sacramento area and, to a lesser extent, the Bay Area)) and PM10 standards (CARB 2019g). The County is designated as unclassified or attainment by the EPA and CARB for all other criteria air pollutants. Table 4.3-3 presents a summary of the attainment status designations in Nevada County.

Local Air Quality Monitoring

Air quality is monitored by CARB at various locations to determine which air quality standards are being violated, and to direct emission reduction efforts, such as developing attainment plans and rules, incentive programs, etc. The number of days exceeding the ambient air quality standards from 2016 to 2018 are presented in Table 4.3-4.

Table 4.3-3
Nevada County Attainment Status Designations

Pollutant	Averaging Time	California Standards	Federal Standards
Ozone	1 Hour	**Nonattainment**	Revoked in 2005
	8 Hour	**Nonattainment**	**Serious Nonattainment**
Carbon Monoxide	8 Hour	Unclassified	Unclassified/Attainment
	1 Hour	Unclassified	Unclassified/Attainment
Nitrogen Dioxide	Annual Mean	Attainment	Unclassified/Attainment
	1 Hour	Attainment	Unclassified/Attainment
Sulfur Dioxide	Annual Mean	Attainment	Unclassified/Attainment
	24 Hour	Attainment	Unclassified/Attainment
	3 Hour	Attainment	Unclassified/Attainment
	1 Hour	Attainment	Unclassified/Attainment
Respirable Particulate Matter (PM_{10})	Annual Mean	**Nonattainment**	-
	24 Hour	**Nonattainment**	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	Attainment (with the exception of the Portola Valley)	Attainment (with the exception of the Portola Valley)
	24 Hour	-	**Nonattainment**
Lead	30 Day Average	Attainment	Unclassified/Attainment
	Calendar Quarter	Attainment	Unclassified/Attainment
	Rolling 3-Month Average	Attainment	Unclassified/Attainment
Sulfates	24 Hour	Attainment	-
Hydrogen Sulfide	1 Hour	Unclassified	-
Visibility Reducing Particles	8 Hour	Unclassified	-

Source: California Air Resources Board. Maps of State and Federal Area Designations. Available at: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed November 2020.

Table 4.3-4
Air Quality Data Summary (2016-2018)

Pollutant	Monitoring Station	Standard	Days Standard Was Exceeded		
			2016	2017	2018
1-Hour Ozone	Grass Valley	State	6	13	5
8-Hour Ozone		State	46	85	28
		Federal	39	78	22
24-Hour $PM_{2.5}$	Grass Valley	Federal	0	3	12.1
24-Hour PM_{10}	Yuba City	State	1	19.3	ND
		Federal	0	0	8
1-Hour Nitrogen Dioxide	Yuba City	State	0	0	0
		Federal	0	0	0

Note: ND = insufficient data available to determine value.

Source: Dudek, 2021.

The Grass Valley monitoring station, located at 200 Litton Drive, Suite 230, Grass Valley, CA 95945, is the nearest air quality monitoring station to the project sites, located approximately one-mile northwest of the Centennial Industrial Site. However, because the Grass Valley station only monitors ozone (O_3) and $PM_{2.5}$, additional measurements were taken from the Yuba City

monitoring station (773 Almond Street, Yuba City, CA 95991), approximately 31 miles west of the project sites. The data collected at these stations are considered generally representative of the air quality experienced in the project vicinity.

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 reactions to the same odor. 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. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur 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 Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Children, pregnant women, older adults, and people with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses where sensitive-receptor population groups are likely to be located such as hospitals, schools, childcare centers, residences, and retirement homes, are considered especially vulnerable.

Residential sensitive receptors are interspersed around the project sites. At the Brunswick Industrial Site, rural residences are located to the north, west, east, and south. The nearest residence is north of East Bennett Road, approximately 100 feet from the Brunswick Industrial Site boundary. Residences are also located in proximity to the proposed Nevada Irrigation District (NID) potable water pipeline along East Bennett Road. Additional rural residences are located north of the Centennial Industrial Site, the nearest of which is along Idaho Maryland Road, approximately 500 feet away. Finally, the nearest hospitals and schools to the project sites are the Sierra Nevada Memorial Hospital on Glasson Way (approximately 1,800 feet north of the Centennial Industrial Site) and the Montessori House of Children on The Burma Road (approximately 2,500 feet south of the Brunswick Industrial Site boundary).

GHG Emissions and Climate Change

The following sections provide an overview of the topic of climate change, information regarding specific GHGs, the global warming potential (GWP) of GHGs, and the potential effects of climate change.

Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period (decades or longer). The Earth's climate depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the Sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere.

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process: short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit the long-wave radiation into space and back toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a livable environment on Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of long-wave radiation that gets absorbed by the atmosphere before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of Earth's climate shows that the climate system varies naturally over a wide range of time scales, and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is virtually certain that human activities have been the dominant cause of that warming since the mid-twentieth century, and that human activities are the most significant driver of observed climate change. Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system. The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions, and secondarily from emissions associated with land use changes, such as deforestation and urban development. Continued emissions of GHGs will cause further warming and changes in all components of the climate system. Potential effects are discussed in further depth below.

GHGs

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3) (see also 14 CCR 15364.5).[8] Some GHGs, such as CO_2, CH_4, and N_2O, are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs have a much greater heat-absorption potential than CO_2 and include fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[9]

Carbon Dioxide

CO_2 is a naturally occurring gas and a by-product of human activities; CO_2 is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungi; evaporation from oceans; volcanic out-gassing;

[8] Climate-forcing substances include GHGs and other substances, such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in California Health and Safety Code Section 38505.

[9] The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change's Fourth Assessment Report (2007), CARB's "Glossary of Terms Used in GHG Inventories" (2018), and the USEPA's "Climate Change" (2017).

and decomposition of dead organic matter. Human activities that generate CO_2 are the combustion of fuels such as coal, oil, natural gas, and wood, and changes in land use.

Methane

CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide

N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N_2O as a propellant (such as in rockets, racecars, and aerosol sprays).

Fluorinated Gases

Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric O_3-depleting substances (e.g., CFCs, HCFCs, and halons). The most prevalent fluorinated gases include the following:

- Hydrofluorocarbons: HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to O_3-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- Perfluorocarbons: PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to O_3-depleting substances. The two main sources of PFCs are aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, HFCs have long lifetimes, ranging between 10,000 and 50,000 years.
- Sulfur Hexafluoride: SF_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- Nitrogen Trifluoride: NF_3 is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons

Chlorofluorocarbons (CFCs) are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. Although CFCs are chemically unreactive in the lower atmosphere (troposphere), the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons

Hydrochlorofluorocarbons (HCFCs) are a large group of compounds, with a similar structure to that of CFCs—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, the use of HCFCs in general is being phased out.

Black Carbon

Black carbon is a component of $PM_{2.5}$, which has been identified as a leading environmental risk factor for premature death. Black carbon is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influencing cloud formation, and darkening the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived substance that varies spatially, which makes the GWP of the substance difficult to classify. Diesel exhaust emissions are a major source of black carbon, because DPM is considered a TAC, DPM has been regulated and controlled in California for several decades to protect public health. In relation to declining DPM as a result of CARB's regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have been reduced by 70 percent between 1990 and 2010, with 95 percent control expected by 2020.

Water Vapor

The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere, and maintains a climate necessary for life.

Ozone

Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3 due to chemical reactions that may be enhanced by climate change results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

GWP

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of a reference gas. The reference gas used is CO_2;

therefore, GWP-weighted emissions are measured in metric tons (MT) of CO_2 equivalent (CO_2e) and MT CO_2e is used as a common unit for measuring GHG emissions.

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 Intergovernmental Panel on Climate Change Synthesis Report indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification.

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87 degree Celsius (°C) (likely between 0.75°C and 0.99°C) higher than the average over the 1850–1900 period. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8 degree Fahrenheit [°F]) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The OEHHA identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernable evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed, including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, and an increase in variability of statewide precipitation.

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed, such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters.

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition.

Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California, as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has been generally increasing.

The California Natural Resource Agency has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments need for information to support action in their communities, the Fourth Assessment (2018) includes reports for nine regions of the state, including the Sierra Nevada region, where the project is located. Key projected climate changes for the Sierra Nevada region include the following:

- Climate change is already underway in the Sierra Nevada region, affecting heat and precipitation extremes, with long-term warming trends, declining snowpacks, and changes in streamflow timing. The observed and ongoing trends foreshadow larger changes to come. By the end of the twenty-first century, temperatures in the Sierra Nevada are projected to warm by 6 to 9ºF on average, enough to raise the transition from rain to snow during a storm by about 1,500 to 3,000 feet. In contrast, future precipitation is predicted to vary less than temperature; long-term changes may be no more than ±10-15 percent of current totals. However, precipitation extremes (both as deluge and drought) are expected to increase markedly under climate change. Such climatic changes will depend on and reflect many factors, including elevation within the mountain range, with quicker warming trends and precipitation changes at highest elevations.
- As a result of projected warming, Sierra Nevada snowpacks will likely be eradicated below about 6,000 feet elevation and will be much reduced by more than 60 percent across nearly all of the range.
- The loss of snowpack will combine to dry soils 15 to 40 percent below historical norms, depending on elevations. The result will be reduced soil and vegetation moisture; changes in rivers and lakes; and ultimately stresses on flora and fauna. Loss of snowpack and overall drying will lead to increased winter streamflows and floods, and to (largely compensating) reductions in spring and summer streamflows.

The Fourth Climate Change Assessment for the Sierra Nevada Region also provides a framework for adaptation that considers several major vulnerabilities and arenas for climate-change adaptation in the Sierra Nevada Region. Principally, a recommended strategy for developing adaptation options includes (1) understanding historical trends, (2) identifying vulnerabilities, (3) developing strategies, and (4) monitoring results. The three main categories of focus are ecosystems and wildlife, water resources, and human communities. Not all strategies seek to completely avoid climate-change impacts. Four categories of adaptation, in order of increasing intervention, are efforts to support resistance (trying to ward off climate-change impacts), resilience (increasing the capacity of systems to absorb and bounce back from climate changes), orderly response (assisting transitions to avoid at least the most undesired outcomes), and realignment (facilitating major transitions to the most desirable new conditions) to the new climate-changed environment that is coming.

Existing Emissions

The project sites contain the historic Idaho-Maryland Mine; however, as noted in Chapter 3, Project Description of this EIR, the sites are mostly unused, with the exception of wood donation activities occurring at the Brunswick Industrial Site. Thus, activities that result in substantial amounts of criteria pollutant emissions or emissions of GHGs at the project sites currently do not exist. Although the sites are not considered a substantial source of emissions, it should be noted that portions of both sites contain vegetation including trees. Trees and vegetation take in CO_2 through photosynthesis, which results in a process known as carbon sequestration. Carbon sequestration is the process by which CO_2 is removed from the atmosphere and deposited into a carbon reservoir (e.g., vegetation). For the purposes of this analysis, the carbon sequestration occurring in 18.7 acres of forested area within the Brunswick Industrial Site and 5.3 acres within the Centennial Industrial Site was quantified. Forested areas may exist on additional portions of the project sites, but the quantification presented herein is focused on those areas of the project sites that would be affected by implementation of the project. Based on standardized default values for carbon sequestration in forest vegetation, the 24 acres of forestland is assumed to sequester approximately 2,664 MT CO_2e in total over 80 years.[10]

Energy

California is one of the highest energy demanding states within the nation. Activities such as heating and cooling structures, lighting, the movement of goods, agricultural production, and countless other facets of daily life consume a variety of energy sources. Energy within the state is provided primarily by the combustion of fossil fuels such as natural gas, motor gasoline, diesel, jet fuel, and, to a lesser extent, coal. In addition to the fossil fuel-based energy sources, the state is ranked second in the nation in renewable energy generation, which includes solar, geothermal, wind, and biomass resources. In fact, California leads the nation in solar thermal electricity capacity, with 73 percent of the nation's total solar thermal capacity installed within the state.[11]

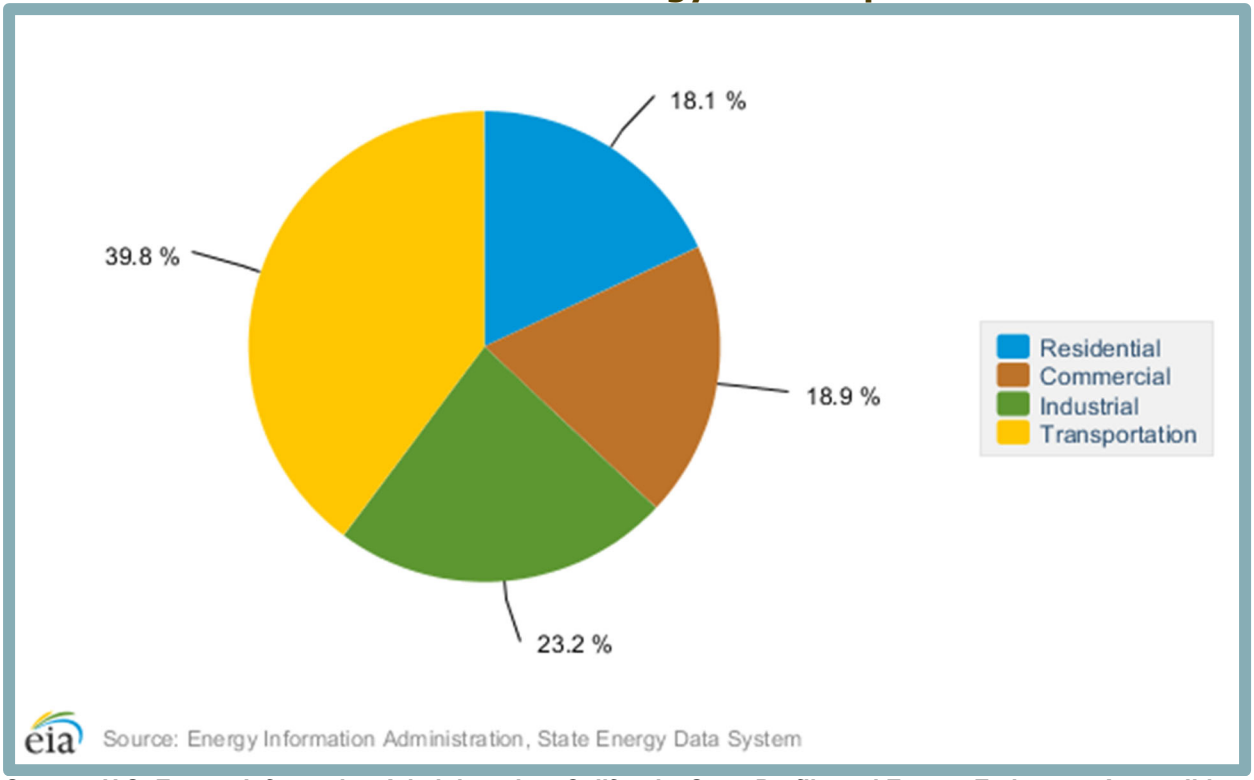
Figure 4.3-1 presents energy consumption within California for the most recent year for which data is available, 2018. As shown in Figure 4.3-1, transportation-related activity consumes the largest single share of energy within the State. Within the transportation sector, motor gasoline is the dominate form of energy, with jet fuel, diesel, natural gas, and electricity supplying the remaining portions of California's transportation sector energy demand. However, when considered together, energy demand from the built-environment including the residential, commercial, and industrial sectors, represents the greatest share of total state-wide energy demand.

Electricity is provided to California consumers through a mix of sources including natural gas, hydroelectric, non-hydroelectric renewable sources, nuclear, coal, and petroleum. Of the foregoing sources of electricity, natural gas provided the greatest amount of electricity at approximately 45 percent of California's statewide supply in 2018. Meanwhile, non-hydroelectric based sources of renewable energy provided an additional 35 percent of the state's energy, with hydroelectric and nuclear providing nine and 11 percent, respectively. Coal contributed less than 0.2 percent of the State's total electricity supply.

[10] California Air Pollution Control Officers Association. *Appendix A: Calculation Details for CalEEMod* [pg 59]. October 2017.

[11] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2020.

Figure 4.3-1
2018 California Energy Consumption



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Accessible at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2020.

The foregoing sources of electricity supply provided for the consumption of a statewide total of 13,103 gigawatt hours (GWh) in the year 2018.[12] Of the total electricity supplied to the State in 2018, Nevada County consumed approximately 713.89 GWh, which constitutes approximately 5.4 percent of the total energy consumed within the State.[13]

California residents and businesses consume petroleum products for various purposes including on-road vehicles, off-road equipment, and air travel. In 2018, 49 percent of all petroleum products consumed within California consisted of motor gasoline. The second largest demand on petroleum products is jet fuel, which represents 19 percent of the petroleum products consumed, while distillate fuel oils, which includes diesel fuel, represents 16 percent of the total petroleum products demanded within the state.[14]

Energy Consumption at the Project Sites

During previous periods of mining at the project sites, energy would have been demanded by off-road equipment, lighting, facilities, ore processing, material transport, and transportation of employees. Types of energy demanded during past activities would have included gasoline and

[12] U.S. Energy Information Administration. *California Net Electricity Generation by Source*. Available at: https://www.eia.gov/state/index.php?sid=CA#tabs-4. Accessed December 2020.
[13] California Energy Commission. *Electricity Consumption by County*. Available at: http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed December 2020.
[14] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2020.

diesel fuel for on- and off-road vehicles and off-road equipment, as well as electricity for lighting and facilities. Demand for energy at the sites ceased with cessation of mining and dewatering activities, except for the period of time during which the Bohemia Mill operated on the Brunswick Industrial Site. Consequently, the sites do not currently result in energy demand.

4.3.3 REGULATORY CONTEXT

Air quality, GHG emissions, and energy are monitored and regulated through the efforts of various international, federal, State, and local government agencies. Agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within the project area, monitoring or reducing GHG emissions, and monitoring or reducing energy consumption are discussed below. Although significant overlap exists within the regulatory environment for air quality, GHG emissions, and energy, the following discussion presents regulations primarily focused on air quality, GHG, and energy separately to the extent feasible.

Federal Regulations Related to Air Quality

The following are the federal regulations relevant to air quality.

Criteria Pollutants

The FCAA, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The USEPA is responsible for implementing most aspects of the FCAA, including setting NAAQS for major air pollutants; setting hazardous air pollutant standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the FCAA, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The FCAA requires the USEPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State implementation plan (SIP) that demonstrates how those areas will attain the standards within mandated time frames.

The USEPA has established New Source Performance Standards (NSPS) for specific stationary sources in order to limit the emissions of criteria air pollutants. The project would be required to comply with all applicable NSPS, which may include:

- Metallic Mineral Processing Plants (40 Code of Federal Regulations [CFR] Part 60 Subpart LL): This NSPS specifies stack emission limits and compliance requirements to limit particulate matter. The provisions of this subpart are applicable to the following affected facilities in metallic mineral processing plants: Each crusher and screen in open-pit mines; each crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station, and railcar unloading station at the mill or

concentrator with the following exceptions. All facilities located in underground mines are exempted from the provisions of this subpart.

- Nonmetallic Mineral Processing Plants (40 CFR Part 60 Subpart OOO): The provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart. The provisions of this subpart do not apply to the following operations: all facilities located in underground mines; plants without crushers or grinding mills above ground; and wet material processing operations. This NSPS specifies stack emission limits and compliance requirements to limit particulate matter.
- Calciners and Dryers in Mineral Industries (40 CFR Part 60 Subpart UUU): The affected facility to which the provisions of this subpart apply is each calciner and dryer at a mineral processing plant. Feed and product conveyors are not considered part of the affected facility. Notably, an affected facility that is subject to the provisions of subpart LL, Metallic Mineral Processing Plants, is not subject to the provisions of this subpart. This NSPS also specifies stack emission limits and compliance requirements to limit particulate matter.
- Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII): The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE). This NSPS establishes criteria air pollutant exhaust limits for CI and ICE based on the model year and power of the engine.

Hazardous Air Pollutants

The 1977 FCAA amendments required the USEPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. Hazardous air pollutants include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 FCAA Amendments, which expanded the control program for hazardous air pollutants, 189 substances and chemical families were identified as hazardous air pollutants.

Asbestos was one of the first hazardous air pollutants regulated under the air toxics program. Of particular importance for the project, the Mine Safety and Health Administration (MSHA) established asbestos regulations that specify exposure limits, engineering controls, and respiratory protection measures for workers in underground mines (30 CFR Part 56, Subpart D). For example, the permissible exposure limits (PELs) include 1) full-shift limit – a miner's personal exposure to asbestos shall not exceed an eight-hour time-weighted average full-shift airborne concentration of 0.1 fiber per cubic centimeter of air; and 2) excursion limit – no miner shall be exposed at any time to airborne concentrations of asbestos in excess of one fiber per cubic centimeter of air as averaged over a sampling period of 30 minutes.

Federal Regulations Related to GHGs

The following are the federal regulations relevant to GHGs.

Federal Vehicle Standards

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 directing the USEPA, the Department of

Transportation (DOT), and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the National Highway Transportation Safety Administration (NHTSA) issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the USEPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (75 FR 25324–25728).

In 2010, President Obama issued a memorandum directing the DOT, Department of Energy, USEPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards were projected to achieve emission rates as low as 163 grams per mile of CO_2 by model year 2025 on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if the foregoing emissions level was achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200), and NHTSA intended to set standards for model years 2022–2025 in future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the USEPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the USEPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by six to 23 percent over the 2010 baselines (76 FR 57106–57513).

In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program would have applied to vehicles with model years 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types of sizes of buses and work trucks. The final standards were expected to lower CO_2 emissions by approximately 1.1 billion MT, and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

In August 2018, the USEPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new, less-stringent standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards that were previously in place, the 2018 proposal would increase U.S. fuel consumption by approximately 0.5 million barrels per day (two-three percent of total daily consumption, according to the Energy Information Administration), and would impact the global climate by 3/1000th of 1°C by 2100. California and other states stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures, and committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the USEPA and NHTSA published the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program” (84 FR 51,310), which became effective November 26, 2019. The Part One Rule revokes California’s authority to set its own GHG emissions standards and set zero-emission-vehicle mandates in California. On March 31, 2020, the USEPA and NHTSA issued the Part Two Rule, which sets CO_2 emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model

years 2021 through 2026. On January 20, 2021, President Joe Biden issued an Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of Part One Rule by April 2021 and review of the Part Two Rule by July 2021. Implementation of both rules will be determined by the results of these reviews.

Federal Regulations Related to Energy

The following are the federal regulations relevant to energy.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act was originally enacted in 1975 with the intention of ensuring that all vehicles sold in the U.S. meet established fuel economy standards. Following congressional establishment of the original set of fuel economy standards the U.S. DOT was tasked with establishing additional on-road vehicle standards and making revisions to standards as necessary. Compliance with established standards is based on manufacturer fleet average fuel economy, which originally applied to both passenger cars and light trucks but did not apply to heavy-duty vehicles exceeding 8,500 pounds in gross vehicle weight. The fuel economy program implemented under the Energy Policy and Conservation Act is known as the Corporate Average Fuel Economy (CAFE) Standards. Updates to the CAFE standards since original implementation have increased fuel economy requirements and begun regulation of medium- and heavy-duty vehicles.

Energy Policy Act of 2005

The Energy Policy Act of 2005 addressed energy production in the U.S. from various sources. In particular, the Energy Policy Act of 2005 included tax credits, loans, and grants for the implementation of energy systems that would reduce GHG emissions related to energy production.

State Regulations Related to Air Quality

The following are applicable State regulations related to air quality. Only the most prominent and applicable California air quality-related legislation is included below; however, an exhaustive list and extensive details of California air quality legislation can be found at the CARB website (http://www.arb.ca.gov/html/lawsregs.htm).

Criteria Air Pollutants

The FCAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the CCAA of 1988, responding to the FCAA, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered “in attainment” if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (one-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 4.3-2.

TACs

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner), and involved definition of a list of TACs. The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) Hazardous Air Pollutants. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

Air Quality and Land Use Handbook

CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB Handbook) addresses the importance of considering health risk issues when siting sensitive land uses, including residential development, in the vicinity of intensive air pollutant emission sources including freeways or high-traffic roads, distribution centers, ports, petroleum refineries, chrome plating operations, dry cleaners, and gasoline dispensing facilities.[15] The CARB Handbook draws upon studies evaluating the health effects of traffic traveling on major interstate highways in metropolitan California centers within Los Angeles (Interstate-405 and Interstate-710), the San Francisco Bay, and San Diego areas. The recommendations identified by CARB, including siting residential uses a minimum distance of 500 feet from freeways or other high-traffic roadways, are consistent with those adopted by the State of California for location of new schools. Specifically, the CARB Handbook recommends, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day".[16]

Importantly, the Introduction chapter of the CARB Handbook clarifies that the guidelines are strictly advisory, recognizing that: "[l]and use decisions are a local government responsibility. The Air Resources Board Handbook is advisory and these recommendations do not establish regulatory standards of any kind." CARB recognizes that there may be land use objectives as well as meteorological and other site-specific conditions that need to be considered by a governmental jurisdiction relative to the general recommended setbacks, specifically stating, "[t]hese recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues".[17]

DPM

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk by 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy

[15] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
[16] *Ibid.*
[17] *Ibid.*

Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. The aforementioned regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures (ATCMs) exist that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Asbestos

Asbestos is strictly regulated due to the serious adverse health effects resulting from exposure, including asbestosis and lung cancer, and based on the natural widespread occurrence of asbestos and the use of asbestos as a building material. CARB has established two ATCMs for naturally occurring asbestos. The first asbestos ATCM applies to Surfacing Applications (i.e., restricts the content of asbestos material used in surfacing applications, such as unpaved roads and parking lots), and the second asbestos ATCM is for Construction, Grading, Quarrying and Surface Mining Operations (i.e., requires implementation of mitigation measures to minimize asbestos-laden dust during the namesake activities). The ATCMs are presented within 17 CCR 93105 for construction, grading, quarrying and surface mining, and 17 CCR 93106 for surfacing applications.

Pursuant to the ATCM for Surfacing Applications, unless one of the exemptions detailed in the ATCM applies, no person shall use, apply, sell, supply, or offer for sale or supply any restricted material for surfacing, unless the material has been tested using an approved asbestos bulk test method and determined to have an asbestos content that is less than 0.25 percent. As defined in this ATCM, “restricted material” means any of the following:

1. Aggregate material extracted from property where any portion of the property is located in a geographic ultramafic rock unit;
2. Aggregate material extracted from property that is NOT located in a geographic ultramafic rock unit if the material has been:
    a. Evaluated at the request of the Air Pollution Control Officer and determined to be ultramafic rock or serpentine;
    b. Tested at the request of the Air Pollution Control Officer and determined to have an asbestos content of 0.25 percent or greater; or
    c. Determined by the owner/operator of a facility to be ultramafic rock, serpentine, or aggregate material that has an asbestos content of 0.25 percent or greater; and
3. Any mixture of aggregate material that contains 10 percent or more of any of the materials listed above, or any combination thereof, shall also be considered “restricted material.”

Pursuant to the ATCM for Construction, Grading, Quarrying and Surface Mining Operations, an Asbestos Dust Mitigation Plan (ADMP) is required for any project with greater than one acre of surface disturbance if any portion of the area to be disturbed is mapped as having serpentine or ultramafic rock, or if any portion of the area to be disturbed has naturally occurring asbestos as determined by the owner/operator or the Air Pollution Control Officer. The ADMP, which must include dust mitigation practices that are sufficient to ensure that equipment and/or operation do not emit dust that is visible crossing the property line, would be required to be submitted to and approved by the local air district before any clearing, grading, or construction begins.

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person must not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. Section 41700 also applies to sources of objectionable odors.

Heavy-Duty Vehicle Idling Emission Reduction Program

On October 20, 2005, CARB approved a regulatory measure to reduce emissions of toxics and criteria pollutants by limiting idling of new and in-use sleeper berth equipped diesel trucks.[18] The regulation established new engine and in-use truck requirements and emission performance requirements for technologies used as alternatives to idling the truck's main engine. For example, the regulation requires 2008 and newer model year heavy-duty diesel engines to be equipped with a non-programmable engine shutdown system that automatically shuts down the engine after five minutes of idling, or optionally meet a stringent NO_X emission standard. The regulation also requires operators of both in-state and out-of-state registered sleeper berth equipped trucks to manually shut down their engine when idling more than five minutes at any location within California. Emission producing alternative technologies such as diesel-fueled auxiliary power systems and fuel-fired heaters are also required to meet emission performance requirements that ensure emissions are not exceeding the emissions of a truck engine operating at idle.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing), off-road, heavy-duty diesel vehicles in California.[19] Such vehicles are used in construction, mining, and industrial operations. The regulation is designed to reduce harmful emissions from vehicles by subjecting fleet owners to retrofit or accelerated replacement/repower requirements, imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The idling limits require operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to less than five minutes. The idling requirements are specified in Title 13 of the CCR.

State Regulations Related to GHGs

The statewide GHG emissions regulatory framework is summarized below. The following text describes executive orders, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

California has taken a number of actions to address climate change. These include executive orders, legislation, and CARB plans and requirements, which are summarized below.

[18] California Air Resources Board. *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling*. October 24, 2013. Available at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm. Accessed December 2020.

[19] California Air Resources Board. *In-Use Off-Road Diesel Vehicle Regulation*. December 10, 2014. Available at: http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm. Accessed December 2020.

EO S-3-05

EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. The EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

EO S-3-05 also directed the California EPA to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010.

AB 32

In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive, multiyear program to limit California's GHG emissions at 1990 levels by 2020, and initiate the transformations required to achieve the state's long-range climate objectives.

EO B-18-12

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10 percent by 2015 and 20 percent by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

EO B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under EO S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40 percent below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achieving this goal, EO B-30-15 called for an update to the CARB's Climate Change Scoping Plan: A Framework for Change (Scoping Plan) to express the 2030 target in terms of million metric tons (MMT) CO_2e. The EO called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

Senate Bill (SB) 32 and AB 197

SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via the CARB's website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and

requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's 2007 Statewide Limit on GHG Emissions

In 2007, in accordance with California Health and Safety Code Section 38550, CARB approved a statewide limit on GHG emissions by 2020, consistent with the determined 1990 baseline (427 MMT CO_2e).

CARB's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561[a]), and to update the Scoping Plan at least once every five years. In 2008, CARB approved the first Scoping Plan. The Climate Change Scoping Plan: A Framework for Change (Scoping Plan) included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR, Section 95480 et seq.); and
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15 percent from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state's GHG emission reduction priorities for the next five years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuation of action to reduce emissions. The First

Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level using more recent GWPs identified by the Intergovernmental Panel on Climate Change, from 427 MMT CO_2e to 431 MMT CO_2e.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40 percent below 1990 levels by 2030 to keep California on a trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050, as set forth in EO S-3-05. Governor Jerry Brown called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In summer 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In December 2017, CARB adopted California's 2017 Climate Change Scoping Plan (2017 Scoping Plan) for public review and comment. The 2017 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target as established by SB 32 and define the state's climate change priorities to 2030 and beyond. Strategies within the 2017 Scoping Plan include implementing renewable energy and energy efficiency measures (including the mandates of SB 350), increased stringency of the LCFS, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant (SLCP) Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, the 2017 Scoping Plan recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20 percent.

For local governments, the 2017 Scoping Plan replaced the initial Scoping Plan's 15 percent reduction goal with a recommendation to aim for a community-wide goal of no more than six MT CO_2e per capita by 2030, and no more than two MT CO_2e per capita by 2050, which are consistent with the State's long-term goals. Such goals are also consistent with the Under 2 Memorandum of Understanding (Under 2 Coalition 2019) and the Paris Agreement, which were developed around the scientifically based levels necessary to limit global warming to below an increase of 2°C. The 2017 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans [CAPs]) and provide more information regarding tools CARB is working on to support those efforts. The 2017 Scoping Plan also recognizes the CEQA streamlining provisions for project-level review where there is a legally adequate CAP.[20]

When discussing project-level GHG emissions reduction actions and thresholds in the context of CEQA, the 2017 Scoping Plan states that "achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development" for project-level CEQA analysis, but also recognizes that such a standard may not

[20] *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City & County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. V. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

be appropriate or feasible for every development project. The 2017 Scoping Plan further provides that "the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."

CARB's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the USEPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 CFR Part 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that the USEPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 MT CO_2e per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emission report verified by a CARB-accredited third party.

SB 605 and SB 1383

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the state, and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of SLCPs (40 percent below 2013 levels by 2030 for CH_4 and HFCs, and 50 percent below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, CARB adopted its SLCP Reduction Strategy in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH_4, and fluorinated gases.

EO B-55-18

EO B-55-18 (September 2018) establishes a statewide policy for California to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net-negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

Mobile Sources

The following regulations relate to the control of emissions from mobile sources. Mobile sources include both on-road vehicles and off-road equipment.

AB 1493

AB 1493 (Pavley) (July 2002) was enacted in response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards would result in a reduction of approximately 22 percent of GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards would result in a reduction of approximately 30 percent. However, as

described within the Federal Vehicle Regulations section above, the USEPA's SAFE Vehicles Rule Part One, adopted in November 2019, revokes California's authority to set GHG emissions standards. As the EPA rule is the subject of pending legal challenges and President Biden issued an EO to review Part One and Part Two, the analysis within this EIR uses the best available information at this time, as set forth in CARB's EMFAC.

Heavy-Duty Diesel Truck and Bus Regulation

CARB adopted the final Heavy-Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce DPM (black carbon) and NO_x emissions from heavy-duty diesel vehicles. The rule requires DPM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule requires nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an ATCM to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than five minutes at any location (13 CCR 2485).

EO S-1-07

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) set a declining LCFS for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020 (17 CCR 95480 et seq.). Carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

SB 375

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every eight years. SB 375 requires the state's 18 regional metropolitan planning organizations to prepare a sustainable communities strategy as part of their Regional Transportation Plans that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise a sustainable communities strategy to achieve the GHG reduction target, the metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not (1) regulate the use of land, (2) supersede the land use authority of cities and counties, or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with the sustainable community strategy. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing

pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. By 2025, implementation of the rule is anticipated to reduce emissions of smog-forming pollution from cars by 75 percent compared to the average new car sold in 2015. To reduce GHG emissions, CARB, in conjunction with the USEPA and NHTSA, adopted GHG standards for model year 2017 to 2025 vehicles; the standards were estimated to reduce GHG emissions by 34 percent by 2025. The zero-emissions vehicle program acts as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years. However, implementation of the Advanced Clean Cars program is contingent upon the outcome of the on-going SAFE Vehicles Rule litigation.

EO B-16-12

EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed CARB, California Energy Commission (CEC), California Public Utilities Commission (CPUC), and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

AB 1236

AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric-vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based on substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill provided for appeal of that decision to the planning commission, as specified. AB 1236 required electric-vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric-vehicle charging stations. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017.

Advanced Clean Trucks Regulation

The Advanced Clean Trucks (ACT) Regulation was approved by CARB in 2020. The purpose of the ACT Regulation is to accelerate the market for zero-emission vehicles in the medium- and heavy-duty truck sector and to reduce air pollutant emissions generated from on-road mobile sources (CARB 2021). The regulation has two components including (1) a manufacturer sales requirement and (2) a reporting requirement:

1. Zero-emission truck sales: Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines will be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-

emission truck/chassis sales would need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales.

2. Company and fleet reporting: Large employers including retailers, manufacturers, brokers and others will be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, will be required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

EO N-79-20

EO N-79-20 (September 2020) establishes a Statewide goal that 100 percent of in-state vehicle sales of new passenger cars and trucks shall be zero-emission by the year 2035. The order directed the CARB to develop and propose passenger vehicle and truck regulations requiring increasing volumes of new zero-emission vehicles sold in the State in order to achieve the goal by 2035. In addition, the order required that a Zero-Emissions Vehicle Market Development Strategy be created and updated to ensure coordinated and expeditious implementation of the EO.

Water

The following regulations relate to the conservation of water, which reduces GHG emissions related to electricity demands from the treatment and transportation of water.

EO B-29-15

In response to a drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives subsequently became permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency, and broadens the applicability of the ordinance to include new development projects with smaller landscape areas.

EO B-37-16

Issued in May 2016, EO B-37-16 directed the State Water Resources Control Board (SWRCB) to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The SWRCB also developed a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25 percent reduction called for in EO B-29-15. The SWRCB and Department of Water Resources were directed to develop new, permanent water use targets that build upon the existing state law requirements that the state achieve 20 percent reduction in urban water usage by 2020. EO B-37-16 also specifies that the SWRCB permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

EO B-40-17

EO B-40-17 (April 2017) lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinded EO B-29-15, but expressly stated that EO B-37-16 remains in effect and directed the SWRCB to continue development of permanent prohibitions on wasteful water use.

Solid Waste

The following regulations relate to the generation of solid waste and means to reduce GHG emissions from solid waste produced within the state.

AB 939, AB 341, and AB 1826

In 1989, AB 939, known as the Integrated Waste Management Act (PRC Sections 40000 et seq.), was passed because of the observed increase in waste stream and the decrease in landfill capacity. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25 percent by 1995 and 50 percent by the year 2000.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75 percent of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week.

Other State Actions

The following regulations relate to regulations of GHG emissions broadly.

SB 97

SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities. The advisory further recommended that the lead agency determine the significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The California Natural Resource Agency (CRNA) adopted the CEQA Guidelines amendments in December 2009, and the amended CEQA Guidelines became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis, or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead

allowing a lead agency to develop, adopt, and apply the lead agency's own thresholds of significance or those developed by other agencies or experts. CNRA acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.

With respect to GHG emissions, the CEQA Guidelines state that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions (14 CCR 15064.4[a]). The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

EO S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, *Safeguarding California: Reducing Climate Risk*, followed in July 2014. To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of the *Safeguarding California: Implementation Action Plans* followed in March 2016. In January 2018, the CNRA released the *Safeguarding California Plan: 2018 Update,* which communicates current and needed actions that state government should take to build climate change resiliency.

State Regulations Related to Energy

The state has adopted various pieces of regulation aimed at reducing energy consumption, increasing energy efficiency, and mandating sourcing requirements for electricity production.

Building Energy

The following regulations relate to energy efficiency and energy use reductions in the built environment.

Title 24, Part 6

Title 24 of the CCR was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed periodically, and revised if necessary, by the Building Standards Commission and CEC (California Public Resources Code [PRC] Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (PRC Section 25402). The regulations are scrutinized and analyzed for

technological and economic feasibility (PRC Section 25402[d]) and cost effectiveness (PRC Sections 25402[b][2] and [b][3]). As a result, the standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The 2019 Title 24 standards are the currently applicable building energy efficiency standards and became effective on January 1, 2020. The 2019 Title 24 Building Energy Efficiency Standards reduced energy used and associated GHG emissions compared to the previous 2016 Title 24 standards. In general, single-family residences built to the 2019 standards are anticipated to use approximately seven percent less energy due to energy efficiency measures than those built to the 2016 standards; once rooftop solar electricity generation is factored in, single-family residences built under the 2019 standards use approximately 53 percent less energy than those under the 2016 standards. Nonresidential buildings built to the 2019 standards use an estimated 30 percent less energy than those built to the 2016 standards.

Title 24, Part 11

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, electric vehicle (EV) charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR Part 11).

Title 20

Title 20 of the CCR requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

SB 1

SB 1 (Murray) (August 2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the California PRC, including Chapter 8.8 (California Solar

Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for homes and businesses within 10 years of adoption, and placing solar energy systems on 50 percent of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

AB 1470

AB 1470 established the Solar Water Heating and Efficiency Act of 2007. The bill made findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. AB 1470 required the CEC to evaluate the data available from a specified pilot program, and, if the CEC made a specified determination, to design and implement a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

AB 1109

Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50 percent for indoor residential lighting and by 25 percent for indoor commercial lighting.

Renewable Energy and Energy Procurement

The following regulations relate to the source of electricity provided to consumers within the State, as well as standards related to the generation of electricity within the State.

Renewable Portfolio Standard (RPS) and SB 100

Established in 2002 under SB 1078 (which added Section 387, 390.1, and 399.25 to the Public Utilities Code and added Article 16 to Chapter 2.3 of Part 1 Division 1 of the Public Utilities Code), accelerated in 2006 under SB 107 (which amended Sections 25620.1, 25740, 25741, 25742, 25743, 25746, and 25751 of, added Sections 25470.5 and 25744.5, and repealed Sections 25745 and 25749 of, the PRC, as well as amending Sections 87, 399.11, 399.12, 399.13, 399.14, and 399.15 of the Public Utilities Code, adding Article 9 to Chapter 3 of Part 1 of Division 1 of the Public Utilities Code, and to repeal and add Section 399.16 of the Public Utilities Code), and expanded in 2011 under SB 2 (which amended Sections 5740, 25740.5, 25741, 25742, 25746, 25747, and 25751 of the PRC, added Section 25519.5 to the PRC, to add and repeal Section 25741.5 of, the PRC, and to amend Sections 399.11, 399.12, 399.20, and 454.5 of, to amend, renumber, and add Sections 399.13 and 399.16 of, to add Sections 399.18, 399.19, 399.26, 399.30, 399.31, and 1005.1, to add Article 11 (commencing with Section 910) to Chapter 4 of Part 1 of Division 1 of, to repeal Section 387 of, and to repeal and add Sections 399.14, 399.15, and 399.17 of, the Public Utilities Code), California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

Since the inception of the RPS program, the program has been extended and enhanced multiple times. In 2015, SB 350 (An act to add Section 44258.5 to the Health and Safety Code, to amend Section 1720 of the Labor Code, to amend Sections 25310 and 25943 of, and to add Sections 25302.2 and 25327 to, the PRC, and to amend Sections 359, 399.4, 399.11, 399.12, 399.13, 399.15, 399.16, 399.18, 399.21, 399.30, 454.55, 454.56, 701.1, 740.8, 9505, and 9620 of, to

amend and repeal Sections 337 and 352 of, to add Sections 237.5, 365.2, 366.3, 454.51, 454.52, 740.12, 9621, and 9622 to, to add Article 17 (commencing with Section 400) to Chapter 2.3 of Part 1 of Division 1 of, to add and repeal Article 5.5 (commencing with Section 359.5) of Chapter 2.3 of Part 1 of Division 1 of, and to repeal Article 5 (commencing with Section 359) of Chapter 2.3 of Part 1 of Division 1 of, the Public Utilities Code) extended the State's RPS program by requiring that publicly owned utilities procure 50 percent of their electricity from renewable energy sources by 2030. The requirements of SB 350 were expanded and intensified in 2018 through the adoption of SB 100 (An act to amend Sections 399.11, 399.15, and 399.30 of, and to add Section 454.53 to, the Public Utilities Code), which mandated that all electricity generated within the State by publicly owned utilities be generated through carbon-free sources by 2045. In addition, SB 100 increased the previous renewable energy requirement for the year 2030 by 10 percent; thus, requiring that 60 percent of electricity generated by publicly owned utilities originate from renewable sources by the year 2030.

CEC

The CEC is the State's primary energy policy and planning agency. Created by the Legislature in 1974, the CEC has seven major responsibilities: forecasting future energy needs; promoting energy efficiency and conservation by setting the State's appliance and building energy efficiency standards; supporting energy research that advances energy science and technology through research, development, and demonstration projects; developing renewable energy resources; advancing alternative and renewable transportation fuels and technologies; certifying thermal power plants 50 MW and larger; and planning for and directing State response to energy emergencies.[21]

CPUC

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC is responsible for ensuring that customers have safe, reliable utility service and infrastructure at reasonable rates, regulating utility services, stimulating innovation, and promoting competitive markets.[22]

Local Regulations Related to Air Quality, GHGs, and Energy

The most prominent local regulations related to air quality, GHG emissions, and energy are established by the NSAQMD, the Nevada County Transportation Commission (NCTC), and the County of Nevada.

NSAQMD

With regard to air quality, the NSAQMD is the primary agency responsible for planning to meet NAAQS and CAAQS in Nevada, Plumas, and Sierra Counties. The NSAQMD develops rules and regulations for stationary sources and equipment, prepares emissions inventories and air quality management planning documents, and conducts source testing and inspections. NSAQMD rules and regulations applicable to the project include the following:

- Rule 205, Nuisance, prohibits discharge of air contaminants or other material from any source that cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public, or that endanger the comfort, repose, health, or safety of any

[21] California Energy Commission. *About the California Energy Commission*. Available at: http://www.energy.ca.gov/commission/index.html. Accessed December 2020.

[22] California Public Utilities Commission. *California Public Utilities Commission*. Available at: http://www.cpuc.ca.gov/puc/. Accessed December 2020.

such persons, or the public, or that have the natural tendency to cause injury or damage to business or property.

- Rule 207, Particulate Matter, prohibits the release or discharge of particulate matter emissions in excess of 0.1 grains per cubic foot of dry exhaust gas as standards conditions into the atmosphere from any source or single processing unit, exclusive of sources emitting combustion contaminants only.
- Rule 227, Cutback and Emulsified Asphalt Paving Materials, restricts the discharge of VOCs caused by the use or manufacture of Cutback or Emulsified asphalts for paving, road construction, or road maintenance, unless such manufacture or use complies with the provisions of the rule.
- Rule 904, Asbestos Airborne Toxic Control Measure Asbestos-Containing-Serpentine, incorporates by reference Title 17, Section 93106, of the CCR in its entirety.

Air districts typically act in an advisory capacity to local governments in establishing the framework for environmental review of air pollution impacts under CEQA. Such an advisory role may include recommendations regarding significance thresholds, analytical tools to estimate emissions and assess impacts, and mitigation for potentially significant impacts. The NSAQMD has not adopted specific guidance or thresholds applicable to the analysis of a project's contribution to GHG emissions or associated climate change effects.

Air Quality Attainment Plan

The NSAQMD has prepared several SIPs for areas within the MCAB. Because the Portola Valley area is designated as nonattainment for the $PM_{2.5}$ NAAQS, the NSAQMD adopted the *2017 Portola $PM_{2.5}$ State Implementation Plan*, which was approved by the CARB in 2017. To address CAA contingency measure requirements, the NSAQMD prepared the *Proposed Portola $PM_{2.5}$ Plan Contingency Measure SIP Submittal*. At the time of preparation of this EIR, the CARB had not yet approved the 2020 Contingency Measure SIP Submittal. The project sites are outside of the Portola Valley, and, as such, the project is not subject to the requirements of the foregoing plans.

Western Nevada County is in nonattainment for the federal and state ozone standards. Consequently, the NSAQMD prepared the *2018 Western Nevada County Planning Area Ozone Attainment Plan* as well as the *2018 Reasonably Available Control Technology SIP for Western Nevada County*. The CARB adopted the 2018 Attainment Plan in 2018 and the Reasonably Available Control Technology SIP was submitted to the USEPA in 2018, following adoption by the NSAQMD. Under the ozone plans, Nevada County is required to reduce ozone precursor emissions by at least three percent per year. Most of the required reductions are expected to result from Statewide measures and from improvements in mobile source efficiency (e.g., improved passenger vehicle emissions fuel efficiency and proliferation of zero emissions vehicles).

NCTC

At the regional level, the NCTC adopted the 2015-2035 Nevada County RTP to establish the short-term (2016 to 2026) and long-term (2026 to 2036) regional transportation needs in Nevada County and to facilitate the efficient development and implementation of projects while maintaining public health and environmental quality. Although the 2015-2035 RTP does not regulate land use or supersede the exercise of land use authority by NCTC's member jurisdictions (i.e., Nevada County or cities therein), the 2015-2035 RTP is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns, and

seeks to reduce air quality and GHG issues associated with future growth by increasing the efficiency of the transportation system and increasing alternative transportation options.

Nevada County General Plan

The County General Plan's Air Quality Element (Nevada County 1995) and Circulation Element describe the following goals and policies that pertain to the project:

Air Quality Element

Goal 14.1 Attain, maintain, and ensure high air quality.

Policy 14.1: Cooperate with the NSAQMD during review of development proposals. As part of the site plan review process, require applicants of all subdivisions, multi-family, commercial and industrial development projects to address cumulative and long-term air quality impacts, and request the NSAQMD enforce appropriate land use regulations to reduce air pollution.

Policy 14.3: Where it is determined necessary to reduce short-term and long-term cumulative impact, the County shall require all new discretionary projects to offset any pollutant increases. Wherever possible, such offsets shall benefit lower-income housing.

Policy 14.4: Encourage and cooperate with the NSAQMD, or any successor agency, to:

d. Develop a program to regulate and control fugitive dust emissions from construction projects.

Policy 14.5: Encourage and cooperate with the NSAQMD, or any successor agency, to develop and implement a long term monitoring program to quantify air quality in the County. The County shall work with the District to identify areas for monitoring and to develop an implementation program to begin on-site monitoring upon project application where a proposal will result in an increase of more than 25 tons per year of nonattainment pollutants (or precursors). The County will also cooperate with the District in developing a monitoring program for CO emissions at key intersections as a basis for consideration of short- to long-term air quality in the preparation of the County Road Improvement Program.

Policy 14.6: For new construction, the County shall prohibit the installation of non-EPA certified and non-EPA exempt solid fuel burning devices.

Policy 14.7A: The County shall, as part of its development review process, ensure that proposed discretionary developments address the requirements of NSAQMD Rule 226.

Policy 14.7B: The County shall, as part of its Road Improvement Program, consider the benefits to air quality from the paving of unpaved roads.

Circulation Element

Goal RD-1: Reduce dependence on the automobile.

Goal RD-2: Increase the availability of alternative modes of transportation.

Goal RD-3: Decrease vehicle miles traveled (VMT) while encouraging increased transit ridership and vehicle occupancy.

Goal EP-4.3: To the extent feasible, encourage the reduction of GHG emissions during the design phase of construction projects.

Goal EP-4.4: To the extent feasible, encourage the development of energy efficient circulation patterns.

Nevada County Energy Action Plan

Nevada County adopted the Nevada County Energy Action Plan (EAP) in February 2019, which provides an analysis of the energy use within unincorporated areas of the County and County operated facilities, as well as strategies for accelerating energy efficiency, water efficiency, and renewable energy efforts already underway in Nevada County. One of the central goals of the EAP is to reduce the projected annual grid supplied electricity use in 2035 by 51 percent, and annual natural gas use by 30 percent compared to a baseline from the year 2005. Notably, the actions within the EAP are voluntary and do not require the County or community to meet the reduction goals; however, savings may only be realized if the recommended actions are taken.

4.3.4 IMPACTS AND MITIGATION MEASURES

The standards of significance and methodology used to analyze and determine the potential project-specific impacts related to air quality, GHG emissions, and energy are described below. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. For the purposes of this EIR, an impact is considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable new 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 GHG emissions, either directly or indirectly, that may have a significant impact on the environment;

- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs;
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Criteria Pollutant Emissions and TAC Emissions

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the project would have a significant impact on air quality.

The NSAQMD has developed a tiered approach to significance levels. The tiered thresholds for Levels A, B, and C are given in Table 4.3-5 for a project's estimated emissions of criteria pollutants in pounds per day. A project with emissions qualifying it for Level A thresholds (i.e., all projects with emissions greater than zero) requires the most basic mitigation. Projects that qualify for Level B require more extensive mitigation, and projects that qualify for Level C require the most extensive application of mitigation. The emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an "O_3 significance threshold" (i.e., the potential for adverse O_3 impacts to occur). Thresholds for O_3 precursors are used instead of thresholds restricting the direct emission of O_3 because O_3 is not emitted directly (see the discussion of O_3 and sources of O_3 in the Existing Environmental Setting portion of this Chapter).

Table 4.3-5
NSAQMD Thresholds of Significance (lbs/day)

Threshold Level	ROG	NO_X	PM_{10}
Level A Threshold	<24	<24	<79
Level B Threshold	24-136	24-136	79-136
Level C Threshold	>136	>136	>136

Source: NSAQMD. Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects. Draft Revised March 2021

If unmitigated emissions of ROG, NO_x, and/or PM_{10} exceed 136 pounds per day (Level C), then there is a potentially significant impact and mitigation is required; if mitigated emissions of ROG, NO_x, and/or PM_{10} still exceed 136 pounds per day (Level C) after implementation of mitigation, then a significant and unavoidable impact would occur. Unmitigated emissions below Level C would result in an impact that is potentially significant and mitigation is required; following implementation of mitigation (as specified separately for Level A and Level B by NSAQMD), emissions would be less than significant. The NSAQMD guidelines recommend that projects with higher emissions (Level C Thresholds) should automatically mitigate more emissions than a lower-impact project (Level A). According to the NSAQMD guidelines, if a new project is unable to provide adequate on-site mitigation of its long-term air quality impacts, an off-site mitigation program may be necessary.

The NSAQMD established thresholds of significance for CEQA purposes to achieve and maintain the NAAQS and CAAQS. Because an AAQS is based on maximum pollutant levels in outdoor air that would not harm the public's health, and air district thresholds pertain to attainment of the AAQS, a project that complies with the thresholds established by a local air district, such as the

NSAQMD, would not result in adverse effects to human health related to criteria pollutant emissions.

For mobile source emissions of CO, the one-hour (20 ppm) and eight-hour (nine ppm) CAAQS for CO are used to determine significance for receptors proximate to intersections affected by project traffic that would fall at level of service (LOS) D or higher (i.e., LOS E or F), under the project and cumulative scenarios.

The NSAQMD's cancer and noncancer thresholds to assess health risk significance for CEQA are consistent with what are used for the AB 2588 risk assessment procedures. The NSAQMD's current health risk thresholds are presented in Table 4.3-6.

Table 4.3-6
NSAQMD Thresholds of Significance for Health Risks

Risk Factor	Threshold
Cancer	Increased cancer risk of >10.0 cases per million persons
Non-Cancer	Increased non-cancer risk of >1.0 Hazard Index (Chronic or Acute)

Source: Longmire, S. NSAQMD. Personal communication [email] with M. Morales, Dudek. February 19, 2021.

GHG Emissions and Other Cumulative Emissions

At this time, neither the NSAQMD nor the County has adopted numerical thresholds of significance for GHG emissions that would apply to the project. The NSAQMD, however, recommends that all projects subject to CEQA review be considered in the context of GHG emissions and climate change impacts, and that CEQA documents include a quantification of GHG emissions from all project sources, as well as including measures to minimize and mitigate GHG emissions as feasible. The project would generate GHG emissions through short-term construction activities, long-term operational activities, and reclamation.

Considering the lack of established GHG emissions thresholds that would apply to the project, CEQA allows lead agencies to identify thresholds of significance applicable to a project that are supported by substantial evidence. Substantial evidence is defined in the CEQA statute to mean "facts, reasonable assumptions predicated on facts, and expert opinion supported by facts" (14 CCR 15384[b]).[23] Substantial evidence can be in the form of technical studies, agency staff reports or opinions, expert opinions supported by facts, and prior CEQA assessments and planning documents. Therefore, to establish additional context in which to consider the order of magnitude of the project's GHG emissions, this analysis accounts for the following considerations by other government agencies and associations about what levels of GHG emissions constitute a cumulatively considerable incremental contribution to climate change:

- The Sacramento Metropolitan Air Quality Management District (SMAQMD) established thresholds, including 1,100 MT CO_2e per year for the construction or operational phase of

[23] 14 CCR 15384 provides the following discussion: "Substantial evidence" as used in the Guidelines is the same as the standard of review used by courts in reviewing agency decisions. Some cases suggest that a higher standard, the so called "fair argument standard" applies when a court is reviewing an agency's decision whether or not to prepare an EIR. Public Resources Code section 21082.2 was amended in 1993 (Chapter 1131) to provide that substantial evidence shall include "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." The statute further provides that "argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly inaccurate or erroneous, or evidence of social or economic impacts which do not contribute to, or are not caused by, physical impacts on the environment, is not substantial evidence."

land use development projects, or 10,000 direct MT CO_2e per year from stationary source projects.

- The Placer County Air Pollution Control District (PCAPCD) recommends a tiered approach to determine if a project's GHG emissions would result in a significant impact. First, project GHG emissions are compared to the de minimis level of 1,100 MT CO_2e per year. If a project does not exceed this threshold, the project does not have significant GHG emissions. If the project exceeds the de minimis level and does not exceed the 10,000 MT CO_2e per year bright line threshold, then the project's GHG emissions can be compared to the efficiency thresholds. The efficiency thresholds are 4.5 MT CO_2e per-capita for residential projects in an urban area, and 5.5 MT CO_2e per-capita for residential projects in a rural area. For nonresidential development, the efficiency thresholds are 26.5 MT CO_2e per 1,000 square feet for projects in urban areas, and 27.3 MT CO_2e per 1,000 square feet for projects in rural areas. The PCAPCD bright-line GHG threshold of 10,000 MT CO_2e per year is also applied to land use projects' construction and operational phases as well as stationary source projects' construction and operational phases. Generally, GHG emissions from a project that exceed 10,000 MT CO_2e per year would be deemed to have a cumulatively considerable contribution to global climate change.
- The Bay Area Air Quality Management District (BAAQMD) has adopted 1,100 MT CO_2e per year as a project-level bright-line GHG significance threshold that would apply to operational emissions from mixed land-use development projects, a threshold of 10,000 MT CO_2e per year as the significance threshold for operational GHG emissions from stationary-source projects, and an efficiency threshold of 4.6 MT CO_2e per service population per year.
- The South Coast Air Quality Management District (SCAQMD) formed a GHG CEQA Significance Threshold Working Group to work with SCAQMD staff on developing GHG CEQA significance thresholds until statewide significance thresholds or guidelines are established. In December 2008, the SCAQMD adopted an interim 10,000 MT CO_2e per-year screening level threshold for stationary source/industrial projects for which the SCAQMD is the lead agency.

For a conservative evaluation, the SMAQMD 1,100 MT CO_2e per year construction GHG threshold has been applied to project construction. For operations, because the project is an industrial project that includes stationary sources (i.e., diesel generators used for emergency power), the project's GHG emissions were compared to the 10,000 MT CO_2e per year quantitative threshold, which, as described above, is used by SMAQMD, PCAPCD, BAAQMD, and SCAQMD for industrial and/or stationary source emissions of GHGs. The substantial evidence for this GHG emissions threshold is based on the expert opinion of various California air districts, which have applied the 10,000 MT CO_2e per year threshold in numerous CEQA documents where those air districts are the lead agency.

Energy

Quantitative thresholds for the analysis of potential impacts related to energy consumption have not been adopted by any local, regional, or statewide entities. Consequently, potential impacts of the project related to energy will be determined based on whether the project would result in wasteful, inefficient, or unnecessary use of energy. In addition, the potential for the project to conflict with or obstruct a state or local plan for renewable energy generation or energy efficiency will be considered. The analysis of energy consumption will include consideration of energy demand during project construction, operations, and reclamation.

Method of Analysis

The information and analysis presented within this Chapter is primarily based on the Air Quality and Greenhouse Gas Emissions Analysis Technical Report and Health Risk Assessment Report, prepared for the proposed project. In general, construction was anticipated to occur over approximately 12 months, operations were anticipated to begin immediately following the construction period and operations would continue for approximately 80 years, and reclamation would occur over approximately three-months following the cessation of operations.

Detailed information regarding the method of analysis for construction, operations, and reclamation are provided in the following sections. In addition, all of the analysis, emissions estimation, and energy demand calculations, are available in Appendix E.1 of this EIR.

Construction Emissions and Energy Demand

Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by Rise Grass Valley Inc., the project applicant. Construction is assumed to take place from January 2021 through December 2021. A construction start date of January 2021 was selected at the start of the environmental review process and, while that date has now passed, use of January 2021 provides a conservative approach to the emissions analysis. The approach is considered conservative because existing regulations will ensure that emissions from construction equipment and vehicles during future years will be less intense than identical activities undertaken at the present time. Likewise, the construction scenario assessed herein is the worst-case, because if the same construction activities were to be spread over a longer period (i.e., a period in excess of 12 months), the amount of overlap of equipment usage would be reduced, which would result in reduced max daily and annual emissions. Lengthening the construction period would also push out the operational and reclamation phases by the same amount of time. The actual construction period would depend on numerous factors including permitting timelines and economic conditions. Emissions from construction activities would originate from several principal sources including, off-road equipment, on-road vehicles, the application of architectural coating, paving, and ground disturbance. To analyze emissions and energy demand from off-road equipment and on-road vehicles, Rise Grass Valley Inc. provided an estimate of the phases of construction as well as the number and types of off-road equipment that would be used during each phase. Information pertaining to off-road equipment is presented in Table 4.3-7. In addition, information related to on-road vehicle usage during construction is provided in Table 4.3-8 and Table 4.3-9.

The criteria air pollutant and TAC emissions inventory was developed based on the assumptions in Table 4.3-7, Table 4.3-8, and Table 4.3-9. Sources of air pollutant emissions during construction would include exhaust from off-road equipment and on-road vehicles (i.e., trucks and worker vehicles); fugitive dust associated with vehicle travel over unpaved roads and compaction areas, material handling, bulldozer spreading, soil compaction, and wind erosion; ROG off-gassing from architectural coatings, and ROG off-gassing during asphalt paving. Emission factors for these sources were incorporated into a spreadsheet model that includes the CARB OFFROAD2011 model for diesel-fueled off-road equipment; the CARB Mobile Source Emissions Inventory Model (EMFAC, version 2017) for on-road vehicles, factors from EPA's AP-42 for fugitive dust and factors from the California Emissions Estimator Model (CalEEMod) for architectural coatings and asphalt paving.

Table 4.3-7
Construction Off-Road Equipment Assumptions

Construction Phase	Schedule (Month/Year)	Equipment				
		Equipment Type	Fuel	Quantity	Usage Hours Per Day	Days Per Week
Project Management, Engineers, Surveyors	1/2021 – 12/2021	N/A	N/A	N/A	N/A	6
Foundation and Concrete Contractor	1/2021 – 12/2021	Walk Behind Compactor	Diesel	1	1	6
		Concrete Saw	Diesel	1	2	6
Grading and Paving Contractor	1/2021 – 12/2021	Dozer	Diesel	1	4	6
		Grader	Diesel	1	4	6
		Excavator	Diesel	1	4	6
		Front-End Loader	Diesel	1	4	6
		Roller Compactor	Diesel	1	4	6
		Paving Equipment	Diesel	1	2	6
Building Contractor	1/2021 – 12/2021	Skid Steer / Forklift	Diesel	3	6	6
		Manlift	Diesel	1	6	6
		Portable Generator / Welder	Diesel	3	6	6
		Forklift	Diesel	2	4	6
		Crane	Diesel	1	4	6
Ironworkers (Headframes)	2/2021 – 3/2021 & 11/2021 – 12/2021	Forklift	Diesel	2	4	6
		Crane	Diesel	1	4	6
Electrical and Mechanical Contractors	1/2021 – 12/2021	Skid Steer / Forklift	Diesel	3	6	6
		Manlift	Diesel	1	6	6
		Portable Generator / Welder	Diesel	3	6	6
		Forklift	Diesel	2	4	6
		Crane	Diesel	1	2	6
Potable Water Installation	2/2021 – 5/2021	Portable Generator / Welder	Diesel	3	6	6
		Forklift	Diesel	2	4	6
		Excavator	Diesel	1	8	6
		Concrete Saw	Diesel	1	4	6
		Front-End Loader	Diesel	1	4	6

(Continued on next page)

Table 4.3-7
Construction Off-Road Equipment Assumptions

Construction Phase	Schedule (Month/Year)	Equipment				
		Equipment Type	Fuel	Quantity	Usage Hours Per Day	Days Per Week
		Roller Compactor	Diesel	1	4	6
		Paving Equipment	Diesel	1	4	6
PG&E Power Line Work	7/2021 – 9/2021	Forklift	Diesel	2	4	6
		Manlift	Diesel	1	6	6
		Crane	Diesel	1	4	6
Underground Shaft Contractors	4/2021 – 12/2021	LHD Units	Diesel	2	20	7
		Personnel All-Terrain Vehicles	Diesel	2	12	7
Raise Bore Contractor	8/2021 – 9/2021	Raise Bore Machine	Electric	1	18	7
Underground Construction	9/2021 – 12/2021	Mine Air Compressor	Electric	1	10	7
		Locomotives	Electric	2	12	7
		Main Ventilation Fans	Electric	1	24	7
		Booster Ventilation Fans	Electric	2	24	7
		Auxiliary Ventilation Fans	Electric	3	24	7
		Brunswick Shaft Hoist	Electric	1	8	7
Mine Dewatering	6/2021 – 11/2021	Main Pump 1300 L	Electric	2	24	7
		Main Pump 2300 L	Electric	2	24	7
		Pain Pump 3280 L	Electric	2	24	7
		Face Pumps	Electric	3	16	7
		Water Treatment Plant	Electric	1	24	7

Note: PG&E = Pacific Gas & Electric, Company.

Source: Dudek, 2021.

Table 4.3-8
Construction On-Road Off-Site Vehicle Trip Assumptions

Project Vehicle	Trip Length (miles)	Maximum Daily Trips (trips/day)	Maximum Daily VMT (VMT/day)	Annual Trips (trips/year)	Annual VMT (VMT/year)
Project management, engineers, surveyors, and fuel					
Workers	16.8	12	202	3,744	62,899
Fuel Trucks	3.5	2	7	208	728
Pickup Trucks	15	8	120	2,496	37,440
Foundation and concrete contractor					
Workers	16.8	16	269	4,992	83,866
Pickup Trucks	15	8	120	2,496	37,440
Concrete Trucks	5	2	10	624	3,120
Grading and paving contractor					
Workers	16.8	12	202	3,744	62,899
Haul Trucks	5	2	10	624	3,120
Building contractor					
Workers	16.8	20	336	6,240	104,832
Pickup Trucks	15	8	120	2,496	37,440
Ironworkers (headframes)					
Workers	16.8	16	269	800	13,440
Pickup Trucks	15	8	120	400	6,000
Electrical and mechanical contractors					
Workers	16.8	20	336	6,240	104,832
Pickup Trucks	15	8	120	2,496	37,440
Potable water installation					
Workers	16.8	12	202	1,224	20,563
Haul Trucks	20	2	40	204	4,080
PG&E power line work					
Workers	16.8	10	168	780	13,104
Haul Trucks	20	2	40	156	3,120
Underground shaft contractors					
Workers	16.8	10	168	2,740	46,032
Raise bore contractor					
Workers	16.8	8	134	480	8,064
Underground construction					
Workers	16.8	10	168	1,210	20,328
Mine Dewatering					
Workers	N/A	N/A	N/A	N/A	N/A

Notes: N/A = not applicable; VMT = vehicle miles traveled.
Concrete and asphalt haul truck trip distance of 5 miles is based on purchasing the materials locally.

Source: Dudek, 2021.

Table 4.3-9
Construction On-Road On-Site Vehicle Trip Assumptions

Project Vehicle	Trip Length (miles)	Maximum Daily Trips (trips/day)	Maximum Daily VMT (VMT/day)	Annual Trips (trips/year)	Annual VMT (VMT/year)
Project management, engineers, surveyors, and fuel					
Workers	0.12	12	1	3,744	449
Fuel Trucks	0.26	2	1	208	54
Pickup Trucks	0.26	8	2	2,496	649
Foundation and concrete contractor					
Workers	0.12	16	2	4,992	599
Pickup Trucks	0.26	8	2	2,496	649
Concrete Trucks	0.26	2	1	624	162
Grading and paving contractor					
Workers	0.12	12	1	3,744	449
Water Trucks	0.44	8	4	624	275
Haul Trucks	0.26	2	1	624	162
Haul Trucks – Import Fill	0.26	78	20	1,550	403
Building contractor					
Workers	0.12	20	2	6,240	749
Pickup Trucks	0.26	8	2	2,496	649
Ironworkers (headframes)					
Workers	0.12	16	2	800	96
Pickup Trucks	0.26	8	2	400	104
Electrical and mechanical contractors					
Workers	0.12	20	2	6,240	749
Pickup Trucks	0.26	8	2	2,496	649
Potable water installation					
Workers	0.12	12	1	1,224	147
Water Trucks	0.44	8	4	204	90
Haul Trucks	0.26	2	1	204	53
PG&E power line work					
Workers	0.12	10	1	780	94
Haul Trucks	0.26	2	1	156	41
Underground shaft contractors					
Workers	0.12	10	1	2,740	329
Raise bore contractor					
Workers	0.12	8	1	480	58
Underground construction					
Workers	0.12	10	1	1,210	145
Mine Dewatering					
Workers	N/A	N/A	N/A	N/A	N/A

Notes: N/A = not applicable; VMT = vehicle miles traveled.

Source: Dudek, 2021.

Entrained or fugitive dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, primarily during the grading phase, resulting in PM_{10} and $PM_{2.5}$ emissions. The project would include implementation of Surface Fugitive Dust Controls, which would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during grading and construction activities through activities such as limiting vehicle speeds on unpaved roads, watering exposed surfaces periodically, and covering material stockpiles, among other strategies to reduce fugitive dust. To account for dust control measures in the calculations, the assumption was made that active work sites would be watered at least two times daily, resulting in an approximately 55 percent reduction of particulate matter. In addition, chemical stabilizers would be applied to any unpaved roads on-site, which would result in an approximately 80 percent reduction of particulate matter.

The modeling assumes that, during construction, NID-supplied water would be required for dust suppression. The NID-supplied water would result in associated indirect GHG emissions. For the assessment, it was assumed that about 11 million gallons total would be required for construction dust suppression. PG&E would provide the electricity for NID, with utility GHG emission factors based on the same assumptions described above for "Electricity Use." Once the proposed Brunswick water treatment plant is operational, treated groundwater from the mine would be used for dust suppression associated with compaction of engineered fill on the Brunswick Industrial Site.

For a worst-case day, the conservative assumption was made that two diesel emergency generators (2,655 horsepower [hp] each) would undergo routine testing and maintenance of up to two hours each on the same day, one time per month.[24] For annual emissions, the aforementioned emergency generators were assumed to undergo testing and maintenance for up to 100 hours, based on CARB's ATCM for Stationary Compression Ignition Engines. Emission data sheets for the representative Cummins model QSK60-G17, which are Tier 4 Final engines, were incorporated into the modeling. Detailed assumptions and emission factors are included in Appendix A of Dudek's Air Quality and Greenhouse Gas Emissions Analysis, which is included as Appendix E.1 of this EIR.

Notably, electrically powered equipment would not contribute to criteria air pollutants or TACs at the project sites but would demand energy and would result in GHG emissions associated with electricity generation. Specific processes that would require electricity include underground mining equipment, water treatment, and raise boring during construction. Anticipated annual electricity consumption during construction (year 2021) would be approximately 16,513 megawatt-hours (MWh). Emission factors (in pounds per MWh) for CO_2, CH_4, and N_2O are from CalEEMod for PG&E.

As discussed in the Existing Environmental Setting section, different GHGs have differing GWPs. For this analysis the GWPs from the current version of CalEEMod (Version 2020.4.0) were used. CalEEMod assumes that the GWP for CH_4 is 25 (so emissions of one MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report. The GWP values identified in CalEEMod were applied to the analysis of emissions from construction, operations, and reclamation.

[24] Two hours of routine testing and maintenance per month is conservative, based on National Fire Protection Association (NFPA) 110. Typical monthly testing is anticipated to be from 0.5 to one hour per generator.

Operational Emissions and Energy Demand

Various operational activities would result in the emission of air pollutants and/or GHGs, as well as consuming energy. Sources of air pollutant emissions during project operations would include off-road equipment (surface and underground), on-road vehicles, underground blasting and crushing, ore processing, reagent storage, fuel tank storage, earthwork and material handling, architectural coatings for repainting, and worker consumer products. Sources of GHG emissions would include off-road equipment (surface and underground), on-road equipment, electricity consumption in proposed facilities, provision of potable water supplies, operation of septic systems, generation of solid waste, and tree removal. Energy would be demanded in the form of gasoline or diesel fuel through the use of off-road equipment as well as on-road vehicles, and various other sources of electricity consumption such as ore processing, earthwork and material handling, the provision of potable water supplies, and general operation of facilities. Each source of air pollutant emissions, GHG emissions, and energy demand will be discussed in further depth below.

Prior to describing the sources of emissions and energy demand, it is important to clarify the operational conditions causing such emissions and energy demand. The principal variation in operational activities over the lifetime of the project is the fate of non-gold bearing mined material that would be used as fill material. With regard to long-term operations, engineered fill would be used for one of three purposes during the lifetime of the project. First, fill would be trucked to the Centennial Industrial Site; after the need for fill at the Centennial Industrial Site is met, fill would then be trucked to a pad at the Brunswick Industrial Site. When the need for fill at the Brunswick Industrial Site is met, fill would be trucked off-site to support local construction projects. Logging and chipping of trees would also occur intermittently at the Centennial and Brunswick Industrial sites, as engineered fill is placed. Although the following sequence could change, for purposes of this air quality analysis and to present a reasonable and conservative evaluation, three different periods were assessed based on assumptions of where and when the engineered fill would be routed:

- Years 2022–2026: Fill placement at the Centennial Industrial Site;
- Years 2027–2032: Fill placement at the Brunswick Industrial Site; and
- Years 2033–2102: Fill placement at off-site locations.

The scenarios presented above affect the trip length of haul trucks, as well as the localized generation of exhaust and fugitive dust from off-road equipment and material handling. Assumptions dependent upon the destination of fill were incorporated in the modeling, are summarized in the On-Road Vehicles section below, and are based on project information provided by Rise Grass Valley Inc.

Off-Road Equipment

Operational equipment is summarized in Table 4.3-10. Emission factors for these sources were incorporated into a spreadsheet model that includes the CARB OFFROAD2011 model for diesel-fueled off-road equipment (see Appendix A of the Dudek Analysis, included as Appendix E.1 to this EIR). Notably, all diesel equipment owned by Rise Grass Valley Inc. would be equipped with Tier 4 Final engines, which feature the highest standard of emissions control technology. As with construction, the electrically powered equipment would not contribute to criteria air pollutants or TACs at the project sites but would result in GHGs associated with electricity generation. All underground equipment would be electrically powered.

Table 4.3-10
Operational Off-Road Equipment Assumptions

Location	Equipment				
	Equipment Type	Fuel	Quantity	Usage Hours Per Day	Days Per Week
Brunswick Industrial Site (Underground)	Jumbo drill carrier	Electric	3	4	7
	LHD units	Electric	6	20	7
	Personnel all-terrain vehicles	Electric	10	12	7
	Longhole drill	Electric	3	18	7
	Diamond core drills	Electric	4	20	7
	Locomotives	Electric	10	12	7
	Main pump 1300 L	Electric	1	24	7
	Main pump 2300 L	Electric	1	24	7
	Main pump 3280 L	Electric	1	24	7
	Face pumps	Electric	10	16	7
	Booster ventilation fans	Electric	2	24	7
	Auxiliary ventilation fans	Electric	10	24	7
	Jaw crusher	Electric	3	8	7
	Lighting	Electric	100	24	7
Brunswick Industrial Site (Surface)	Skid steer / forklift	Diesel	3	12	7
	Front-end loader	Diesel	1	4	7
	Manlift	Diesel	1	6	7
	Rough-terrain crane (50-ton)	Diesel	1	12	7
	Portable generator / welder	Diesel	3	8	7
	Mine air compressor	Electric	1	24	7
	Main ventilation fans	Electric	3	24	7
	Service shaft hoist	Electric	1	14	7
	Brunswick shaft hoist	Electric	1	8	7
	Water treatment plant	Electric	1	24	7
Engineered Fill Placement at the Centennial Industrial Site and Brunswick Industrial Site (Surface)	Dozer	Diesel	1	4	5
	Excavator	Diesel	1	4	5
	Front-end loader	Diesel	1	4	5
	Mobile tire pressure washer	Diesel	1	3	5
	Mobile auger blending plant	Diesel	1	4	5

Source: Dudek, 2021.

On-Road Vehicles

The project would generate criteria air pollutant emissions from mobile sources (vehicular traffic) as a result of the employee passenger vehicles (workers) and truck traffic associated with operation of the mine. Emissions from mobile sources during operation of the project were estimated using a spreadsheet-based model and emission factors from the CARB EMFAC2017 and USEPA AP-42 factors for paved and unpaved road dust generation. Emission calculation equations and assumptions were primarily derived from CalEEMod and EPA AP-42. The key factors in the mobile source emission calculations were number of trips, trip lengths, vehicle categorization, and emissions factors for each vehicle, which are described further below.

Trips were estimated for each type of project vehicle and for each operational scenario (beginning in 2022, 2027, and 2033) based on information provided by the applicant. Each employee and truck were assumed to generate two one-way trips. Employees are anticipated to be on site 365 days per year; however, estimated daily employees during the week is 178, and estimated weekend employees is 134. As such, 178 employees were assumed to estimate maximum daily emissions, and the annual emissions were estimated based on the estimated weekdays and weekend days in one year and the respective employee estimate. For haul trucks, estimated maximum daily trips were multiplied by 365 days to estimate annual trips. For all other trucks, daily emissions were estimated based on the anticipated maximum daily truck trips, and annual emissions were estimated based on anticipated average trips per week multiplied by 52 weeks per year. Trip lengths were also based on information provided by the applicant.

Off-site and on-site vehicle activity was estimated separately. The anticipated average trip length, trips per day, VMT per day, trips per year, and VMT per year by project vehicle category in 2022, 2027, and 2033 and separated by off-site and on-site travel are shown in Table 4.3-11 and Table 4.3-12.

Vehicle emissions of air pollutants occur during startup, operation (running), idling, and from evaporative losses when the engines are resting. GHG emissions, on the other hand, are more directly tied to VMT, and do not occur from sources such as evaporative loss. The emissions factors for trucks and passenger vehicles were determined using EMFAC2017, which generates emissions factors, expressed in grams per mile, grams per trip, and grams per vehicle per day, for the fleet in a class of motor vehicles within a county for a particular study year. For this analysis, NSAQMD was selected for the region and calendar years 2022, 2027, and 2033 were selected in EMFAC2017 to represent the different operational scenarios based on engineered fill destination. For each vehicle emissions factor, aggregated values for model year and speed were assumed.

A composite, or weighted-average, emissions factor was developed for project vehicle types if more than one vehicle category in EMFAC2017 is anticipated to be representative of the project vehicle. The composite emission factors are weighted by VMT, population, or trips depending on the physical mechanism that results in the emissions of a pollutant. For employee vehicles, the composite emission factor represents the weighted average emission rate for passenger vehicles (light-duty automobiles), light-duty trucks (LDT1, 0–3,750 pounds), light-duty trucks (LDT2, 3,751–5,750 pounds), and a composite mix of gasoline- and diesel-fueled and electric vehicles. All haul trucks (including on-site-only soil haul trucks), freight trucks, explosive trucks, and concentrate trucks were assumed to be heavy-heavy-duty trucks that are diesel-fueled. The fuel trucks, cement delivery trucks, and on-site-only water trucks were assumed to be medium-heavy-duty trucks that are diesel-fueled. The outside services light vehicles were assumed to be a composite of light-duty vehicles and trucks (LDT1, LDT2, LHDT1 [8,501–10,000 pounds], and LHDT2), and a composite mix of gasoline- and diesel-fueled and electric. On-site-only light-duty trucks were assumed to be light-heavy duty trucks (LHDT2) and diesel-fueled.

Table 4.3-11
Operations Off-Site On-Road Vehicle Trip Assumptions

Project Vehicle	Trip Length (miles)	Maximum Daily Trips (trips/day)	Maximum Daily VMT (VMT/day)	Annual Trips (trips/year)	Annual VMT (VMT/year)
Year 2022 to Year 2026 – Engineered Fill to Centennial Site					
Engineered Fill Haul Trucks	1.8	200	360	36,500	65,700
Freight Trucks	60	6	360	312	18,720
Concentrate Trucks	145	10	1,450	728	105,560
Fuel Trucks	3.5	6	21	108	378
Cement Trucks	60	4	240	936	56,160
Explosives Trucks	60	2	120	104	6,240
Outside Services (light vehicles)	5	8	40	2,184	10,920
Employees	14.7	356	5,233	120,788	1,775,584
Year 2027 to Year 2032 – Engineered Fill to Brunswick Site					
Freight Trucks	60	6	360	312	18,720
Concentrate Trucks	145	10	1,450	728	105,560
Fuel Trucks	3.5	6	21	108	378
Cement Trucks	60	4	240	936	56,160
Explosives Trucks	60	2	120	104	6,240
Outside Services (light vehicles)	5	8	40	2,184	10,920
Employees	14.7	356	5,233	120,788	1,775,584
Year 2033 to Year 2102 – Engineered Fill to Other Customers					
Engineered Fill Haul Trucks	60	200	12,000	36,500	2,190,000
Freight Trucks	60	6	360	312	18,720
Concentrate Trucks	145	10	1,450	728	105,560
Fuel Trucks	3.5	6	21	108	378
Cement Trucks	60	4	240	936	56,160
Explosives Trucks	60	2	120	104	6,240
Outside Services (light vehicles)	5	8	40	2,184	10,920
Employees	14.7	356	5,233	120,788	1,775,584

Notes: VMT = vehicle miles traveled

- For 2022, a haul truck trip length of 1.8 miles was assumed based on the estimated distance from the Brunswick Industrial Site to Centennial Industrial Site.
- For 2027, the haul truck trips were assumed to occur on-site only and thus, are included in the on-site trip estimate only.
- For 2033, haul truck trip length of 60 miles was assumed based on the estimated distance from the Brunswick Industrial Site to various other customers in the region.
- Fuel assumed to be trucked from Robinson Fuels Cardlock a distance of approximately 3.5 miles from the Brunswick Site.
- Freight, cement, and explosives trucks were assumed to have an average 60-mile distance assuming that these materials would come from distribution facilities in Sacramento California.
- Outside Services expected to be within a 5-mile driving distance from site which includes Grass Valley, Nevada City, and Nevada County Airport Industrial Area.
- Concentrate truck trip distance of 145 miles is based on the distance between the project site and the Port of Oakland.
- The average employee trip length of 14.7 miles is based on the CalEEMod default rural trip length for NSAQMD, which the applicant determined was consistent with the anticipated trip length for employees.

Source: Dudek, 2021.

Table 4.3-12
Operations On-Site On-Road Vehicle Trip Assumptions

Project Vehicle	Trip Length (miles)	Maximum Daily Trips (trips/day)	Maximum Daily VMT (VMT/day)	Annual Trips (trips/year)	Annual VMT (VMT/year)
Year 2022 to Year 2026 – Engineered Fill to Centennial Site					
Engineered Fill Haul Trucks	0.52	200	104	36,500	18,980
On-site-Only Soil Haul Trucks	0.10	24	2.28	8,760	832
Freight Trucks	0.26	6	2	312	81
Concentrate Trucks	0.26	10	3	728	189
Fuel Trucks	0.26	6	2	108	28
Cement Trucks	0.26	4	1	936	243
Explosives Trucks	0.26	2	1	104	27
On-site-Only Water Trucks	0.44	8	3.52	2,920	1,285
Outside Services (light vehicles)	0.26	8	2	2,184	568
On-site-Only Light-Duty Trucks	0.19	24	5	8,760	1,664
Employees	0.12	356	43	120,788	14,495
Year 2027 to Year 2032 – Engineered Fill to Brunswick Site					
Engineered Fill Haul Trucks	0.64	200	127	36,500	23,178
On-site-Only Soil Haul Trucks	0.10	24	2.28	8,760	832
Freight Trucks	0.26	6	2	312	81
Concentrate Trucks	0.26	10	3	728	189
Fuel Trucks	0.26	6	2	108	28
Cement Trucks	0.26	4	1	936	243
Explosives Trucks	0.26	2	1	104	27
On-site-Only Water Trucks	0.44	8	3.52	2,920	1,285
Outside Services (light vehicles)	0.26	8	2	2,184	568
On-site-Only Light-Duty Trucks	0.19	24	5	8,760	1,664
Employees	0.12	356	43	120,788	14,495
Year 2033 to Year 2102 – Engineered Fill to Other Customers					
Engineered Fill Haul Trucks	0.52	200	104	36,500	18,980
On-site-Only Soil Haul Trucks	0.10	24	2.28	8,760	832
Freight Trucks	0.26	6	2	312	81
Concentrate Trucks	0.26	10	3	728	189
Fuel Trucks	0.26	6	2	108	28
Cement Trucks	0.26	4	1	936	243
Explosives Trucks	0.26	2	1	104	27
On-site-Only Water Trucks	0.44	8	3.52	2,920	1,285
Outside Services (light vehicles)	0.26	8	2	2,184	568
On-site-Only Light-Duty Trucks	0.19	24	5	8,760	1,664
Employees	0.12	356	43	120,788	14,495

Notes: VMT = vehicle miles traveled See Appendix A for complete details.
All trip lengths were provided by Rise based on anticipated vehicle travel routes on-site.

Source: Dudek, 2021.

Running Exhaust, Tire Wear, and Brake Wear

To estimate emissions associated with vehicle travel to and from the project sites, running exhaust,[25] tire wear,[26] and brake wear[27] emission factors for each respective pollutant were developed for trucks and passenger vehicles in grams per mile and then multiplied by the average daily VMT. Running exhaust emissions were estimated for all pollutants, and tire wear and brake wear emissions were specific to PM_{10} and $PM_{2.5}$.

Starting Exhaust, Hot Soak, Running Loss Evaporative, Resting Loss Evaporation, and Diurnal Loss Evaporation

Starting exhaust tailpipe[28] emissions were estimated for all pollutants. Hot soak evaporative[29] emissions, running loss evaporative[30] emissions, resting loss evaporative[31] emissions, and diurnal evaporative[32] emissions are specific to ROG emissions. For starting, hot soak, and running loss emissions, emission factors for trucks and passenger vehicles were developed per trip, consistent with the EMFAC2017 output. For resting loss and diurnal emissions, emission factors in grams per vehicle per day from EMFAC2017 were converted to grams per trip using the equation provided in CalEEMod 2020.4.0 User's Guide to yield uniform emission factor units. The respective grams per trip emission factors by pollutant were then multiplied by the average daily vehicle trips to estimate emissions associated with vehicle starting and ROG evaporative emissions.

Idling

Truck idling[33] was estimated using EMFAC2017 emission factors that were converted from grams per vehicle per day to grams per minute of idling per vehicle based on EMFAC2017-provided idle duration per truck category. The idling emissions were calculated by multiplying the per-minute emission factors for each respective pollutant by the estimated idle duration of 10 minutes per truck trip, representing up to two idling events of a maximum of 5 minutes of idling each instance. For vehicles traveling on- and off-site, one idling event was assumed to occur off-site and one idling event was assumed to occur on-site; for vehicles that are on-site only, both idling events were assumed to occur on-site.

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25 Running exhaust emissions come out of the vehicle tailpipe while traveling on the road.

26 Tire wear particulate matter emissions originate from tires as a result of wear.

27 Brake wear particulate matter emissions originate from brake usage.

28 Start exhaust tailpipe emissions occur when starting a vehicle. These emissions are independent of running exhaust emissions and represent the emissions occurring during the initial period when a vehicle is warming up. The magnitude of these emissions is dependent on how long the vehicle has been sitting prior to starting. Starting exhaust is defined differently for heavy-duty diesel trucks than for other vehicles.

29 Hot soak evaporative hydrocarbon emissions occur immediately after a trip due to fuel heating, since an engine remains hot for up to 35 minutes after being switched off.

30 Running loss evaporative hydrocarbon emissions occur as a result of hot fuel vapors that escape from the fuel system or overwhelm the carbon canister while the vehicle is operating.

31 Resting loss evaporative hydrocarbon emissions occur while the vehicle is sitting and are caused by fuel permeation through rubber and plastic components. Emissions are counted as resting loss emissions if the vehicle has not been operated for 35 minutes and has been stationary, while the ambient temperature is either constant or decreasing.

32 Diurnal evaporative hydrocarbon emissions occur when rising ambient temperatures cause fuel evaporation from vehicles sitting throughout the day. These losses are from leaks in the fuel system, fuel hoses, connectors, and as a result of the breakthrough of vapors from the carbon canister. If a vehicle is sitting for a period of time, emissions from the first 35 minutes are considered as hot soak, and emissions from the remaining period are considered as diurnal emissions, provided that the ambient temperature is increasing during the remaining period of time.

33 Idle exhaust emissions come out of the vehicle tailpipe while the vehicle is operating, but not traveling any substantial distance. This process captures emissions from heavy-duty vehicles that idle for extended periods of time while loading or unloading goods. Idle exhaust is calculated only for heavy-duty trucks.

Paved Road Dust

Vehicles that drive on paved roads generate fugitive dust by dispersing the silt from the roads. Paved road dust PM_{10} and $PM_{2.5}$ emission factors were developed pursuant to the CalEEMod 2020.4.0 road dust equation and based on road surface silt loading factors from CalEEMod and particle size multipliers from the USEPA's AP-42 Section 13.2.1 Paved Roads. Emissions were calculated by multiplying the paved road dust emission factors by the VMT. Different paved road emission factors were applied for off-site and on-site vehicle travel to account for anticipated project-specific values for on-site paved roads.

Logging and Chipping

Removal of trees and vegetation located at the engineered fill placement pads on the Centennial and Brunswick Industrial Sites would occur concurrently with fill placement. As such, the entire 24 acres would not be cleared at once but would rather occur over very brief periods (potentially one day per year) for a period of approximately 11 years. For the criteria air pollutant analysis, a worst-case day was assumed. For the TACs and GHGs, the total emissions for logging and chipping the 24 acres were amortized over 11 years to determine an annual average. The off-road equipment and on-road vehicle assumptions for this activity are presented in Table 4.3-13 and Table 4.3-14.

Emergency Generator Routine Testing and Maintenance

During operations, four diesel emergency generators (2,655 hp each) would undergo routine testing and maintenance. Emission data sheets for the representative Cummins model QSK60-G17 were incorporated into the modeling. For a worst-case day, it was conservatively assumed that all four generators would undergo routine testing and maintenance of up to two hours each on the same day, one time per month. For annual emissions, these emergency generators were assumed to undergo testing and maintenance for up to 100 hours, based on CARB's ATCM for Stationary Compression Ignition Engines (Part 17 CCR, Subsection 93115).

Underground Blasting and Crushing

Ore production through tunneling and long-hole blasting is anticipated to produce 1,000 tons per a day (365,000 tons per year) of ore. The ore may be reduced in size using an underground jaw crusher before hoisting the material to the surface. For the project, it was assumed that approximately 0.93 tons of ammonium nitrate fuel oil (ANFO) and 257 detonators would be used daily and that all ore would be crushed underground. Emission factors from the USEPA's AP-42: Compilation of Air Emission Factors were used to estimate emissions for rock blasting (AP-42 Chapter 11.9 – Western Surface Coal Mining) (EPA 1998), ANFO (AP-42 Chapter 13.3 – Explosives Detonation), detonators (AP-42 Chapter 15.9 – Blasting Caps, Demolition Charges, and Detonators), and crushing (AP-42 Chapter 11.19.2 – Crushed Stone Processing and Pulverized Mineral Processing). According to the safety data sheet for the detonators being used, no TACs would be emitted with OEHHA approved reference exposure levels and therefore the detonators being used would not impact the health risk calculations assessed within this EIR (see Appendix E.1 to this EIR). Nevertheless, emission factors for the generation of criteria air pollutants and GHGs from detonator combustion were incorporated in the criteria air pollutant and GHG emissions modeling prepared for the project.

Table 4.3-13
Off-Road Equipment Assumptions – Logging and Chipping

Location	Equipment				
	Equipment Type	Fuel	Quantity	Usage Hours Per Day	Total Days
Logging and Chipping at the Centennial Industrial Site and Brunswick Industrial Site	Chainsaw	Diesel	4	6	10
	Grapple loader	Diesel	1	6	10
	Front-end loader	Diesel	1	6	10
	Skidder	Diesel	1	6	10
	Grinder	Diesel	1	4	5
	Excavator	Diesel	2	4	5

Notes: "Total Days" represents the anticipated duration to complete the entire logging and chipping of the 24 acres to be cleared.

Source: Dudek, 2021.

Table 4.3-14
On-Road Vehicle Trip Assumptions – Logging and Chipping

Project Vehicle	Trip Length (miles)	Maximum Daily Trips (trips/day)	Maximum Daily VMT (VMT/day)	Total Trips	Total VMT
Lumber Haul Trucks	145	22	3,190	220	31,900
Chip Trucks	60	6	360	30	1,800
Low Bed Trucks	60	2	120	10	600
Crew/ Service Trucks	14.7	8	118	80	1,176

Notes: VMT = vehicle miles traveled

- "Total Trips" and "Total VMT" represents the anticipated trips and miles needed to complete the entire logging and chipping of the 24 acres to be cleared.
- Lumber haul truck trip length of 145 miles was assumed based on distance to lumber sawmills in Redding.
- Chip and low bed truck trip lengths of 60 miles were assumed based on the estimated distance from the Centennial and Brunswick Industrial Sites to various other customers in the region.
- Crew vehicle trip length of 14.7 miles is based on the CalEEMod default employee rural trip length for NSAQMD.

Source: Dudek, 2021.

Ore Processing

Ore hoisted from the Brunswick shaft would be placed in the existing concrete silo located on the Brunswick property and then transported using chutes and enclosed conveyor to a fully enclosed ore processing plant. Ore would be conveyed from the silo to inside the processing plant and grinding mill where water would be added and the ore would be ground to size before the gold would be recovered. A gravity concentrator would be located in the grinding circuit to recover approximately 70 percent of the gold. The slurry of ore and water that results from the foregoing process would be pumped to a second gold recovery system, sulfide flotation, where the remaining recoverable gold would be captured in a sulfide mineral concentrate. Each method would remove gold from the ore into a concentrate. The gold concentrate would be dewatered using thickeners and filter presses before the gold would be bagged for off-site shipment. The gravity gold concentrate may be further concentrated on site using gravity and water to create gold doré bars. Approximately 20 tons of gold concentrate would be produced and bagged on site per day. Sand tailings (waste) from the gold recovery process would be dewatered and used for either backfill for the underground mine or stockpiled for transport and used as engineered fill.

Emission factors from the USEPA's AP-42: Compilation of Air Emission Factors were used to estimate emissions of PM_{10} and $PM_{2.5}$ for conveyance/transfer of the ore to the processing building (AP-42 Chapter 11.19.2 – Crushed Stone Processing and Pulverized Mineral Processing), material handling and transfer (AP-42 Chapter 11.24 – Metallic Minerals Processing) (EPA 1982), and cement loading (AP-42 Chapter 11.12 – Concrete Batching) (EPA 2006a). Once inside the processing building, all processes are considered wet and would not generate fugitive dust.

Reagent Storage

Various reagents would be used for ore processing (i.e., for collection, promotion, frothing, flocculation, descaling). According to the reagent-specific Material Safety Data Sheets, the reagents selected would not result in ROG emissions.

Fuel Tank Storage

ROG emissions from breathing and working losses associated with the aboveground diesel storage tanks were estimated using the EPA TANKS model (Version 4.09d). It was assumed that a 30,000-gallon tank and 1,200-gallon tank would be located at the Brunswick and Centennial Industrial Sites, respectively.

Earthwork and Material Handling

Barren rock hoisted from the Brunswick shaft would be placed in the existing concrete silo located at the Brunswick Industrial Site. The barren rock would be transported from the concrete silo using a series of chutes and conveyors to a fully enclosed truck loading building. Barren rock may be mixed with sands from the ore processing plant to create an engineered fill that meets appropriate geotechnical specifications for construction of development pads. Engineered fill would be transported from the ore processing facility to a receiving site. During the operational periods when fill is transported to either the Brunswick or Centennial Industrial Sites the fill would be spread using a dozer. Fugitive dust emissions associated with the earthwork activities were estimated using equations and assumptions from EPA AP-42 based on 1,000-ton-per-day material transfer. Emission factors from EPA's AP-42: Compilation of Air Emission Factors were used to estimate emissions for material handling (AP-42 Chapter 13.2.4 – Aggregate Handling and Storage Piles) (EPA 2006b), bulldozer spreading and fill compaction (AP-42 Chapter 11.9 – Western Surface Coal Mining) (EPA 1998), and wind erosion (AP-42 Chapter 11.9 – Western Surface Coal Mining) (EPA 1998). Notably, for fill transported to off-site locations (for year 2033 and beyond), emissions associated with fill placement were not included since the assumption was made that the other facilities are already receiving, or would receive, fill from other sources, and, thus, only the hauling of material from the project sites is a result of the proposed project.

Architectural Coating

ROG off-gassing emissions result from evaporation of solvents contained in surface coatings, such as in paints and primers used during building maintenance. Default assumptions from CalEEMod were applied in the analysis, which calculates the ROG evaporative emissions from application of nonresidential surface coatings based on the ROG emissions factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The model default reapplication rate of 10 percent of area per year was assumed.

Consumer Products

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics;

personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Consumer product ROG emissions were estimated using default assumptions from CalEEMod based on the floor area of nonresidential buildings and on the default factor of pounds of ROG per building square foot per day. For parking lot land uses, CalEEMod estimates ROG emissions associated with use of parking surface degreasers based on a square footage of parking surface area and pounds of ROG per square foot per day.

Electricity for Facilities

Electricity consumption for facility operations accounts for electrically powered underground mine equipment, the ore processing facility, water treatment, and surface building operations. For the three different periods assessed (based on where the engineered fill would be routed), it was assumed that the electricity consumption would remain the same, estimated at approximately 49,613 megawatt-hours per year. Additionally, the same GHG emission factors (pounds per megawatt-hour) for CO_2, CH_4, and N_2O used for the construction phase were used for all future years of operation. This assumption is conservative because, as discussed within Regulatory Setting above, the RPS standard schedule will result in reduced GHGs from electricity generation overtime.

NID-Supplied Potable Water

Supply, conveyance, treatment, and distribution of water for the project would require the use of electricity, which would result in associated indirect GHG emissions. For the purposes of modeling, it was assumed that up to 26 residences would be switched from well water to the new NID potable water line, with indoor and outdoor water use (total demand of approximately 2.8 million gallons per year) based on default water use factors included in CalEEMod for single-family homes. Potable water use at the Brunswick Industrial Site was estimated to be approximately 1.4 million gallons per year.

Septic System

A septic field system would be used to treat wastewater from the Brunswick Industrial Site facilities. Approximately 3,952 gallons of potable water would be used per day, which would flow into the septic field. Emissions of CH_4 and N_2O from septic wastewater treatment for the project were based on default equations and emission factors from CalEEMod.

Solid Waste

Annual solid waste generated by project employees would be approximately 205 tons, which would result in GHG emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation and emission factors were used to estimate GHG emissions associated with solid waste.

Tree Removal

Carbon sequestration is the process by which CO_2 is removed from the atmosphere and deposited into a carbon reservoir (e.g., vegetation). Trees and vegetation take in CO_2 from the atmosphere during photosynthesis, break down the CO_2, store the carbon within plant parts, and release the oxygen back into the atmosphere. On the Brunswick Industrial Site, approximately 18.7 acres of forested areas (Montane Hardwood-Conifer, Montane Hardwood, Ponderosa Pine, and Sierran Mixed Conifer vegetation communities) would be disturbed and trees would require removal. On the Centennial Industrial Site, up to approximately 5.3 acres of forested areas (Montane Hardwood-Conifer and Montane Hardwood vegetation communities) would be disturbed and trees would require removal. The removal of approximately 24 acres of trees would

be required as a result of the proposed project, thereby removing stored carbon from the Sites.[34] To evaluate the loss of stored carbon associated with removal of vegetation, the calculation methodology and default values provided in CalEEMod for the "forest land – trees" category were used. To calculate potential CO_2 emissions associated with the one time change in carbon sequestration capacity of a vegetation land use type, CalEEMod utilizes data and formulas based on the Intergovernmental Panel on Climate Change (IPCC) reports. The estimated CO_2 loss was then amortized over 80 years based on the anticipated project life.

Reclamation Emissions and Energy Demand

Upon completion of underground mining, access to underground workings would be closed, consistent with federal and state regulations. Upon completion of aboveground ore processing and off-site sale of engineered fill, the Brunswick Industrial Site would be reclaimed, with the majority of the aboveground facilities and structures remaining to support the site's potential post-mining industrial land use. All paved surfaces, including access roads, parking areas, and driveways, would remain to facilitate access to the site and buildings. The reclamation phase was assumed to occur in the year 2103 over a period of approximately three-months, based on the assumptions provided by Rise Grass Valley Inc., which are summarized in Table 4.3-15 and Table 4.3-16.

Table 4.3-15
Reclamation Off-Road Equipment Assumptions

Phase	Schedule	Equipment				
		Equipment Type	Fuel	Quantity	Usage Hours Per Day	Days Per Week
Reclamation	1/2103 – 3/2103	Forklift	Diesel	2	4	6
		Crane	Diesel	1	4	6

Source: Dudek, 2021.

Table 4.3-16
Reclamation On-Road Vehicle Trip Assumptions

Project Vehicle	Trip Length (miles)	Maximum Daily Trips (trips / day)	Maximum Daily VMT (VMT / Day)	Annual Trips (trips / year)	Annual VMT (VMT / year)
Workers	16.8	16	269	1,216	20,429
Pickup Trucks	15	8	120	608	9,120

Notes: Pickup trucks would be used on-site, with a conservative trip length of 15 miles. Worker trip lengths are based on the CalEEMod default rural trip lengths for NSAQMD.

Source: Dudek, 2021.

[34] It is noted that the estimated area of forested land presented herein differs by up to 1.2 acres as comapred to the figures presented in Chapter 4.2, Agricultural and Forestry Resources, and Chapter 4.4, Biological Resources, of this EIR. Such differences can be attributed to refinements to the Biological Resources Assessments prepared for the proposed project. Pursuant to Dudek's Air Quality and Greenhouse Gas Emisssions Analysis, one acre of forested land sequesters approximately 60 MT CO_2. For the operational GHG analysis in this EIR, the potential loss of carbon sequestration was amortized over the 80-year project lifetime. Therefore, the potential 1.2-acre differential in forested land could result in an additional (approximately) 0.90 MT CO_2e/yr, which would be negligible compared to the numbers presented in Impact 4.3-7 of this EIR.

Health Risk Assessment

In addition to the analysis of criteria air pollutant and GHG emissions, a Health Risk Assessment (HRA) was prepared to determine whether the proposed project would result in short- and/or long-term health impacts to nearby receptors. The HRA is included in Appendix E.1 to this EIR, and information regarding the method of analysis used in the HRA is summarized below.

The HRA prepared for the project included consideration of health risks related to construction, operations, and reclamation of the project. Details regarding construction, operation, and reclamation of the project are presented above. In addition to the foregoing information, it should be noted that 2,655 hp diesel generators could be required as emergency backup sources of electricity. During construction, up to two generators could be required, while operations could require up to four generators. For purposes of the HRA, the emergency generators were assumed to operate for up to 100 hours per year in accordance with CARB's ATCM for Stationary Compression Ignition Engines. Emissions for the generators were estimated based on the exhaust emission data sheets for the representative Cummins model QSK60-G17, which are Tier 4 Final engines.

The TAC emissions associated with blasting and crushing, ore processing, and earthwork and material handling would include asbestos and silica emitted from the fugitive dust produced. The applicant estimates that the ore processed would be quartz veins hosted primarily within andesite rock and an assumed 60 percent silica content. The applicant has prepared an Asbestos, Serpentinite, and Ultramafic Rock Management Plan (ASUR Plan) which is designed to exclude asbestos containing material, serpentinite, or ultramafic rock from the engineered fill produced as part of the project (see Appendix E.2).[35] Additionally, the ASUR Plan is designed to minimize asbestos content in the engineered fill produced by the project and from rock mined and processed. Potential asbestos fiber concentration shall be determined by phase contrast microscopy (PCM). The ASUR Plan requires testing of all mined materials to ensure that the average content of naturally occurring asbestos does not exceed 0.01 percent by mass of PCM equivalent units. The ASUR Plan also ensures that no engineered fill with detectable asbestos, determined by Polarized Light Microscopy (PLM), would be used for surfacing applications. The ASUR plan includes asbestos testing by Transmission Electron Microscopy (TEM) to ensure the average content of naturally occurring asbestos does not exceed 0.01 percent by mass of PCM equivalent units. TEM is the preferred analytical method for outdoor asbestos samples because of its ability to detect small fibers (greater than or equal to 0.0002 microns in diameter) and to distinguish between asbestos fibers and non-asbestos fibers. The term "TEM structures" is often used to describe asbestos fibers detected by this method. TEM is the method recommended by the OEHHA. However, TEM measurements cannot be directly related to the cancer potency factors because the studies upon which OEHHA's risk assessment was based used PCM analysis. Thus, the TEM measurements must be converted to PCM-equivalent units. A conservative approach for the modelling of TAC emissions is used, with the asbestos content in mined materials assumed at the maximum of 0.01 percent by mass of PCM equivalent units. The average asbestos content of the total mined material is of primary concern given that asbestos does not have established acute noncancer effects. Therefore, only the average asbestos emissions that could be generated over the long-term (per year), and associated long-term health risk, has been evaluated herein. However, it should be noted that mine operations would be required to comply with MSHA PELs that protect underground workers from asbestos fiber

[35] Rise Grass Valley, Inc. *Idaho-Maryland Mine Project – Asbestos, Serpentinite, and Ultramafic Rock (ASUR) Management Plan*. November 2021.

exposure during short-term shifts. The protections sufficient to meet the MSHA PELs would result in limiting the potential emissions of asbestos aboveground from the shaft in general.

Blasting and crushing would also result in emissions of heavy metal TACs including arsenic, beryllium, cadmium, copper, lead, manganese, mercury, nickel, selenium, and vanadium. These metals are naturally occurring within the rock found at the project sites. Concentrations of each heavy metal within the barren rock was taken from Table 4-7 of the *Groundwater Hydrology and Water Quality Analysis Report for the Idaho-Maryland Mine Project*.[36] Based on the PM_{10} emissions estimated, emissions of asbestos, silica, and heavy metals were estimated for purposes of the health risk modeling.

As previously noted, according to the safety data sheet for the detonators being used, no TACs would be emitted with OEHHA approved reference exposure levels and therefore would not impact the health risk calculations assessed herein.

Once the sources of TAC emissions were identified and the quantity of TAC emissions quantified, dispersion modeling was conducted to determine the concentration of pollutants and the exposure of nearby receptors to project-generated TACs. The following discussion summarizes the dispersion modeling and HRA methodology. Further information is provided in the HRA included as part of Appendix E.1 to this EIR.

In order to assess the health risk impacts of the project's construction and operational activities on proximate off-site sensitive receptors, a dispersion modeling analysis was conducted for the HRA of DPM emitted from diesel vehicles and off-road equipment, blasting emissions, and TACs from fugitive dust sources on the project sites. A full list of emission sources and the parameters used to model each source may be found in the HRA included within Appendix E.1 to this EIR. The dispersion modeling was performed using AERMOD Version 21112, which is the model that the USEPA approved and NSAQMD recommends for atmospheric dispersion of emissions. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of surface and elevated sources, building downwash, and simple and complex terrain. A detailed description of modeling inputs for the HRA are available in Appendix E.1 to this EIR.

The HRA evaluates the risk to existing sensitive receptors (including residential receptors) located in proximity to the project sites. For the purposes of this analysis, and pursuant to guidance from NSAQMD, sensitive receptors were considered to be land uses where sensitive-receptor population groups are likely to be located such as hospitals, schools, playgrounds, day care centers, and senior centers. Residences were considered to be sensitive receptors as well. Residences currently exist in all directions from the project sites, with the nearest located north of East Bennett Road, approximately 100 feet from the site boundary. The nearest hospitals and schools to the project sites are the Sierra Nevada Memorial Hospital on Glasson Way (approximately 1,800 feet north of the Centennial Industrial Site) and the Montessori House of Children on The Burma Road (approximately 2,500 feet south of the Brunswick Industrial Site boundary). Discrete cartesian receptors were placed at residents proximate to the project sites. A uniform Cartesian grid of 4,426 by 3,299 meters was centered over the project sites to capture the maximum point of impact and extent of the plume isopleth. In so doing, the HRA considers

[36] EMKO Environmental, Inc. *Groundwater Hydrology and Water Quality Analysis Report for the Idaho-Maryland Mine Project*. March 2020.

health risks at the exact locations of nearby receptors, as well as health risks over the general area.

Plot files generated in AERMOD were then imported into CARB's Hotspots Analysis and Reporting Program Version 2 (HARP2), with ground level concentrations determined by multiplication of emission rates and X/Q (dispersion factor) values for each individual source of emissions. HARP2 was then used to assess resulting cancer and noncancer risk at the existing receptors from exposure to project-related TAC emissions. For health risks at nearby residences, the HRA was based on the assumption that exposure to project-related TAC emissions would start in the 3rd trimester of pregnancy, and extend for a duration of 30 years,[37] in accordance with the OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments. Because the equipment used and emission profiles during construction, operation, and reclamation are very similar for mining projects (including the proposed project), the HRA included both short-term construction and long-term operations in the analysis.

The foregoing methodology allowed for the quantification of health risks to nearby receptors. Once health risks were quantified, the health risks were compared to NSAQMD's thresholds of significance.

Localized CO Impact Assessment

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Recent improvements to vehicle emissions controls and operating systems have generally reduced CO emissions from on-road vehicles. Nevertheless, projects contributing to adverse traffic impacts may result in the formation of CO hotspots. To determine whether the project would cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted.

A traffic impact analysis (KD Anderson & Associates, Inc. 2020) evaluated the LOS (i.e., increased congestion) impacts at intersections affected by the project. The potential for CO hotspots was evaluated based on the results of the traffic impact analysis. The NSAQMD indicates that if a traffic study is performed for a project, the traffic study should identify any intersection(s) that would fall at LOS D, E, or F under the project alone or cumulative development scenarios, and a CO analysis should be prepared using the California Department of Transportation (Caltrans) and University of California, Davis, Institute of Transportation Studies CO Protocol or California LINE Source Dispersion Model (CALINE4), as appropriate. Pursuant to NSAQMD guidance, the CALINE4 model was used to assess potential CO hotspots.

The project's traffic impact analysis evaluated 24 intersections and 11 roadway segments based on existing traffic volumes and current street geometry. As shown in Appendix D of the Air Quality and GHG Report prepared by Dudek (included as Appendix E.1 to this EIR), three of the traffic study intersections operate at LOS D or worse in the Near-Term Existing Plus Project scenario:

[37] OEHHA describes cancer risk evaluations for 9-, 30-, and 70-year exposure durations in the 2015 Risk Assessment Guidelines Manual, and identifies that the 9- and 30-year durations correspond to the average and high-end of residency time recommended by the US EPA, with the 30-year exposure duration recommended for use as the basis for estimating cancer risk at the maximally exposed individual resident in all HRAs investigating long-term health risks.

1. Brunswick Road/Idaho Maryland Road (LOS F in PM);
2. Brunswick Road/State Route (SR) 174 (LOS E in PM); and
3. Idaho Maryland Road/Centennial Drive (LOS F in PM).

The remaining intersections operate at an acceptable LOS during the AM and PM peak hours in the scenarios evaluated.

As shown in Appendix D of the Air Quality and GHG Report prepared by Dudek, one of the study intersections operates at an LOS D or worse in the Year 2035 Plus Project scenario:

1. Sutton Way/Dorsey Drive (LOS F in PM)

The remaining intersections operate at an acceptable LOS during the AM and PM peak hours in the Year 2035 Plus Project scenario evaluated.

For each scenario (Near-Term Existing Plus Project conditions and Year 2035 Plus Project), the CO screening evaluation presents LOS and whether a quantitative CO hotspots analysis may be required. According to the CO Protocol, there is a cap on the number of intersections that need to be analyzed for any one project. For a single project with multiple intersections, only the three intersections representing the worst LOS ratings of the project, and, to the extent they are different intersections, the three intersections representing the highest traffic volumes, need to be analyzed. For each intersection failing a screening test as described in this protocol, an additional intersection should be analyzed. The potential impact of the project on local CO levels was assessed at these intersections with the Caltrans CL4 interface based on CALINE4, which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections.

The emissions factor represents the weighted average emissions rate of the local County vehicle fleet expressed in grams per mile per vehicle. Emissions factors for the Near-Term Existing Plus Project conditions and Year 2035 Plus Project were predicted by EMFAC2017 based on a five-mile-per hour (mph) average speed for all of the intersections for approach and departure segments. The hourly traffic volume anticipated to travel on each link, in units of vehicles per hour, was based on information provided by the traffic consultant. Modeling assumptions are outlined in Appendix D of the Air Quality and GHG Report prepared by Dudek (included as Appendix E.1 to this EIR).

Consistent with the CO Protocol, four receptor locations at each intersection were modeled to determine CO ambient concentrations. A receptor was assumed on the sidewalk at each corner of the modeled intersections, for a total of four receptors adjacent to the intersection, to represent the future possibility of extended outdoor exposure. CO concentrations were modeled at these locations to assess the maximum potential CO exposure that could occur. A receptor height of 5.9 feet (1.8 meters) was used in accordance with Caltrans recommendations for all receptor locations.

The maximum CO concentration measured at the nearest monitoring station over the last three years was 8.8 ppm, which was measured in 2018. This maximum one-hour concentration value is used as the background concentration when evaluating the addition of the vehicle-generated CO emissions. To estimate an eight-hour average CO concentration, a persistence factor of 0.6, as calculated based on Caltrans guidance, was applied to the output values of predicted concentrations in ppm at each of the receptor locations.

Applicant Proposed Emissions Reduction Measures

The following measures have been proposed by the applicant and are relevant to the analysis presented below. The analysis presented within this chapter assumes that all of the applicant proposed measures (APMs) presented below would be implemented.

APM-AQ-1: Exhaust Emission Controls

The following measures shall be implemented during construction, operation, and reclamation to reduce exhaust emissions:

- All off-road diesel-fueled equipment and emergency generators owned by Rise Grass Valley Inc. shall be equipped with Tier 4 Final engines.
- Unnecessary construction vehicle idling time shall be minimized. The ability to limit construction vehicle idling time is dependent on the sequence of activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for immediate use. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project shall apply a "common sense" approach to vehicle use such that idling is reduced as much as possible below the maximum of 5 consecutive minutes required by regulation (13 CCR 2449 and 2485). If a vehicle is not required for use immediately or continuously for activities or for other safety-related reasons, its engine shall be shut off.
- All off-road equipment shall be maintained in accordance with manufacturer's specifications. All equipment shall be checked by a qualified mechanic, and equipment shall be confirmed that it is in proper condition prior to operation.

APM-AQ-2: Surface Fugitive Dust Controls

The following measures shall be implemented to reduce surface fugitive dust emissions:

- During construction, operation, and reclamation, all exposed soil surfaces (e.g., unpaved disturbed areas, unpaved parking areas, and unpaved staging areas, and soil piles) shall be adequately wetted to ensure that no visible dust crosses the property boundary, except when rains are occurring. As an alternative to watering, inactive soil piles shall be covered to minimize wind erosion.
- During construction, all on-site roadways shall be paved as soon as possible after grading and any unpaved gravel roads shall be treated with chemical stabilizers in order to control fugitive dust.

APM-AQ-3: ASUR Plan

Rise Grass Valley Inc. shall implement the ASUR Plan, which incorporates measures designed to minimize asbestos in engineered fill produced by the project, as well as minimize the emission of asbestos-containing dust from the underground mine (see Appendix E.2). The ASUR Plan builds on the provisions of applicable regulations, including the two CARB ATCMs for naturally occurring asbestos (i.e., ATCM for Surfacing Applications [17 CCR 93106] and ATCM for Construction, Grading, Quarrying and Surface Mining Operations [17 CCR 93105]), and includes additional measures beyond what is required in the ATCMs in order to limit any potential emission of asbestos dust and to protect human health and the environment. The ASUR Plan incorporates routine asbestos testing by TEM and an Asbestos Inventory to ensure that average mined material and engineered fill contains less than 0.01 percent asbestos by mass of PCM equivalent units.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above. It should be noted that GHG emissions are inherently cumulative; thus, the discussion of impacts associated with GHG emissions is included under the Cumulative Impacts and Mitigation Measures section below.

4.3-1 Conflict with or obstruct implementation of the applicable air quality plan. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

An area is designated as "in attainment" when the area is in compliance with the NAAQS and CAAQS. The NAAQS and CAAQS are set by the USEPA or CARB, respectively, for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or public welfare with a margin of safety. As discussed in the Existing Environmental Setting section above, western Nevada County, which includes the project sites, is designated as nonattainment for the federal and state O_3 standards. The County is also designated as nonattainment for the state PM_{10} standard. As a nonattainment area, the NSAQMD submitted the *2018 Western Nevada County Planning Area Ozone Attainment Plan* as well as the *2018 Reasonably Available Control Technology SIP for Western Nevada County* to the USEPA. The CARB has adopted both aforementioned plans, and the plans are considered enforceable under the CCAA.

The general criteria for determining if a project would conflict or obstruct implementation of an Ozone Attainment Plan are 1) whether the project would exceed the NSAQMD CEQA thresholds of significance for O_3 precursors (ROG and NO_x) and could delay the timely attainment of the ambient air quality standards or interim emission reductions of the Ozone Attainment Plan, and/or 2) whether the project would result in demographic growth that would exceed the forecasts included in the Ozone Attainment Plan.

Criterion 1

To address the criterion of whether the project would exceed the NSAQMD CEQA significance thresholds for O_3 precursors and potentially delay the timely attainment of the ambient air quality standards or interim emission reductions of the Ozone Attainment Plan, an air quality modeling analysis that identified the project's impact on air quality was performed. The air quality modeling analysis included quantification of emissions during project construction, operations, and reclamation.

As described in the Method of Analysis section above, for the purposes of estimating project emissions, construction of the project is anticipated to occur over 12 months and assumed to take place from January 2021 through December 2021. Sources of air pollutant emissions during construction would include exhaust from off-road equipment and on-road vehicles (i.e., trucks and worker vehicles), emergency generator testing and maintenance, fugitive dust associated with grading and material handling, and ROG off-gassing from architectural coatings and asphalt paving. Many of the operational sources of air pollutant emissions would be similar to construction and would include off-road equipment (surface and underground), on-road vehicles,

emergency generator testing and maintenance, underground blasting and crushing, ore processing, reagent storage, fuel tank storage, earthwork and material handling, architectural coatings for repainting, and worker consumer products. Similarly, emissions during reclamation would be generated by off-road equipment and worker commutes.

Table 4.3-17 presents the estimated maximum daily unmitigated emissions associated with construction, operation, and reclamation of the project. As discussed in Standards of Significance section above, the NSAQMD has established Level A, B, and C thresholds for ROG, NO_x, and PM_{10}. According to the NSAQMD, unmitigated project-generated emissions of ROG NO_X and PM_{10} that are greater than zero are potentially significant and require mitigation.[38] Although numeric thresholds have not been established for CO, SO_X, or $PM_{2.5}$, emissions are presented for disclosure.

Table 4.3-17
Maximum Unmitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Year 2021 – Construction/Dewatering						
Off-Road Equipment[a]	6.71	53.84	50.83	0.10	2.30	2.15
On-Road Vehicles – Off-Site	1.34	8.79	10.83	0.05	3.54	1.05
On-Road Vehicles – On-Site	0.30	1.70	1.20	0.00	0.70	0.18
Diesel Fuel Tanks – Breathing/ Working	0.12	—	—	—	—	—
Emergency Generator Testing[b]	0.47	9.37	24.35	0.13	0.09	0.09
Fugitive Dust – Unpaved Roads/ Disturbed Areas/ Material Handling/ Wind Erosion[c]	—	—	—	—	8.30	2.95
Architectural Coatings	2.64	—	—	—	—	—
Asphalt Off-Gassing	0.38	—	—	—	—	—
Maximum Total Daily Emissions	**11.96**	**73.69**	**87.21**	**0.28**	**14.93**	**6.43**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	Potentially	Potentially	No	No	Potentially	No
Year 2022 to 2026 – Mining, Brunswick Industrial Site Operations, Fill Placement at Centennial Industrial Site						
Off-Road Equipment[a]	0.65	6.67	25.51	0.05	0.06	0.06
On-Road Vehicles – Off-Site	1.27	21.65	4.22	0.05	7.20	2.08
On-Road Vehicles – On-Site	0.69	3.57	2.81	0.00	1.86	0.47

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[38] Following implementation of NSAQMD-recommend mitigation measures (as specified separately for Level A, B, and C) only emissions that exceed Level C thresholds are considered significant and unavoidable.

Table 4.3-17
Maximum Unmitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Logging/ Chipping – Off-Road Equipment	1.88	12.80	10.41	0.04	0.41	0.40
Logging/ Chipping – On-Road Vehicles – Off-Site	0.58	27.89	3.15	0.02	3.60	1.19
Logging/ Chipping – On-Road Vehicles – On-Site	0.03	0.32	0.21	0.00	0.13	0.03
Emergency Generator Testing[b]	0.94	18.73	48.70	0.26	0.19	0.19
Underground Blasting/Mining[f]	0.00	15.85	62.40	1.86	1.61	0.53
Ore Processing	—	—	—	—	0.29	0.21
Reagent Off-Gassing	0.00	—	—	—	—	—
Diesel Fuel Tanks – Breathing/ Working	0.12	—	—	—	—	—
Fugitive Dust – Unpaved Roads/ Disturbed Areas/ Material Handling/ Wind Erosion[c]	—	—	—	—	39.05	5.82
Architectural Coatings	0.26	—	—	—	—	—
Consumer Products	2.65	—	—	—	—	—
Maximum Total Daily Emissions	**9.07**	**107.49**	**157.41**	**2.27**	**54.40**	**10.97**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	Potentially	Potentially	No	No	Potentially	No
Year 2027 to 2032 – Mining, Brunswick Industrial Site Operations, Fill Placement at Brunswick Industrial Site						
Off-Road Equipment[a]	0.65	6.67	25.51	0.05	0.06	0.06
On-Road Vehicles – Off-Site	0.67	13.15	2.29	0.09	6.19	1.76
On-Road Vehicles – On-Site	0.60	4.77	3.70	0.01	2.75	0.69
Logging/ Chipping – Off-Road Equipment	1.88	12.80	10.41	0.04	0.41	0.40
Logging/ Chipping – On-Road Vehicles – Off-Site	0.58	27.89	3.15	0.02	3.60	1.19
Logging/ Chipping – On-Road Vehicles – On-Site	0.03	0.32	0.21	0.00	0.13	0.03
Emergency Generator Testing[b]	0.94	18.73	48.70	0.26	0.19	0.19

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Table 4.3-17
Maximum Unmitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Underground Blasting/Mining[f]	0.00	15.85	62.40	1.86	1.61	0.53
Ore Processing	—	—	—	—	0.29	0.21
Reagent Off-Gassing	0.00	—	—	—	—	—
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Fugitive Dust – Unpaved Roads/ Disturbed Areas/ Material Handling/ Wind Erosion[c]	—	—	—	—	39.05	5.82
Architectural Coatings	0.26	—	—	—	—	—
Consumer Products	2.65	—	—	—	—	—
Maximum Total Daily Emissions	**8.38**	**100.20**	**156.37**	**2.31**	**54.28**	**10.86**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	Potentially	Potentially	No	No	Potentially	No
Year 2033 to 2102 – Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location						
Off-Road Equipment[a]	0.37	5.28	15.39	0.03	0.03	0.03
On-Road Vehicles – Off-Site	1.13	74.82	8.88	0.35	17.31	5.24
On-Road Vehicles – On-Site	0.40	2.99	2.48	0.01	2.64	0.66
Emergency Generator Testing[b]	0.94	18.73	48.70	0.26	0.19	0.19
Underground Blasting/Mining[f]	0.00	15.85	62.40	1.86	1.61	0.53
Ore Processing	—	—	—	—	0.29	0.21
Reagent Off-Gassing	0.00	—	—	—	—	—
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Architectural Coatings	0.26	—	—	—	—	—
Consumer Products	2.65	—	—	—	—	—
Maximum Total Daily Emissions	**5.87**	**117.68**	**137.86**	**2.50**	**22.07**	**6.85**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	Potentially	Potentially	No	No	Potentially	No
Year 2103 – Reclamation						
Off-Road Equipment[a]	0.08	0.32	3.91	0.01	0.01	0.01

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Table 4.3-17
Maximum Unmitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
On-Road Vehicles – Off-Site	0.19	0.36	0.90	0.01	0.30	0.09
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Maximum Total Daily Emissions	**0.39**	**0.68**	**4.81**	**0.01**	**0.31**	**0.10**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level A (<24)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	Potentially	Potentially	No	No	Potentially	No

Notes: Totals may not sum due to rounding.

a Accounts for APM-AQ-1 (Exhaust Emission Controls), including Tier 4 Final equipment owned by Rise Grass Valley Inc.

b For maximum daily emissions, all diesel generators (2 during construction and 4 during operations) were conservatively assumed to operate for 2 hours on the same day, 1 time per month.

c For APM-AQ-2 (Surface Fugitive Dust Controls), a control efficiency of 55 percent was included when calculating the emissions of PM10 and PM2.5 for vehicle traffic on unpaved roads during operation and a control efficiency of 80% was assumed for chemical stabilization on unpaved roads during construction. A moisture content of 13 percent was assumed when calculating emissions of PM10 and PM2.5 during fill spreading and compaction to account for fugitive dust control.

d The NSAQMD Threshold Levels are presented in Table 4.3-5.

e Significance is based on NSAQMD thresholds. For Level A or B criteria, emissions are considered potentially significant and trigger mitigation. If the emissions exceed the Level C threshold, they are considered significant and require greater mitigation. After incorporation of feasible mitigation, emissions at Level A or B would be less than significant, and emissions at Level C (i.e., >136 pounds per day) would be significant and unavoidable.

f Includes emissions from rock blasting, combustion of ANFO, and detonators for blasting.

Source: Dudek, 2021.

As shown in Table 4.3-17, daily unmitigated emissions of ROG, NO_x and PM_{10} would be potentially significant (Level A or B) according to the NSAQMD significance criteria; therefore, mitigation is required. Because emissions of ROG, NO_x and PM_{10} would not reach or exceed Level C, emissions would not be considered significant and unavoidable, pursuant to NSAQMD's significance criteria. The NSAQMD does not have significance criteria for SO_2, CO, or $PM_{2.5}$, thus emissions of SO_2, CO, or $PM_{2.5}$ are presented for informational purposes only. According to NSAQMD guidance, emissions exceeding the Level A or B significance threshold would contribute to existing nonattainment conditions and may also interfere with the region's ability to maintain ambient air quality standards if mitigation is not implemented.

Therefore, prior to mitigation, the project would result in potentially significant levels of ROG, NO_x, and PM_{10} emissions and could conflict with or obstruct implementation of the Ozone Attainment Plan pursuant to Criterion 1.

Mobile Source Emissions by Air District

For the purposes of this analysis, all mobile source emissions generated by the project have been assumed to occur within the NSAQMD's jurisdictional boundaries. Assuming all mobile source emissions occur within NSAQMD's jurisdictional

boundaries prior to comparing emissions to the NSAQMD thresholds represents a conservative assumption. Nonetheless, it is acknowledged that due to the assumed trip length for some project vehicles, portions of project trips and associated mobile source emissions could occur outside of the NSAQMD jurisdictional boundaries and within other air district boundaries. Accordingly, to facilitate public disclosure and to present the magnitude of potential emissions occurring within other air districts, off-site mobile source emissions for the Year 2033 to 2102 – Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location scenario by air district are presented herein. The Year 2033 to 2102 scenario was selected for this informational evaluation as that scenario resulted in the maximum daily emissions of NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ from on-road vehicles; only ROG was slightly greater in other scenarios evaluated. The origins and destinations of all vehicle trip types is not available at this time; therefore, trip portions in other air districts are estimated based on the best available information. The CEQA Guidelines state that if a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (14 CCR subsection 15145). Nonetheless, this analysis is provided in an effort to show a good faith analysis and comply with CEQA's information disclosure requirements.

Based on best available information, air districts where project-generated mobile source emissions may occur are anticipated to include PCAPCD, SMAQMD, Yolo-Solano Air Quality Management District (YSAQMD), and the BAAQMD, in addition to the NSAQMD. Notably, the project would not include any activities that fall within the permitting jurisdiction of any air district other than the NSAQMD (i.e., all project-related activities that require permitting would occur within NSAQMD's jurisdictional boundaries and activities occurring in other air district boundaries would not require permitting). The PCAPCD, SMAQMD, YSAQMD, and BAAQMD, however, are responsible for planning to attain applicable ambient air quality standards, and as part of this planning obligation, these air districts are responsible for accounting for vehicular emissions from locations within their respective boundaries. Air districts do not directly regulate vehicle exhaust emission standards, which are regulated by the USEPA under the federal Clean Air Act and by CARB under both federal and state laws.

To estimate the criteria air pollutant emissions by air district, the unmitigated off-site mobile source emissions for running exhaust and paved road dust were apportioned to each air district according to the estimated VMT for each trip that may occur within that air district boundary. For this emission estimation, only running exhaust and paved road dust emissions were included; starting and idling emissions, which are minor, are excluded because the focus is on the VMT rather than the ultimate origin and/or destination of each trip. In the Year 2033 to 2102 scenario, haul trucks, freight trucks, explosive trucks, and cement delivery trucks are anticipated to have a 60-mile one-way trip length, which represents a trip distance between the project site to as far as Sacramento. Assuming a destination of Sacramento, haul trucks, freight trucks, explosive trucks, and cement delivery trucks were assumed to have the following air district trip mileage breakdown: 16 miles (27 percent) within NSAQMD, 26 miles (43 percent) within PCAPCD, and 18 miles (30 percent) within SMAQMD. Concentrate trucks are assumed to have a 145-mile one-way trip length, which represents a trip distance between the project site and the Port of Oakland. For concentrate trucks, the following air district trip mileage breakdown was assumed: 16 miles (11 percent) within

NSAQMD, 26 miles (18 percent) within PCAPCD, 17 miles (12 percent) within SMAQMD, 34 miles (23 percent) within YSAQMD, and 52 miles (36 percent) within BAAQMD. Fuel trucks, outside services, and employees, which all have an assumed one-way trip length less than 15 miles, are anticipated to occur within the NSAQMD boundaries.

Table 4.3-18 presents the maximum daily project-generated off-site mobile source emissions by air district based on the assumptions discussed above for informational purposes only. Because this information is presented for informational purposes only, the emissions apportioned per air district do not affect the conclusions presented above related to Criterion 1.

Table 4.3-18
Maximum Daily Project Off-Site Mobile Source Emissions by Air District (lbs/day)

Year 2033 to 2102 – Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location

Air District	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
NSAQMD	0.24	18.90	1.81	0.10	22.44	5.82
PCAPCD	0.28	29.39	2.75	0.13	29.16	7.54
SMAQMD	0.20	20.46	1.91	0.08	20.32	5.23
YSAQMD	0.02	1.71	0.16	0.01	1.71	0.44
BAAQMD	0.03	2.68	0.25	0.01	2.68	0.69

Notes: Combined emissions by air district do not match total project-generated mobile source emissions due to rounding and inclusion of running exhaust and paved road emissions only

Source: Dudek, 2021.

Criterion 2

Regarding demographic growth and Criterion 2, forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) were developed by NCTC for the NCTC's 2015–2035 RTP. The Ozone Attainment Plan prepared by NSAQMD relies on the land use and population projections provided in the 2015–2035 RTP. In turn, the 2015-2035 RTP is generally consistent with the local plans in Nevada County; therefore, because the Ozone Attainment Plan is consistent with the 2015-2035 RTP, the Ozone Attainment Plan is also generally consistent with local government plans. The Brunswick Industrial Site is currently zoned Light Industrial (M1) with Site Performance Combining District (SP). Implementation of the project would include rezoning the Brunswick Industrial Site to Light Industrial with Mineral Extraction Combining District (M1-ME). The primary purpose of the Mineral Extraction Combining District is to inform the public of the potential for mineral extraction. However, the base zoning district of M1 would remain unchanged.

As described in the 2015–2035 RTP, the mining, logging, and construction industry in Nevada County has resulted in an increase in 390 jobs from 2009 to 2014. Additionally, the mining, logging, and construction industry is projected to be the fastest-growing market through 2022, with an anticipated 37.4 percent growth rate. During full operations, the project would require approximately 312 direct employees. It is anticipated that most of the jobs associated with the project would be filled by residents within the vicinity of the project sites. However, the possibility exists that

implementation of the project could result in population growth in the event that new employees move to the area. Even in the case that some employees do move to the area, as noted previously, growth in the mining sector has been anticipated through the year 2022, and thus, the movement of new employees to the area has been previously anticipated in the 2015-2035 RTP and the Ozone Attainment Plan. Considering the anticipated utilization of current residents as employees at the project sites and the inclusion of mining industry employment growth within the 2015-2035 RTP and the Ozone Attainment Plan, the project would not result in regional growth that is not accounted for within the Ozone Attainment Plan. Because the project would not result in regional growth in excess of the levels anticipated in the Ozone Attainment Plan, the project would comply with Criterion 2.

Conclusion

Based on the analysis presented above, the proposed project would comply with Criterion 2. However, as presented in Table 4.3-17, emissions of ROG, NO_x, and PM_{10} would be potentially significant (Level A or B) during construction, operations, and reclamation, and mitigation would be required in order for the project to comply with Criterion 1. Because the project would not comply with Criterion 1 without mitigation, implementation of the project could conflict with the Ozone Attainment Plan, and implementation of the project could create a conflict with or obstruct implementation of the applicable air quality plan related to the region's nonattainment status for ozone and PM_{10}, resulting in a ***significant*** impact prior to implementation of mitigation.

Mitigation Measure(s)

The emission data presented in Table 4.3-17 (i.e., unmitigated emissions) reflect the reductions that would occur with implementation of APM-AQ-1 and APM-AQ-2. Table 4.3-19 shows the estimated maximum daily mitigated emissions associated with construction, operation, and reclamation of the project, accounting for additional emissions reductions associated with Mitigation Measure 4.3-1(b), which would result in a reduction in construction contractors' equipment exhaust criteria air pollutants during project construction (year 2021).[39] Additional reductions could not be quantified for Mitigation Measure 4.3-1(a), which are the NSAQMD recommended mitigation measures that are applicable to the project.

According to the NSAQMD, implementation of recommended mitigation measures for Level A and B thresholds (included as Mitigation Measure 4.3-1[b] below) would reduce project impacts to a *less-than-significant* level during all years of project construction, operations, and reclamation.[40]

[39] Tier 4 standards for engine hp between 11 hp and 75 hp were available starting in 2008. For engines with hp between 75 and 175, Tier 4 engines were available starting in 2012. For engine hp between 175 and greater than 1,200, Tier 4 engines were available starting in 2011. As such, equipment engines that meet Tier 4 emission standards are currently available at the time of this analysis, and would continue to be available during the project's construction and operational years (starting in 2021).

[40] Dudek. *Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Idaho Maryland Mine Project Nevada County, California* [pg. 51]. November 2021.

Table 4.3-19
Maximum Mitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Year 2021 – Construction/Dewatering						
Off-Road Equipment[a]	3.25	15.97	54.08	0.10	0.60	0.60
On-Road Vehicles – Off-Site	1.34	8.79	10.83	0.05	3.54	1.05
On-Road Vehicles – On-Site	0.30	1.70	1.20	0.00	0.70	0.18
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Emergency Generator Testing[b]	0.47	9.37	24.35	0.13	0.09	0.09
Fugitive Dust – Unpaved Roads/ Disturbed Areas/ Material Handling/ Wind Erosion[c]	—	—	—	—	8.30	2.95
Architectural Coatings	2.64	—	—	—	—	—
Asphalt Off-Gassing	0.38	—	—	—	—	—
Maximum Total Daily Emissions	**8.50**	**35.82**	**90.46**	**0.28**	**13.23**	**4.87**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	No	No	No	No	No	No
Year 2022 to 2026 – Mining, Brunswick Industrial Site Operations, Fill Placement at Centennial Industrial Site						
Off-Road Equipment[a]	0.65	6.67	25.51	0.05	0.06	0.06
On-Road Vehicles – Off-Site	1.27	21.65	4.22	0.05	7.20	2.08
On-Road Vehicles – On-Site	0.69	3.57	2.81	0.00	1.86	0.47
Logging/ Chipping – Off-Road Equipment	0.58	27.89	3.15	0.02	3.60	1.19
Logging/ Chipping – On-Road Vehicles - Off-Site	0.03	0.32	0.21	0.00	0.13	0.03
Logging/ Chipping – On-Road Vehicles - On-Site	0.65	6.67	25.51	0.05	0.06	0.06
Emergency Generator Testing[b]	0.94	18.73	48.70	0.26	0.19	0.19
Underground Blasting/Mining[f]	0.00	15.85	62.40	1.86	1.61	0.53
Ore Processing	—	—	—	—	0.29	0.21
Reagent Off-Gassing	0.00	—	—	—	—	—
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Fugitive Dust – Unpaved Roads/ Disturbed Areas/	—	—	—	—	39.05	5.82

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Table 4.3-19
Maximum Mitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Material Handling/ Wind Erosion[c]						
Architectural Coatings	0.26	—	—	—	—	—
Consumer Products	2.65	—	—	—	—	—
Maximum Total Daily Emissions	**9.07**	**107.49**	**157.41**	**2.27**	**54.40**	**10.97**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	No	No	No	No	No	No
Year 2027 to 2032 – Mining, Brunswick Industrial Site Operations, Fill Placement at Brunswick Industrial Site						
Off-Road Equipment[a]	0.65	6.67	25.51	0.05	0.06	0.06
On-Road Vehicles – Off-Site	0.67	13.15	2.29	0.09	6.19	1.76
On-Road Vehicles – On-Site	0.60	4.77	3.70	0.01	2.75	0.69
Logging/ Chipping – Off-Road Equipment	1.88	12.80	10.41	0.04	0.41	0.40
Logging/ Chipping – On-Road Vehicles - Off-Site	0.58	27.89	3.15	0.02	3.60	1.19
Logging/ Chipping – On-Road Vehicles - On-Site	0.03	0.32	0.21	0.00	0.13	0.03
Emergency Generator Testing[b]	0.94	18.73	48.70	0.26	0.19	0.19
Underground Blasting/Mining[f]	0.00	15.85	62.40	1.86	1.61	0.53
Ore Processing	—	—	—	—	0.29	0.21
Reagent Off-Gassing	0.00	—	—	—	—	—
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Fugitive Dust – Unpaved Roads/ Disturbed Areas/ Material Handling/ Wind Erosion[c]	—	—	—	—	39.05	5.82
Architectural Coatings	0.26	—	—	—	—	—
Consumer Products	2.65	—	—	—	—	—
Maximum Total Daily Emissions	**8.38**	**100.20**	**156.37**	**2.31**	**54.28**	**10.86**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	No	No	No	No	No	No
Year 2033 to 2102 – Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location						
Off-Road Equipment[a]	0.37	5.28	15.39	0.03	0.03	0.03

(Continued on next page)

Table 4.3-19
Maximum Mitigated Daily Project Emissions (lbs/day)

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
On-Road Vehicles – Off-Site	1.13	74.82	8.88	0.35	17.31	5.24
On-Road Vehicles – On-Site	0.40	2.99	2.48	0.01	2.64	0.66
Emergency Generator Testing[b]	0.94	18.73	48.70	0.26	0.19	0.19
Underground Blasting/Mining[f]	0.00	15.85	62.40	1.86	1.61	0.53
Ore Processing	—	—	—	—	0.29	0.21
Reagent Off-Gassing	0.00	—	—	—	—	—
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Architectural Coatings	0.26	—	—	—	—	—
Consumer Products	2.65	—	—	—	—	—
Maximum Total Daily Emissions	**5.87**	**117.68**	**137.86**	**2.50**	**22.07**	**6.85**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level B (24-136)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	No	No	No	No	No	No
Year 2103 – Reclamation						
Off-Road Equipment[a]	0.08	0.32	3.91	0.01	0.01	0.01
On-Road Vehicles – Off-Site	0.19	0.36	0.90	0.01	0.30	0.09
Diesel Fuel Tanks – Breathing/Working	0.12	—	—	—	—	—
Maximum Total Daily Emissions	**0.39**	**0.68**	**4.81**	**0.01**	**0.31**	**0.10**
NSAQMD Significance Threshold Level[d]	*Level A (<24)*	*Level A (<24)*	*N/A*	*N/A*	*Level A (<79)*	*N/A*
Significant (Yes/No or Potentially)?[e]	No	No	No	No	No	No

Notes: Totals may not sum due to rounding.

a Accounts for APM-AQ-1 (Exhaust Emission Controls), including Tier 4 Final equipment owned by Rise Grass Valley Inc.

b For maximum daily emissions, all diesel generators (2 during construction and 4 during operations) were conservatively assumed to operate for 2 hours on the same day, 1 time per month.

c For APM-AQ-2 (Surface Fugitive Dust Controls), a control efficiency of 55% was included when calculating the emissions of PM10 and PM2.5 for vehicle traffic on unpaved roads during operation and a control efficiency of 80% was assumed for chemical stabilization on unpaved roads during construction. A moisture content of 13% was assumed when calculating emissions of PM10 and PM2.5 during fill spreading and compaction to account for fugitive dust control.

d The NSAQMD Threshold Levels are presented in Table 4.3-5.

e Significance is based on NSAQMD thresholds. For Level A or B criteria, emissions are considered potentially significant and trigger mitigation. If the emissions exceed the Level C threshold, they are considered significant and require greater mitigation. After incorporation of feasible mitigation, emissions at Level A or B would be less than significant, and emissions at Level C (i.e., >136 pounds per day) would be significant and unavoidable.

f Includes emissions from rock blasting, combustion of ANFO, and detonators for blasting.

Source: Dudek, 2021.

4.3-1(a) *Prior to the initiation of construction, the following requirements shall be noted on project improvement plans. Improvements plans shall be submitted to the Nevada County Planning Department for review and approval.*

Mitigations for Use During Construction:
The following measures are from the Northern Sierra Air Quality Management District and are based on the significance threshold level of emissions.

For all Significance Level Thresholds (A, B, and C)

a. *Alternatives to open burning of vegetative material shall be used unless deemed infeasible by the Northern Sierra Air Quality Management District. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel.*
b. *Grid power shall be used (as opposed to diesel generators) for job site power needs where feasible during construction.*

Additional Measures for Emissions at Level B Thresholds:

c. *All controls discussed above (a and b) shall be implemented.*
d. *Temporary traffic control shall be provided during all phases of the construction to improve traffic flow as deemed appropriate by the local transportation agencies and/or the California Department of Transportation.*
e. *Construction activities shall be scheduled to direct traffic flow to off-peak hours as much as practicable.*

4.3-1(b) ***Construction Exhaust Emissions Minimization Plan.***
Prior to the initiation of construction, Rise Grass Valley Inc. or its designee shall submit a Construction Exhaust Emissions Minimization Plan to Nevada County or its designated representative for review and approval. The Construction Exhaust Emissions Minimization Plan shall detail project compliance with the following requirements:

- *Where access to alternative sources of power and alternative-fueled equipment are available, portable diesel engines shall be prohibited.*
- *All diesel-powered equipment with engines equal to or greater than 50 horsepower (hp) shall be powered by California Air Resources Board (CARB) certified Tier 4 Final engines. If 50 hp or greater engines that comply with Tier 4 Final emissions standards are not commercially available, then the project applicant shall ensure that all diesel-powered equipment equal to or greater than 25 hp shall have at least CARB-certified Tier 3 engines with the most effective Verified Diesel Emission Control Strategies available for the engine type, such as Level 3 Diesel Particulate Filters (Tier 4 engines automatically meet this requirement).*

a. *For purposes of this mitigation measure, "commercially available" shall mean the availability of the Tier 4 Final equipment, taking into consideration factors such as critical path timing of construction and geographic proximity of the equipment location to the project sites.*
b. *The project applicant shall maintain and submit records to Nevada County concerning its efforts to comply with this requirement.*

4.3-2 Expose sensitive receptors to substantial pollutant concentrations. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The major pollutants of concern are localized CO emissions, TAC emissions, and criteria pollutants, which are addressed below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Implementation of the proposed project would increase traffic volumes on streets near the project sites. As noted in the Method of Analysis section, several intersections would operate at unacceptable LOS during the Near-Term Existing Plus Project and Year 2035 Plus Project scenarios. CO emissions resulting from intersections operating at unacceptable LOS were quantified using CALINE4, and the results are presented in Table 4.3-20.

As shown in Table 4.3-20, the maximum CO concentration predicted for the one-hour averaging period at the studied intersections would be 9.3 ppm, which is below the one-hour CO CAAQS of 20 ppm. The maximum predicted eight-hour CO concentration of 5.58 ppm at the studied intersections would be below the eight-hour CO CAAQS of nine ppm. Neither the one-hour CAAQS nor the eight-hour CAAQS would be equaled or exceeded at any of the intersections studied. Therefore, the project would not expose sensitive receptors to substantial concentrations of localized CO and impacts related to localized CO emissions would be less than significant.

Table 4.3-20
CALINE4 Predicted CO Concentrations

Intersection	Maximum Modeled Impact (ppm)	
	One-Hour	Eight-Hour[1]
Near-Term Existing Plus Project		
Brunswick Rd/Idaho Maryland Rd (LOS F in PM)	9.3	5.58
Brunswick Rd/SR 174 (LOS E PM)	9.1	5.46
Idaho Maryland Rd/Centennial Dr (LOS F in PM)	9.2	5.52
Year 2035 Plus Project		
Sutton Way/Dorsey Dr (LOS F in PM)	9.0	5.40

Notes:
[1] 8-hour concentrations were obtained by multiplying the 1-hour concentration by a persistence factor of 0.6.

Source: Dudek, 2021.

TAC Emissions

Project construction, operations, and reclamation activities would produce DPM emissions (with PM_{10} exhaust modeled as surrogate) due to off-road equipment and haul truck trips, and other TAC emissions from mining and soil movement. The TAC emissions associated with blasting and crushing, ore processing, and earthwork and material handling would include asbestos, silica, and trace heavy metal TACs including arsenic, beryllium, cadmium, copper, lead, manganese, mercury, nickel, selenium, and vanadium. In addition, for purposes of the HRA, diesel emergency generators were assumed to operate for up to 100 hours per year in accordance with CARB's ATCM for Stationary Compression Ignition Engines. Other emissions of TACs from blasting pertain to the combustion of ANFO. However, according to the safety data sheet for the detonators that would be used at the project site, the detonators would not emit any TACs that have OEHHA approved reference exposure levels, and, therefore, the detonators would not impact the health calculations assessed within this EIR.

Emissions from the foregoing sources could result in elevated concentrations of TAC emissions at nearby receptors, which could lead to an increase in the risk of cancer or other health impacts. Consequently, an HRA was performed to determine the extent of increased cancer risks and hazard indices at the maximally exposed receptors. The detailed HRA is included as part of Appendix E.1 to this EIR, with results summarized below.

The maximally exposed receptor was estimated to be the nearest existing residence, which is north of the Brunswick Industrial Site. Potential health risks at the maximally exposed individual residence resulting from project implementation are shown in Table 4.3-21. Table 4.3-21 presents health risks both form an unmitigated project scenario as well as a mitigated project scenario following implementation of Mitigation Measure 4.3-1(b) of this EIR.

As shown in Table 4.3-21, the incremental cancer risk at the maximally exposed individual resident of 10.4 in one million (assuming exposure starts in 3rd trimester) from project implementation would exceed the NSAQMD threshold of 10 in one million without mitigation. However, with incorporation of higher-tier engines during construction, as required by Mitigation Measure 4.3-1(b), the project would result in an incremental cancer risk of 7.6 in one million. The unmitigated and mitigated chronic hazard index would be 0.6 and 0.6 at the maximally exposed individual resident, respectively, which would be below the NSAQMD threshold of 1.0. The unmitigated and mitigated acute hazard index would be 0.004 and 0.004 at the maximally exposed individual resident, respectively, which would be below the NSAQMD threshold of 1.0. Thus, the project would not result in exposure of sensitive receptors to substantial concentrations of TACs with the implementation of the required Mitigation Measure 4.3-1(b).

It should be noted that because asbestos is present in some of the material that would be mined, the project would have the potential to result in emissions of asbestos. Health risks related to asbestos are considered together with the TACs discussed above; in addition, further consideration is given to emissions of asbestos separately below.

Table 4.3-21
Project-Related Health Risk Results

Receptor	Cancer Risk (persons per million)[1]	Chronic Impact	Acute Impact
Unmitigated Project			
Maximally Exposed Individual Resident[2]	10.4	0.6	0.004
NSAQMD Significance Criteria	10	1.0	1.0
Exceed Threshold?	**Yes**	**No**	**No**
Mitigated Project[3]			
Maximally Exposed Individual Resident[2]	7.6	0.6	0.004
NSAQMD Significance Criteria	10	1.0	1.0
Exceed Threshold?	**No**	**No**	**No**

Notes: TAC exposure at receptors modeled with AERMOD, which were then input into HARP2 to generate health risk estimates. Exposure was assumed to begin in the 3rd trimester of pregnancy for a duration of 30 years, pursuant to the OEHHA 2015 Risk Assessment Guidelines Manual.

1 Accounts for APM-AQ-3 (ASUR Plan), which incorporates measures designed to minimize asbestos in engineered fill produced by the project, as well as asbestos fibers generated from underground mining from exhausting to the surface.

2 The maximally exposed individual resident for annual cancer and chronic health risk impacts is located north of the project sites at UTM coordinates 671091.4 meter Easting (m E)/4342277.23 meters Northing (m N).

3 Mitigated risk values incorporate Mitigation Measure 4.3-1(b) (Control Measures for Construction Exhaust-Related Emissions), which requires all construction contractor equipment with engines 50 hp or greater to be Tier 4.

Source: Dudek, 2021.

Asbestos

With regard to potential asbestos emissions from mining, Rise Grass Valley Inc. would be required to comply with applicable regulations, including those established by the MSHA and CARB, that limit potential exposure for workers. Further, as described in APM-AQ-3, the project would include implementation of an ASUR Plan that has been designed to minimize asbestos in the engineered fill produced by the project, as well as asbestos fibers generated from underground mining exhausting to the surface. Finally, pursuant to the CARB ATCM for Construction, Grading, Quarrying and Surface Mining Operations, an ADMP is required to be submitted to the NSAQMD for any project with greater than one acre of surface disturbance if any portion of the area to be disturbed is mapped as having serpentine or ultramafic rock or if any portion of the area to be disturbed has naturally-occurring asbestos, serpentine or ultramafic rock as determined by the owner/operator or the Air Pollution Control Officer. Because asbestos was found to be present in some of the underground mining material samples that Rise Grass Valley Inc. sent for laboratory analysis,[41] an ADMP is required to be implemented to reduce potential asbestos exposure and protect public health.

41 Samples containing naturally-occurring asbestos were from underground rock only; naturally-occurring asbestos is not known to outcrop at the surface of the Brunswick Indutrial Site or Centennial Industrial Site.

Criteria Pollutants

ROG and NO_x are precursors to O_3, for which the MCAB is designated as nonattainment with respect to the NAAQS and CAAQS. As discussed previously, the health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROG and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the MCAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the ROG emissions would occur because exceedances of the O_3 NAAQS and CAAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to reliably and meaningfully assess the impact. Thus, a project's ROG and NO_x emissions are evaluated in the context of the NSAQMD significance thresholds, which define the levels of emissions that can occur without causing or contributing to violations of the NAAQS or CAAQS. In turn, the NAAQS and CAAQS define the pollutant concentrations above which adverse health effects are expected to occur. Because ROG and NO_x emissions associated with project construction, operation, and reclamation would be potentially significant before mitigation, the project could minimally contribute to regional O_3 concentrations and the associated health effects.

Health effects that result from NO_x (including NO_2) include respiratory irritation. NO_x emissions from project construction, operation, and reclamation would occur at NSAQMD threshold Level B. Project implementation is not anticipated to contribute to exceedances of the NAAQS or CAAQS for NO_2 because the MCAB is designated as attainment of the NAAQS and CAAQS for NO_2, and the existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Thus, project-related NO_2 emissions would not be sufficient to create exceedances of the NAAQS and CAAQS for NO_2 and implementation of the project would not result in exposure of receptors to substantial concentrations of NO_2.

CO tends to be a localized impact associated with congested intersections. As described above, the project-related CO emissions would not contribute to significant health effects or expose receptors to substantial pollutant concentrations.

Construction, operation, and reclamation of the project would result in PM_{10} emissions at NSAQMD threshold Level A, which would be considered potentially significant before mitigation. As such, the project would potentially contribute to exceedances of the CAAQS for PM_{10}, and would potentially obstruct the MCAB from coming into attainment for this pollutant. The project would be required to comply with NSAQMD Rule 207, Particulate Matter, and would implement APM-AQ-2, Surface Fugitive Dust Controls, which would limit the amount of dust generated during project implementation. By reducing the generation of fugitive dust through compliance with the foregoing NSAQMD rules and APM-AQ-2, emissions of PM_{10} would be reduced to the maximum extent practicable and receptors would not be exposed to excess pollutant concentrations.

Notably, as detailed in Appendix C of the Air Quality and GHG Report prepared by Dudek (included as Appendix E.1 to this EIR), numerous scientific and technological complexities exist that are associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, such as the disconnect between mass emissions and concentrations due to secondary pollutant (such as O_3) generation and pollutant transport, as well as the inaccuracy of applying regional and population-wide models to a local level in order to estimate health effects, and modeling tools endorsed by an expert agency (i.e., NSAQMD) that could provide reliable and meaningful additional information regarding health effects from criteria air pollutants generated by individual projects do not currently exist.

Thus, considering the conclusion of Impact 4.3-1, that the proposed project would not obstruct attainment of CAAQS and NAAQS, and with implementation of all APMs as well as Mitigation Measures 4.3-1(a) and 4.3-1(b), the proposed project would not expose sensitive receptors to excess concentrations of criteria pollutants causing substantial adverse health impacts.

Conclusion

Table 4.3-20 demonstrates that project-related CO emissions would not exceed the one-hour or eight-hour thresholds, and, as such, the project would not expose sensitive receptors to excess concentrations of CO. Table 4.3-21 demonstrates that emissions of TACs would not result in health risks to nearby receptors in excess of NSAQMD thresholds. Furthermore, criteria pollutant emissions from project construction, operations, and reclamation would not expose receptors to substantial concentrations of pollutants. Implementation of the ASUR Plan would ensure that underground mining activities and use of project-generated fill would not result in the emission of asbestos containing dust. Nevertheless, an ADMP would be required pursuant to the CARB ATCM for Construction, Grading, Quarrying and Surface Mining Operations. Without implementation of an ADMP, the project could result in a ***significant*** impact with respect to exposing receptors to substantial concentrations.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.3-2 would ensure project consistency with the CARB ATCM for Construction, Grading, Quarrying and Surface Mining Operations by requiring preparation and implementation of an ADMP, even though the ASUR Plan is specifically designed to prohibit significant levels of asbestos from reaching the surface. The following mitigation measure would ensure that the potential impact would be *less-than-significant*.

4.3-2 ***Asbestos Dust Mitigation Plan.***
Prior to the initiation of any clearing, grading, or construction activities, Rise Grass Valley Inc. shall submit an Asbestos Dust Mitigation Plan (ADMP) to Northern Sierra Air Quality Management District (NSAQMD) for review and approval. The provisions of the ADMP shall be initiated at the beginning of the project (before clearing or grubbing) and maintained for the duration of the project. The Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (Title 17 of the California Code of Regulations [CCR] Section 93105) contains

specific requirements for the preparation of an ADMP. Conditions of the ADMP shall include the following:

- *Provisions of this ADMP shall apply throughout construction, operation, and reclamation activities, except as specified otherwise.*
- *All visible track-out material (from vehicles leaving the work site) must be removed from all public roads at least once per day using wet sweeping or a HEPA-filter-equipped vacuum device.*
- *A gravel pad designed and maintained to effectively clean tires of exiting vehicles, a wheel wash system, or a minimum of 50 feet of pavement must be placed between the construction area and any public road, and must be used by all exiting vehicles (including personal vehicles and delivery trucks) throughout the duration of the project.*
- *All active storage piles shall be adequately wetted or covered with plastic to ensure that no visible dust crosses the property boundary. Potential dust emissions from disturbed surface areas and storage piles that will remain inactive for more than seven days shall be controlled to completely prevent visible dust from crossing the property boundary by at least one of the following methods (pursuant to [e][4][C] of the ATCM):*

    a. *Keeping the surface adequately wetted;*
    b. *Applying chemical dust suppressants or chemical stabilizers according to the manufacturer's recommendations and all applicable regulations;*
    c. *Covering with tarp(s) or vegetative cover;*
    d. *Installing wind barriers of 50 percent porosity around three sides of all storage piles; and/or*
    e. *Installing wind barriers across open areas and between the project sites and any adjacent occupied residential or business property.*

- *The maximum vehicle speed on all unpaved parts of the project sites must be clearly posted and must not exceed 15 miles per hour.*
- *All areas where vehicles drive on the site, at all times when the area is subjected to vehicle or equipment traffic, shall be watered every two hours or kept adequately wetted to prevent visible dust emissions from leaving the property boundary, except where a gravel cover has been established that has a silt content of less than five percent and an asbestos content of less than 0.25 percent and is at least three inches thick.*
- *For all earthmoving activities, at least one of the following methods of dust control shall be implemented, pursuant to (e)(4)(E) of the ATCM:*

    a. *Pre-wetting the ground to the depth of anticipated cuts; and/or*

b. Suspending grading operations when visible dust emissions from any aspect of the grading (including tires, fans, and exhaust) cross the property line.

- *Trucks used for hauling material off site shall be maintained such that spillage cannot occur from holes or other openings.*
- *All loads to be hauled off site shall be adequately wetted to prevent visible dust from escaping during transportation, pursuant to (e)(4)(F)2 of the ATCM, and shall either:*

  a. be completely covered with tarps; or
  b. have at least six inches of freeboard on the sides of the bed of the vehicle, with no excavated material extending above the edges of the vehicle bed at any point.

- *Upon completion of the project, disturbed surface areas shall be stabilized, pursuant to (e)(4)(G) of the ATCM, using one or more of the following methods:*

  a. establishment of a vegetative cover;
  b. placement of at least three inches of material having an asbestos content of 0.25 percent asbestos or less as measured using an approved asbestos bulk test method; and/or
  c. paving.

- *The NSAQMD's Air Pollution Control Officer may require bulk sampling at any time. If bulk sampling is required, the sampling shall be performed in accordance with California Air Resources Board Test Method 435. Where Method 435 specifies "serpentine," this shall apply to gravel, decomposed ultramafic rock, and any other material as specified by the Air Pollution Control Officer.*
- *The NSAQMD's Air Pollution Control Officer may require air monitoring at any time, and may modify the ADMP on the basis of results of the monitoring. If required, provisions of air monitoring shall be determined in coordination with the NSAQMD.*
- *Before site disturbance (e.g., clearing, grubbing, or grading) begins, the NSAQMD shall be informed by telephone at (530) 274-9360 of the exact day on which site disturbance will commence.*

4.3-3 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Based on the analysis below, the impact is *less than significant*.

Impacts associated with project emissions of criteria air pollutants and toxic air contaminants are addressed under Impacts 4.3-1 and 4.3-2. In consideration of the project's potential to result in other emissions, analysis in Impact 4.3-3 considers the potential for the project to result in impacts related to the emission of odors.

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of the location receiving the odors each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Some of these activities, for instance the use of off-road diesel-powered equipment, would continue with project operations. However, such odors would disperse rapidly from the point of origin within the project sites and would generally occur at magnitudes that would not affect substantial numbers of people.

Land uses and industrial operations that typically are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, solid waste transfer stations, rendering plants, dairies, and fiberglass molding. The project does not propose any of the aforementioned odor-generating land uses.

The possibility exists that objectionable odors could be produced by the pumped mine water or by sulfide flotation associated with ore processing. The aforementioned sources are discussed in further detail below.

Mine Water Treatment

Groundwater pumped from the underground mine would go through an on-site water treatment process before being discharged. To determine the potential for odor generation from mine water treatment, two similar existing treatment systems in Nevada County, at the Empire Mine and the North Star Mine, were examined. Nevada County evaluated the North Star treatment system in 2015 before approval of the Mitigated Negative Declaration for the project (Nevada County 2015). Additionally, Nevada County planning staff assessed the Empire Mine site for odors, and odors were not identified. It is understood that odors do not occur because the water is not stagnant and does not contain biological contaminants. The naturally occurring mineral contaminants of manganese, iron, and arsenic, including their oxidized forms, do not emit an odor (Nevada County 2015).

The Empire Mine and North Star treatment plants are passive systems, whereas the proposed project would include an active treatment method. The chemicals proposed to be used in water treatment for the proposed project were evaluated for their potential to create odors, and only sodium hypochlorite was reported to have an odor (chlorine odor). Sodium hypochlorite is added at the Water Treatment Plant and, therefore, would only have the potential to occur inside the Water Treatment Plant building. Additionally, the water treatment process includes the use of granulated activated carbon filters, which serve to remove potential odors from the treated water.

Finally, ammonia derived from explosive residues could be present in the mine water pumped from the mine; however, any ammonia present, if any, would exist in negligible

quantities and any potential odors would disperse rapidly from the project site. Thus, any odors associated with ammonia would generally occur at magnitudes that would not affect substantial numbers of people.

For the foregoing reasons, mine water treatment associated with the proposed project would result in a less-than-significant odor impact.

Ore Processing

The mineral process plant within the on-site Process Plant building would use reagents for the flotation of sulfide minerals. The proposed chemicals to be used in flotation were evaluated for their potential to create odors. The frother reagent (MIBC) is reported to have a mild alcohol odor, whereas one of the promoter reagents (AEROFLOAT) has a mild alcohol and sulfur odor, and the other promoter reagent (AEROPHINE) does not produce any odor.

The flotation reagents are added during mineral processing and, therefore, would only have the potential to occur inside the Process Plant building. The Process Plant building would be serviced by a centralized heating, ventilation, and air conditioning system and, as feasible, emissions from processing activities at the site would be adequately contained therein. Potential odor from the use of MIBC and AEROFLOAT would disperse rapidly from the project site and would generally occur at magnitudes that would not affect substantial numbers of people.

Based on the preceding considerations, mineral processing associated with the proposed project would result in a less-than-significant odor impact.

Conclusion

Based on the above, implementation of the proposed project would not have the potential to result in emissions leading to odors, which could adversely affect a substantial number of people, and this impact would be ***less than significant***.

Mitigation Measure(s)

None required.

4.3-4 Result in the inefficient or wasteful use of energy. Based on the analysis below, the impact is *less than significant*.

Implementation of the proposed project would result in the consumption of energy resources during construction, operation, and reclamation activities. The principal forms of energy consumed would be electricity, gasoline, and diesel. The foregoing forms of energy would be consumed by off-road equipment, facilities, stationary generators, and on-road vehicles. Off-road equipment (such as graders, excavators, cranes, et.) and stationary generators would generally be powered by diesel; however, some equipment, such as boring machines, air compressors, locomotives, pumps, and ventilation equipment would be electrically powered. On-road vehicles would demand either diesel or gasoline, with lighter duty vehicles often requiring gasoline while haul trucks and heavier duty vehicles typically require diesel fuel.

In addition to reducing air quality and GHG emissions, APM-AQ-1, Exhaust Emission Controls, would serve to avoid inefficient energy consumption in several ways. First, APM-AQ-1 commits the project applicant to using Tier 4 Final equipment throughout project construction, operation, and reclamation. The commitment to the use of Tier 4 engines is further required by Mitigation Measure 4.3-1(b) of this EIR. As a result of the improvements integrated into Tier 4 Final engines (relative to lower tier engines), Tier 4 Final compliant engines are generally the most fuel-efficient models currently available. Consequently, by using Tier 4 compliant engines throughout the construction, operation, and reclamation processes, fuel use by off-road equipment would be minimized, and the off-road equipment used in project implementation would not be inefficient.

As a further means of increasing the efficiency of fuel use associated with project implementation, APM-AQ-1 includes measures to minimize vehicle idling where practical. In general, reducing idling reduces the amount of run-time for engines, which decreases the amount of fuel consumed. Reducing idling time would, therefore, avoid inefficient energy consumption related to off-road vehicle use. Similarly, maintaining equipment in accordance with manufacturer's specifications, as required by APM-AQ-1, ensures that equipment continues to operate efficiently.

In addition to the energy efficiency requirements focused on reducing fuel consumption discussed above, construction and operations would also require operation of electrically powered equipment. Use of grid-supplied electricity provides an opportunity for the use of renewably generated electricity to power project operations. Unlike fossil-fueled equipment, electric equipment may receive electrical power from sources such as solar, hydro-electric, wind, or biomass, which are sustainable and renewable. The electricity provider for the project area, PG&E, currently utilizes a variety of renewable energy sources to provide electricity to the grid. Thus, use of electrically powered equipment would reduce the project's dependence on fossil-fuel energy supplies and would not be considered an inefficient source of energy demand. Although electricity demand for the project would primarily be met through grid-supplied electricity, in certain instances, such as during power outages or emergency electrical shut-offs, the use of emergency generators would be necessary to provide continued electrical power. Despite the emergency generators being diesel fueled, both of the generators used during project construction and all four of the generators used during project operations, if needed, would be Tier 4 Final engines. As discussed above, Tier 4 Final engines are the most efficient engines currently available, which would ensure that the consumption of fuel by the generators would be minimized to the extent feasible. Moreover, the generators would be used to provide continued operations to critical mining infrastructure such as pumps, locomotives, and ventilation systems, which are critical to the safety of miners and efficient operation of the mine. Thus, the use of electrically powered equipment would not result in the inefficient or wasteful consumption of energy.

All stages of project implementation would require on-road vehicle use. Light- and heavy-duty vehicles would be used by employees commuting to and from the project sites, as well as for the movement of goods, products, and equipment to and from the project sites. On-road vehicles currently use a variety of fuels including gasoline, diesel, and electricity. California has implemented strict regulations related to fuel efficiency standards for all types of vehicles, and to encourage the proliferation of

electrically powered vehicles. Project-related vehicles, including those operated and owned by the project applicant, would be required to meet all existing and future state standards, which would ensure that all vehicles operated as part of the project are fuel- and energy-efficient. Finally, by using project-generated fill at the Centennial and Brunswick sites, the project would provide a local source of fill materials to both sites, which would minimize the length of travel for fill material. Providing local sources of fill materials reduces the energy required to transport material, and provides an energy-efficient supply of construction materials.

Based on the above, APM-AQ-1 and Mitigation Measure 4.3-1(b) would ensure that only high-efficiency off-road equipment is used during project construction, operation, and reclamation. Electrically powered equipment used on-site would primarily be served by grid-supplied electricity, which would originate from an increasingly renewably sourced mix of energy, and, if emergency power is required, the emergency generators would be Tier 4 Final compliant engines. On-road vehicles are required to meet stringent state and federal requirements related to fuel efficiency. All project vehicles would be required to comply with the existing requirements, which would ensure that on-road vehicles would be operated in an energy efficient manner. Accordingly, the proposed project would not result in an inefficient, wasteful, and unnecessary consumption of energy, and the impact would be ***less than significant***.

Mitigation Measure(s)

None required.

4.3-5 Conflict with a State or local plan for renewable energy or energy efficiency. Based on the analysis below, the impact is *less than significant*.

State regulations promote the generation of renewable energy and encourage energy efficiency through requirements placed on utility providers and strict development standards. For instance, the RPS require utilities, including PG&E, to procure an increasing proportion of electricity from renewable sources. Ultimately the RPS requirements mandate that all electricity produced within the state be renewably sourced by the year 2045. The proposed project is anticipated to result in increased electricity consumption of 16,513 MWh during the year of construction and 49,613 MWh annually during operations. Reclamation activity is not anticipated to create a substantial demand for electrical power. Although the project would increase electricity demand, the increased demand is not anticipated to conflict with PG&E's ability to meet the RPS requirements. In fact, PG&E has previously exceeded the RPS requirements as recently as the year 2017; in 2017 PG&E exceeded the RPS requirements by four percent by providing 33 percent of all delivered electricity through renewable sources. PG&E plans to increase the proportion of RPS compliant renewable sources of electricity in line with state requirements in the future.[42] Project electricity demand would not inhibit PG&E's continued compliance with RPS.

[42] PG&E. *Renewable Energy*. Available at: Renewable Energy - PG&E Corporate Responsibility and Sustainability Report 2017. Accessed December 2020.

Another key state initiative related to energy efficiency is the goal of increasing energy efficiency requirements for new structures. To that end, the State has adopted several regulations including the California Building Energy Efficiency Standards, the CALGreen Standards, the California Building Standards Code (CBSC) and Title 24 and 20 of the CCR, all of which include mandatory and voluntary measures that are intended to increase energy efficiency and decrease net energy demand. All structures developed as part of the proposed project would be required to adhere to the California Building Energy Efficiency Standards, CALGreen, and various other building standards contained in the California Building Standards Code and Titles 24 and 20 of the CCR. Adherence to the foregoing requirements would ensure that construction of the project would not interfere with plans for energy efficiency.

In addition to the State plans for renewable energy generation and energy efficiency discussed above, Nevada County adopted the Energy Action Plan (EAP) in 2019. The EAP includes voluntary actions that are intended to meet the goals of reducing Countywide annual electricity demand by 51 percent and natural gas consumption by 30 percent in the year 2035, relative to a year 2005 baseline. The target energy reductions are anticipated to be achieved through increased energy efficiency, increased renewable energy production, and measures related to water supply sustainability. It should be noted that the EAP is not a Qualified GHG Emissions Reduction Plan under CEQA pursuant to the requirements outlined in the CEQA Guidelines, Section 15183.5(D); therefore, no CEQA document can tier from the County EAP. Nevertheless, the compliance of the project with EAP strategies has been analyzed and presented in Table 4.3-22.

Table 4.3-22
Project Consistency with Nevada County Energy Action Plan Energy Reduction Measures

Strategy Number	Strategy Description	Project Consistency
Goal 1: Energy Efficiency – Improve Energy Efficiency in Buildings, Facilities, and Nevada County Operations		
Strategy 1.1	Expand outreach and education on existing energy efficiency practices, programs, and financing options for residential and non-residential utility customers.	Nevada County (County) to implement. Not applicable to the project.
Strategy 1.2	Improve compliance with current California Building Energy Efficiency Standards (Title 24, Part 6) by providing informational materials when available.	Consistent. Project would comply with Title 24, Part 6 standards in applicable buildings. County to implement the provision of informational materials.
Strategy 1.3	Continue to increase the energy efficiency of County buildings, facilities, and operations.	County to implement. Not applicable to the project.
Goal 2: Renewable Energy – Expand the Utilization of Renewable Energy and Resilience Measures		
Strategy 2.1	Prepare for the inclusion of renewable energy systems in new construction and large retrofit projects in order to meet California Zero Net Energy Goals by providing informational material when available.	Pertains to solar photovoltaic systems in all residential construction and large retrofit projects. County to implement the provision of informational

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Table 4.3-22
Project Consistency with Nevada County Energy Action Plan Energy Reduction Measures

Strategy Number	Strategy Description	Project Consistency
		materials. Not applicable to the project because the project consists of mining activity and industrial type development.
Strategy 2.2	Encourage renewable energy projects through education, outreach, and local leadership.	County to implement. Not applicable to the project.
Strategy 2.3	Encourage energy storage and grid optimization infrastructure projects that support local renewable energy systems and community resilience.	Pertains to energy storage and grid optimization infrastructure projects. Not applicable to the project.
Goal 3: Water Energy – Encourage the Efficient and Safe Transportation and Use of Water Resources		
Strategy 3.1	Improve and increase the County's outreach and education efforts in collaboration with Nevada Irrigation District and other water agencies by providing information on existing and future water efficiency and conservation programs.	Consistent. Project activities would comply with water efficiency Title 24, Part 11 (CALGreen Code) standards in applicable buildings, including installing toilets, urinals, faucets, and showerheads subject to the CALGreen maximum flow rates. County to implement the provision of informational materials.
Strategy 3.2	Coordinate with Nevada Irrigation District (NID) and other water agencies to participate in proactive leak detection programs in order to reduce water losses.	County and NID to implement. Not applicable to the project.
Strategy 3.3	Continue to improve the efficiency of County Wastewater Treatment operations and encourage and collaborate with Nevada Irrigation District and other water agencies to improve the efficiency of agency water operations.	County to implement. Not applicable to the project.

Source: Dudek, 2021.

As shown in Table 4.3-22, the majority of strategies within the EAP are directed at the County level or other types of projects (e.g., residential or commercial projects, renovations of existing developments, etc.). Nevertheless, the proposed project complies with all applicable strategies from the EAP.

Considering the above, the proposed project is not anticipated to interfere with any State adopted plans for renewable energy production or energy efficiency, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. The geographic context for the cumulative air quality analysis includes Nevada County and surrounding areas within the portions of the MCAB designated nonattainment for ozone and/or PM_{10}.

As mentioned above, global climate change is, by nature, a cumulative impact. Emissions of GHG contribute incrementally to adverse environmental effects associated with global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). Because climate change is a global phenomenon, a single project could not generate enough GHG emissions to contribute noticeably to climate change. However, the combination of GHG emissions from a project with other past, present, and future projects (including global anthropomorphic activities) could contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA, and due to the regulatory context pertaining to GHG emissions and global climate change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

4.3-6 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. Based on the analysis below, the project's incremental contribution to this significant cumulative impact is *less than cumulatively considerable*.

Past, present, and future development projects may contribute to adverse air quality impacts in the MCAB on a cumulative basis. In developing thresholds of significance for air pollutants, NSAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, the project's emissions would be considered cumulatively considerable, resulting in a significant adverse incremental contribution to the region's existing air quality conditions.[43] Therefore, if the project's emissions are below the NSAQMD's thresholds, then the project would not result in a cumulatively considerable increase of any criteria air pollutant.

Impact 4.3-1 compares the estimated project emissions to the NSAQMD's thresholds of significance under Criterion 1. In particular, Table 4.3-17presents the estimated unmitigated project emissions from construction, operation, and reclamation. Considering the level of emissions presented in Table 4.3-17, the project is required to comply with Mitigation Measures 4.3-1(a) and 4.3-1(b) in order to reduce emissions and comply with the NSAQMD's applicable air quality plans. Implementation of Mitigation Measures 4.3-1(a) and 4.3-1(b) would reduce project-related emissions to the levels presented in Table 4.3-19. According to the NSAQMD, implementation of Measures 4.3-1(a) and 4.3-1(b) would ensure that implementation of the project would not conflict with the applicable air quality plans.

[43] Dudek. *Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Idaho Maryland Mine Project Nevada County, California* [pg. 40]. November 2021.

Therefore, emissions resulting from the implementation of the proposed project would not represent a cumulatively considerable contribution of any criteria pollutant for which the project region is in nonattainment. As such, the impact would be ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

4.3-7 Generation of GHG emissions that may have a significant impact on the environment. Based on the analysis below and with implementation of mitigation, the project's incremental contribution to global GHG emissions and climate change is *less than cumulatively considerable*.

Implementation of the project would contribute to increases of GHG emissions that are associated with global climate change during construction, operation, and reclamation. Construction of the project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, worker vehicles, and emergency generator testing and maintenance. Additionally, GHG emissions would be associated with PG&E-supplied electricity for the underground mine equipment, water treatment, and raise boring. Sources of GHG emissions generated during project operations would include off-road equipment, on-road vehicles, emergency generator testing and maintenance, underground blasting, electricity use associated with facility consumption, NID conveyance of water to residences along the potable water line, septic field treatment of wastewater, solid waste, and carbon emissions associated with tree removal. Emissions from reclamation activities would be associated with the use of off-road vehicles as well as employee commutes. Assumptions associated with project construction-related, operational, and reclamation-related GHG emission calculations are provided in the Method of Analysis section above, as well as in the Air Quality and GHG Report included as Appendix E.1 to this EIR.

The estimated unmitigated annual emissions from construction, operations, and reclamation activity are presented in Table 4.3-23.

Table 4.3-23
Estimated Annual Greenhouse Gas Emissions (Metric Tons)

Emission Source	CO_2	CH_4	N_2O	CO_2e
Year 2021 – Construction/Dewatering				
Emergency Generators[a]	301.76	0.01	0.00	303.44
Off-Road Equipment[b]	1,029.94	0.30	0.13	1,077.25
On-Road Vehicles – Off-Site	496.35	0.01	0.04	508.67
On-Road Vehicles – On-Site	11.61	0.00	0.00	12.22
PG&E-Supplied Electricity	1,527.86	0.25	0.03	1,542.97
NID-Supplied Potable Water	3.56	0.00	0.00	3.60
Total Annual Emissions				**3,444.55**
GHG Threshold				*1,100*
Significant (Yes/No)?				Yes

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Table 4.3-23
Estimated Annual Greenhouse Gas Emissions (Metric Tons)

Emission Source	CO_2	CH_4	N_2O	CO_2e
Year 2022 to 2026 – Mining, Brunswick Industrial Site Operations, Fill Placement at Centennial				
Emergency Generators[a]	603.53	0.02	0.01	606.88
Off-Road Equipment[b]	721.54	0.21	0.09	754.68
On-Road Vehicles – Off-Site	900.61	0.02	0.07	922.80
On-Road Vehicles – On-Site	71.40	0.01	0.01	75.16
Logging/ Chipping – Off-Road Equipment	1.07	0.00	0.00	1.10
Logging/ Chipping – On-Road Vehicles Off-Site	4.52	0.00	0.00	4.73
Logging/ Chipping – On-Road Vehicles On-Site	0.02	0.00	0.00	0.02
Underground Blasting/Mining[c]	68.79	0.00	0.00	69.05
PG&E-Supplied Electricity	4,590.43	0.74	0.09	4,635.82
NID-Supplied Potable Water	5.48	0.00	0.00	5.53
Wastewater Septic Field	—	0.33	0.00	8.52
Solid Waste	41.55	2.46	—	102.94
Tree Removal – Carbon Loss[d]	33.30	—	—	33.30
Total Annual Emissions				**7,221.64**
GHG Threshold				*10,000*
Significant (Yes/No)?				No
Year 2027 to 2032 – Mining, Brunswick Industrial Site Operations, Fill Placement at Brunswick				
Emergency Generators[a]	603.53	0.02	0.01	606.88
Off-Road Equipment[b]	721.55	0.21	0.09	754.27
On-Road Vehicles – Off-Site	680.59	0.01	0.05	694.55
On-Road Vehicles – On-Site	82.35	0.00	0.01	86.51
Logging/ Chipping – Off-Road Equipment	1.07	0.00	0.00	1.10
Logging/ Chipping – On-Road Vehicles Off-Site	4.52	0.00	0.00	4.73
Logging/ Chipping – On-Road Vehicles On-Site	0.02	0.00	0.00	0.02
Underground Blasting/Mining[c]	68.79	0.00	0.00	69.05
PG&E-Supplied Electricity	4,590.43	0.74	0.09	4,635.82
NID-Supplied Potable Water	1.92	0.00	0.00	1.94
Wastewater Septic Field	—	0.33	0.00	8.52
Solid Waste	41.55	2.46	—	102.94
Tree Removal – Carbon Loss[d]	33.30	—	—	33.30
Total Annual Emissions				**6,999.63**
GHG Threshold				*10,000*
Significant (Yes/No)?				No
Year 2033 to 2102 – Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location				
Emergency Generators[a]	603.53	0.02	0.01	606.88
Off-Road Equipment[b]	395.26	0.05	0.02	402.44
On-Road Vehicles – Off-Site	2,998.79	0.01	0.42	3,123.46
On-Road Vehicles – On-Site	54.16	0.00	0.01	56.89
Underground Blasting/Mining[c]	68.79	0.00	0.00	69.05
PG&E-Supplied Electricity	4,590.43	0.74	0.09	4,635.82

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Table 4.3-23
Estimated Annual Greenhouse Gas Emissions (Metric Tons)

Emission Source	CO_2	CH_4	N_2O	CO_2e
NID-Supplied Potable Water	1.92	0.00	0.00	1.94
Wastewater Septic Field	—	0.33	0.00	8.52
Solid Waste	41.55	2.46	—	102.94
Tree Removal – Carbon Loss[d]	33.30	—	—	33.30
Total Annual Emissions				**9,041.23**
GHG Threshold				*10,000*
Significant (Yes/No)?				No
Year 2103 – Reclamation				
Off-Road Equipment[b]	25.86	0.00	0.00	26.02
On-Road Vehicles – Off-Site	19.61	0.00	0.00	20.07
Total Annual Emissions				**46.09**
GHG Threshold				*10,000*
Significant (Yes/No)?				No

Totals may not sum due to rounding.

[a] The diesel emergency generators were assumed to operate up to a maximum of 100 hours per year for routine testing and maintenance, per the CARB ATCM for Stationary Compression Ignition Engines.

[b] Accounts for APM-AQ-1 (Exhaust Emission Controls), including Tier 4 Final equipment owned by Rise Grass Valley Inc and electricity needed for underground equipment.

[c] Includes GHG emissions from the combustion of ANFO and detonators for blasting.

[d] Carbon loss was estimated for 24 acres of tree removal, then amortized over the anticipated 80-year project life.

Source: Dudek, 2021.

As shown in Table 4.3-23, the project would not exceed the applied threshold of 10,000 MT CO_2e per year during operations and reclamation. However, the project would exceed the 1,100 MT CO_2e per year threshold during construction.

Therefore, the proposed project would not be considered to generate GHG emissions that would have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs during operations and reclamation. However, project construction would have the potential to generate GHG emissions that could have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and the project's incremental contribution of GHG emissions would be ***cumulatively considerable***.

Mobile Source GHG Emissions by Air District

As discussed in Impact 4.3-1, for the purpose of this EIR, all mobile source emissions generated by the project are assumed to occur within the NSAQMD jurisdictional boundaries. Assuming all mobile source GHG emissions are included in the project's GHG emissions inventory prior to comparing emissions to the applied CEQA GHG threshold represents a conservative assumption. Nonetheless, due to the assumed trip length for some project vehicle trips, portions of project trips and associated mobile source emissions could occur outside of the NSAQMD jurisdictional boundaries and within other air district boundaries. Accordingly, to facilitate full public disclosure and to present the magnitude of potential GHG emissions occurring within other air districts, off-site mobile source emissions for the Year 2033 to 2102 – Mining,

Brunswick Industrial Site Operations, Fill Placement at Off-Site Location scenario by air district are presented by air district herein. GHG emissions result in global effects; accordingly, the location of the GHG emission source is irrelevant from a scientific perspective. However, because GHG emissions are compared to the lead agency applied numeric threshold, GHG emissions are separated by air district for disclosure and informational purposes. For this GHG emission estimation, only running exhaust emissions were included; starting and idling emissions, which are minor, as excluded as the focus is on the VMT rather than the ultimate origin and/or destination of each trip and paved road dust do not result in GHG emissions.

Table 4.3-24 presents the estimated annual project-generated off-site mobile source GHG emissions by air district for informational purposes only (The emissions presented in Table 4.3-24 are accounted for in Table 4.3-23, above, in "On-Road Vehicle" category under the "Year 2033 – 2102 Emissions for Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location" scenario. Combined emissions by air district in Table 4.3-24 are not identical to the Table 4.3-23 data due to rounding and inclusion in Table 4.3-24 of running exhaust and paved road emissions only.)

Table 4.3-24
Estimated Annual Off-Site Mobile Source Greenhouse Gas Emissions by Air District (Metric Tons)

Year 2033 to 2102 – Mining, Brunswick Industrial Site Operations, Fill Placement at Off-Site Location

Air District	CO_2	CH_4	N_2O	CO_2e
NSAQMD	1,074.79	0.00	0.11	1,108.93
PCAPCD	1,084.55	0.00	0.16	1,135.37
SMAQMD	756.02	0.00	0.11	791.44
YSAQMD	26.55	0.00	0.00	27.79
BAAQMD	41.55	0.00	0.01	43.50
Total	**2,983.46**	**0**	**0.39**	**3,107.03**

Notes: Combined emissions by air district do not match total project-generated mobile source emissions due to rounding and inclusion of running exhaust and paved road emissions only.

Source: Dudek, 2021.

Mitigation Measure(s)

Implementation of the following mitigation measures would ensure that construction-related emissions would be reduced sufficiently to ensure that the project's incremental contribution of GHG emissions would be *less than cumulatively considerable*.

4.3-7(a) ***Construction GHG Emissions Reductions.***
To reduce greenhouse gas (GHG) emissions generated during project construction from construction equipment, the following measures shall be incorporated into the project construction drawings:

a) Properly tune and maintain all construction equipment in accordance with manufacturer's specifications;

b) *Where feasible, employ the use of electrical or alternative fueled (i.e., non-diesel) construction equipment, including forklifts, concrete/industrial saws, pumps, aerial lifts, air compressors, and other comparable equipment types to the extent commercially available;*
c) *To reduce the need for electric generators and other fuel-powered equipment, provide on-site electrical hookups for the use of hand tools such as saws, drills, and compressors used for building construction;*
d) *Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes;*
e) *Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products utilized should be certified through a sustainable forestry program; and*
f) *Minimize the amount of concrete for paved surfaces or utilize a low carbon concrete option.*

4.3-7(b) ***Carbon Offsets – Construction Emissions.***
Rise Grass Valley Inc. (Rise) shall retire carbon offsets in a quantity sufficient to offset the project's construction greenhouse gas (GHG) emissions to below the 1,100 metric ton carbon dioxide equivalent (MT CO_2e) per year construction threshold, consistent with the performance standards and requirements set forth below. Specifically, prior to Nevada County's (County) issuance of the project's first grading permit, Rise shall retire carbon offsets equaling 2,345 MT CO_2e, which was calculated by subtracting 1,100 MT CO_2e (threshold) from the construction emissions generated by the project.

Carbon Offset Standards – Eligible Registries, Acceptable Protocols and Defined Terms:
"Carbon offset" shall mean an instrument, credit or other certification verifying the reduction of GHG emissions issued by the Climate Action Reserve, the American Carbon Registry, or Verra (previously, the Verified Carbon Standard). This shall include, but is not limited to, an instrument, credit or other certification issued by these registries for GHG reduction activities within the Nevada County region. The Project shall neither purchase offsets from the Clean Development Mechanism (CDM) registry nor purchase offsets generated under CDM protocols. Qualifying carbon offsets presented for compliance with this mitigation measure may be used provided that the evidence required by the "Reporting and Enforcement Standards" below is submitted to the County demonstrating that each registry shall continue its existing practice of requiring the following for the development and approval of protocols or methodologies:

i) *Adherence to established GHG accounting principles set forth in the International Organization for Standardization (ISO) 14064, Part 2 or the World Resources Institute/World Business Council for*

Sustainable Development (WRI/WBCSD) Greenhouse Gas Protocol for Project Accounting; and

ii) *Oversight of the implementation of protocols and methodologies that define the eligibility of carbon offset projects and set forth standards for the estimation, monitoring and verification of GHG reductions achieved from such projects. The protocols and methodologies shall:*

   a. *Be developed by the registries through a transparent public and expert stakeholder review process that affords an opportunity for comment and is informed by science;*
   b. *Incorporate standardized offset crediting parameters that define whether and how much emissions reduction credit a carbon offset project should receive, having identified conservative project baselines and the length of the crediting period and considered potential leakage and quantification uncertainties;*
   c. *Establish data collection and monitoring procedures, mechanisms to ensure permanency in reductions, and additionality and geographic boundary provisions; and,*
   d. *Adhere to the principles set forth in the program manuals of each of the aforementioned registries, as such manuals are updated from time to time.*
   e. *Be approved by the California Air Resources Board, and be compliant with 17 CCR § 95972.*

Further, any carbon offset used to reduce the project's GHG emissions shall be a carbon offset that represents the past or forecasted reduction or sequestration of one MT of CO_2e that is "not otherwise required" (CEQA Guidelines Section 15126.4[c][3]). Each carbon offset used to reduce GHG emissions shall achieve additional, real, permanent, quantifiable, verifiable, and enforceable reductions, which are defined for purposes of this mitigation measure as follows:

i) *"Additional" means that the carbon offset is not otherwise required by law or regulation, and not any other GHG emissions reduction that otherwise would occur;*
ii) *"Real" means that the GHG reduction underlying the carbon offset results from a demonstrable action or set of actions, and is quantified under the protocol or methodology using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources and sinks within the boundary of the applicable carbon offset project, uncertainty, and the potential for activity-shifting leakage and market-shifting leakage;*
iii) *"Verifiable" means that the GHG reduction underlying the carbon offset is well documented, transparent and set forth in a document prepared by an independent verification body that is accredited through the American National Standards Institute (ANSI);*
iv) *"Permanent" means that the GHG reduction underlying the carbon offset is not reversible; or, when GHG reduction may be reversible,*

that a mechanism is in place to replace any reversed GHG emission reduction;

v) *"Quantifiable" means the ability to accurately measure and calculate the GHG reduction relative to a project baseline in a reliable and replicable manner for all GHG emission sources and sinks included within the boundary of the carbon offset project, while accounting for uncertainty and leakage; and*

vi) *"Enforceable" means that the implementation of the GHG reduction activity must represent the legally binding commitment of the offset project developer to undertake and carry it out.*

The protocols and methodologies of the Climate Action Reserve, the American Carbon Registry, and Verra establish and require carbon offset projects to comply with standards designed to achieve additional, real, permanent, quantifiable, verifiable and enforceable reductions. Additionally, the "Reporting and Enforcement Standards" below ensure that the emissions reductions required by this mitigation measure are enforceable against Rise, as the County has authority to hold Rise accountable and to take appropriate corrective action if the County determines that any carbon offsets do not comply with the requirements set forth in this mitigation measure.

The above definitions are provided as criteria and performance standards associated with the use of carbon offsets. Such criteria and performance standards are intended only to further construe the standards under CEQA for mitigation related to GHG emissions (see, e.g., State CEQA Guidelines Section 15126.4(a), (c)), and are not intended to apply or incorporate the requirements of any other statutory or regulatory scheme not applicable to the project (e.g., the Cap-and-Trade Program).

Reporting and Enforcement Standards:
Prior to issuance of requested grading permits, Rise shall submit a report to the County that identifies the quantity of emission reductions required by this mitigation measure, as well as the carbon offsets to be retired to achieve compliance with this measure. For purposes of demonstrating that each offset is additional, real, permanent, quantifiable, verifiable and enforceable, the report shall include: (i) the applicable protocol(s) and methodologies associated with the carbon offsets, (ii) the third-party verification report(s) and statement(s) affiliated with the carbon offset projects, (iii) the unique serial numbers assigned by the registry(ies) to the carbon offsets to be retired, which serves as evidence that the registry has determined the carbon offset project to have been implemented in accordance with the applicable protocol or methodology and ensures that the offsets cannot be further used in any manner.

If the County determines that the project's carbon offsets do meet the requirements of this mitigation measure, the offsets can be used to reduce project GHG emissions and project permits shall be issued. If the County determines that the project's carbon offsets do not meet the requirements of this mitigation measure, the offsets cannot be used to reduce project

GHG emissions and project permits shall not be issued. Additionally, the County may issue a notice of non-consistency and cease permitting activities in the event that the County determines the carbon offsets provided to reduce project GHG emissions are not compliant with the aforementioned standards. In the event of such an occurrence, project permitting activities shall not resume until Rise has demonstrated that the previously provided carbon offsets are compliant with the standards herein or have provided substitute carbon offsets achieving the standards of this mitigation measure in the quantity needed to achieve the required emission reduction.

4.3-8 Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Based on the analysis below, the project's impact is *less than cumulatively considerable*.

Nevada County has not adopted any plans, policies, or regulations that meet the requirements of a Qualified GHG Emissions Reduction Plan under CEQA section 15183.5(D). Although the County's EAP is intended to reduce energy reduction within the County, which can directly or indirectly lead to reductions in GHG emissions, because the EAP is not a Qualified GHG Emissions Reduction Plan, the project's compliance with the EAP is not directly relevant to this discussion of plans specifically intended to reduce GHG emissions. Instead, the EAP is discussed elsewhere within this Chapter, specifically Impacts 4.3-5 and 4.3-9. Thus, to assess the project's potential for creating a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, the project's consistency with the NCTC's 2015–2035 RTP, the CARB's Scoping Plan, SB 32, and EO S-3-05 is discussed below.

Project Consistency with the NCTC's 2015-2035 RTP

The NCTC's 2015–2035 RTP is intended to reduce air pollutant and GHG emissions associated with future growth by increasing the efficiency of the transportation system and increasing alternative transportation options. As described in the 2015–2035 RTP, the mining, logging, and construction industry in Nevada County has experienced an increase of 390 jobs from 2009 to 2014, and is projected to be the fastest-growing market through 2022, with an anticipated 37.4 percent growth rate. As described under Impact 4.3-1, although the project would increase traffic within the project area due to increased employment, projections within the 2015–2035 RTP have identified and accounted for such growth in the mining industry. Therefore, the project would not conflict with the RTP.

Consistency with the CARB's Scoping Plan

As discussed previously, the Scoping Plan (approved by CARB in 2008 and updated in 2014 and 2017) provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. According to the California Natural Resource Agency's *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97*, "[t]he Scoping Plan may not be appropriate for use in determining

the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan." Accordingly, the Scoping Plan is not intended to be used for project-level evaluations. Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most such measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., LCFS), among others.

The Scoping Plan recommends strategies at the statewide level to meet the goals of AB 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. To the extent that these regulations are applicable to the project, the project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law. For instance, vehicles used on-site and for hauling activities will be required to meet existing fleet regulations and emissions standards. Consequently, compliance with the Scoping Plan is ensured through compliance with mandatory, statewide regulations.

Consistency with SB 32 and EO S-3-05

As discussed previously, EO S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. SB 32 establishes a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40 percent below 1990 levels by December 31, 2030. Although established protocols or thresholds of significance for the future year analyses have not been prepared, CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting the aforementioned long-term GHG goals, although the specific path to compliance is unknown.

CARB has expressed optimism regarding both the 2030 and 2050 goals. The CARB states in the First Update to the Climate Change Scoping Plan that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32."[44] Regarding the 2050 target for reducing GHG emissions to 80 percent below 1990 levels, the First Update states the following:

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80% below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary

[44] California Air Resources Board. *First Update to the Climate Change Scoping Plan* [pg. ES2]. May 2014.

> to meet federal air quality standards in 2032, could lead to even greater emission reductions.[45]

In other words, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the 2017 Scoping Plan, which states:

> This Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Plan includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and-Trade Program, which constrains and reduces emissions at covered sources.[46]

In addition, the project is consistent with the NCTC 2015–2035 RTP, and measures in the Scoping Plan, and would not conflict with the state's trajectory toward future GHG reductions. With respect to future GHG targets under SB 32 and EO S-3-05, the CARB maintains the requisite authority to adopt whatever regulations are necessary, beyond the AB 32 horizon year of 2020, to meet SB 32's 40 percent reduction target by 2030 and EO S-3-05's 80 percent reduction target by 2050. The CARB's legal interpretation regarding the ability of the CARB to adopt regulations as necessary to achieve future GHG reduction goals represents the opinion of an expert agency, which provides evidence that future regulations will be adopted to continue GHG reductions on the State's trajectory toward meeting future GHG targets. Because the specific path to compliance for the state regarding the long-term goals will likely require development of technology or other changes that are not currently known or available, specific additional mitigation measures for the project would be speculative and cannot be identified at this time, nor are they required.

Conclusion

Based on the above considerations, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Consequently, the project's impact is ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

[45] California Air Resources Board. *First Update to the Climate Change Scoping Plan* [pg. 34]. May 2014.
[46] California Air Resources Board. *California's 2017 Climate Change Scoping Plan* [pg. 6]. November 2017.

4.3-9 Result in the inefficient or wasteful use of energy or conflict with a State or local plan for renewable energy or energy efficiency. Based on the analysis below, the project's impact is *less than significant*.

Impacts 4.3-4 and 4.3-5 discuss the consumption of energy on a project-level, within the context of existing State plans and regulations, as well as local plans. As discussed previously, the project would involve consumption of diesel, gasoline, and electricity throughout construction, operations, and reclamation. Both the APMs and the mitigation measures within this EIR would act to increase the energy efficiency of project operations, while reducing energy demand from the project. For instance, APM-AQ-1 and Mitigation Measure 4.3-1(b) would ensure that Tier 4 Final engines are used during project construction, operation, and reclamation. Tier 4 Final engines are more fuel-efficient than lower tier engine models, which reduces the total fuel demand for the project. Unnecessary idling would be minimized through APM-AQ-1 to further reduce the potential for wasteful or inefficient use of energy.

All proposed structures would be built in compliance with existing statewide mandatory energy efficiency standards, such as those contained in the California Building Energy Efficiency Standards and the CALGreen Code. Compliance with the energy efficiency standards would reduce the amount of electricity consumed in proposed facilities. State regulations would also work to reduce the amount of energy consumed by on-road vehicles. For instance, State and federal emissions standards and fuel economy standards result in increased fuel efficiency for on-road vehicles. The same building energy efficiency requirements would be met by other cumulative development identified in Chapter 5, Statutorily Required Sections, of this EIR.

There is already a trend in Nevada County regarding increased energy efficiency. According to the Nevada County EAP, since 2010, Nevada County residents and businesses have saved 13,034,571 kWh of electricity and 163,282 therms of natural gas annually from PG&E energy efficiency programs including Nevada City and Grass Valley customers.[47] Increased efficiency will be ensured in the future as cumulative development occurs due to compliance with the State's robust energy efficiency requirements. For example, the 2019 CBSC has begun phasing in Zero Net Energy requirements by requiring residential projects to meet 100% of their electricity needs through rooftop solar. Cumulative residential development would include rooftop solar to meet 100% of each project's electricity demand. In addition, pursuant to 2019 CBSC, new non-residential buildings associated with cumulative development are also required to be solar ready.

Based on the above, implementation of the project in combination with other cumulative development would not result in the wasteful or inefficient use of energy. Because the project would not conflict with a local plan to increase energy efficiency and reduce energy consumption, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

[47] Sierra Business Council. Nevada County Energy Action Plan. February 2019, pg. 21.

Non-CEQA Related Analysis

The information and analysis presented heretofore within this Chapter has focused on the proposed elements of the project, and the foreseeable consequences and impacts of such elements. The information and analysis above properly considers impacts that could occur due to implementation of the project under the routine conditions that existed at the time of release of the Notice of Preparation. However, PG&E has recently begun to intermittently institute Public Safety Power Shutoffs (PSPS) during periods of high fire danger, to reduce the potential for electric utility infrastructure to cause wildfires. PSPS are not scheduled nor are PSPS regular occurrences, but rather are instituted on an as needed basis when weather patterns present a particularly high danger for starting wildfires. Despite the uncertain nature of PSPS, certain aspects of the project must be provided constant electrical power in order to maintain critical function. Consequently, the proposed project would include installation of emergency generators, two during construction and four during operations, that would be permitted by the NSAQMD for emergency use and are critical to the continuing operation of the facility and the safety of the workers during emergency situations, based on the following considerations:

- Ground water continually flows into the underground mine. If the water is not pumped out, the water would very quickly flood the lowest tunnels. Flooding would destroy electrical equipment that was left in place and cause increased work and material waste when the workings would be again dewatered.
- The ventilation system must be continuously on in order to provide airflow through the underground workings. Continuous operation of the ventilation system is necessary to provide a safe environment underground.
- The compressed air system for the underground mine is important for emergency situations where the ventilation system could fail or a fire occur underground and therefore must be kept operational.
- Electric locomotives need to remain functional at all times to move persons and equipment from working headings to the shafts.
- Underground lighting at certain key locations is necessary for safety.
- The hoists must be available for use to move personnel and equipment from the underground to surface. If the hoists did not function the workers would be trapped underground.
- The processing plant recirculates water and ground minerals through the processing systems. The slurry of water and ground minerals must be constantly agitated so that the solids do not settle. If the recirculation machines are turned off during operations, the sand would settle in all of the tanks and pipes which is very costly and time consuming to remediate.
- The water treatment system must remain functional so that water can be treated and discharged.

PSPSs are infrequent (as an example, nine days of power outages annually would be a conservative representation based on the PSPSs in recent years) and emergency generator use may not be needed at all during construction and/or some years of operations. However, for disclosure, maximum daily emissions were estimated for 2,655 hp emergency generator usage during construction (two generators) and operations (four generators), assuming all emergency generators would operate for 24 hours per day. Emissions for the generators were estimated based on the exhaust emission data sheets for the representative Cummins model QSK60-G17, which are Tier 4 Final engines. It should be noted that Tier 4 Final standards represent the highest level of emissions control technology currently available. Although maximum daily emissions have

been estimated, the ultimate number of days per year the generators would operate can not be known with certainty. Because the use of emergency generators is speculative and beyond the reasonable control of Rise Grass Valley, Inc., the emissions presented in Table 4.3-25 are for informational purposes only.[48] Finally, it is important to note that while the use of emergency generators during power-outages such as PSPSs is outside of the scope of CEQA, the regular use of generators for routine maintenance and testing has been considered throughout the entirety of the analysis of the chapter, as such use is not speculative.

Table 4.3-25
Emergency Generator Emissions During 24-Hour Power Outage

Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Construction						
Two Emergency Generators	3.60	71.92	187.00	0.99	0.72	0.71
Operations						
Four Emergency Generators	8.99	179.81	467.50	2.47	1.80	1.78

Source: Dudek, 2021.

In terms of NSAQMD's emissions thresholds, based on the emissions presented in Table 4.3-25, operation of the emergency generators in response to a PSPS occurring during project construction or operation would result in emissions of ROG and PM_{10} in Level A. Emissions of NO_x would be at Level B during project construction, and Level C during operations. Mitigation has been included in this EIR that would apply to all aspects of the project, including the proposed generators. Moreover, Tier 4 Final include the highest level of emissions control technologies commercially available. Consequently, emissions from operations of the generators would be minimized to the maximum extent feasible.

[48] The CEQA Guidelines state that if a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (14 CCR 15145). California courts have consistently held that "an EIR is not required to engage in speculation in order to analyze a worst case scenario." (See Napa Citizens for Honest Government v. Napa County Bd. of Supervisors (2001) 91 Cal.App.4th 342, 373.). This discussion is nonetheless provided in an effort to show good-faith analysis and comply with CEQA's information disclosure requirements.
"The Stationary Engine ATCM allows owners and operators of emergency standby engines to use those engines to provide electrical power when a facility experiences the loss of normal electrical service that is beyond the reasonable control of the facility. Electrical service loss resulting from PSPS events is beyond the reasonable control of most back-up engine owners and operators, and therefore, appropriately- permitted emergency standby engines may be operated to provide electrical power during such an event pursuant to the Stationary Engine ATCM" (CARB, *Use of Back-Up Engines for Electricity Generation During Public Safety Power Shutoff Events*. 2019. Accessed February 2020. Available at: https://ww2.arb.ca.gov/sites/default/files/2019-10/PSPS_Back-up_Power_Guidance.pdf.).