Air Quality, Greenhouse Gas, and Energy Appendix

Air Quality and Greenhouse Gas Background and Modeling Data

AIR QUALITY

Climate/Meteorology

MOJAVE DESERT AIR BASIN

The project site lies within the Mojave Desert Air Basin (MDAB). The MDAB covers the desert portions of San Bernardino County, the eastern portion of Kern County, the northeastern portion of Los Angeles County, and the easternmost portion of Riverside County. The San Bernardino and Riverside portions are under the jurisdiction of the Mojave Desert Air Quality Management District, the Los Angeles portion is within the jurisdiction of the Antelope Valley Air Quality Management District, and eastern Kern County is within the EKAPCD. The City of Ridgecrest is within the Indian Wells Valley (IWV) portion of EKAPCD.

Topography and Climate

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB.

The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada in the north by the Tehachapi Pass (3,800 ft elevation). Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 ft). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (Morongo Valley).

The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley), whose primary channel is the San Gorgonio Pass (2,300 ft) between the San Bernardino and San Jacinto Mountains. During the summer the MDAB is generally influenced by a Pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, because these frontal

systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south.

The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert. The climatological station nearest to the project site with temperature data is the China Lake NAF, California Monitoring Station (ID 041733). The average low is reported at 26.1°F in December while the average high is 101.9 °F in August.[1] Rainfall averages 4.27 inches per year in the project area.[2]

Air Quality Regulations

The proposed project has the potential to release gaseous emissions of criteria pollutants and dust into the ambient air; therefore, it falls under the ambient air quality standards promulgated at the local, state, and federal levels. The project site is in eastern Kern County in the Mojave Desert Air Basin (MDAB) and is subject to the rules and regulations imposed by the EKAPCD, as well as the California Ambient Air Quality Standards (AAQS) adopted by the California Air Resources Board (CARB) and National AAQS adopted by the U.S. Environmental Protection Agency (EPA). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized below.

AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National AAQS and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

[1] Western Regional Climate Center (WRCC). 2020, September 30 (accessed). China Lake NAF, California ([Station ID] 041733): Period of Record Monthly Climate Summary, 02/01/1944 to 06/10/2016. Western U.S. Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1733.

[2] Western Regional Climate Center (WRCC). 2020, September 30 (accessed). China Lake NAF, California ([Station ID] 041733): Period of Record Monthly Climate Summary, 02/01/1944 to 06/10/2016. Western U.S. Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1733.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 1, these pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Ozone (O_3)[3]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	
Respirable Fine Particulate Matter ($PM_{2.5}$)[4]	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)[5]	24 hours	25 µg/m^3	*	Industrial processes.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: California Air Resources Board (CARB). 2016, October 1. Ambient Air Quality Standards. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.
Notes: ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (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. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2 National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
4 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
5 On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- AB 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building and Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

CRITERIA AIR POLLUTANTS

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen dioxide

(NO_2), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that AAQS have been established for them. VOC and oxides of nitrogen (NO_x) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and NO_2 are the principal secondary pollutants. Description of the primary and secondary criteria air pollutants and their known health effects are presented below.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. The MDAB is designated as being in attainment under the California AAQS.[3] It has an attainment/unclassified designation under the National AAQS.[4]

Nitrogen Oxides (NO_x) are a by-product of fuel combustion and contribute to the formation of ground-level O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO_2 produced by combustion is NO, but NO reacts quickly with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 is an acute irritant and more injurious than NO in equal concentrations. At atmospheric concentrations, however, NO_2 is only potentially irritating. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 exposure concentrations near roadways are of particular concern for susceptible individuals, including asthmatics, children, and the elderly. Current scientific evidence links short-term NO_2 exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Also, studies show a connection between elevated short-term NO_2 concentrations and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma [5] The MDAB is designated an attainment area for NO_2 under the California AAQS and an unclassified/attainment area under the National AAQS.[6]

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2.[7] When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_X). Thus, SO_2 is both a primary and secondary criteria air

[3] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[4] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[5] US Environmental Protection Agency (USEPA). 2020, October 14 (accessed). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

[6] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[7] US Environmental Protection Agency (USEPA). 2020, October 14 (accessed). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. The MDAB is designated attainment under the California AAQS and unclassified/attainment under the National AAQS.[8]

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on arid landscapes also contributes substantially to local particulate loading (i.e., fugitive dust). Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems.[9]

The US Environmental Protection Agency's (EPA) scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to health effects and at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. Diesel particulate matter (DPM) is classified by the CARB as a carcinogen. The MDAB is a nonattainment area for $PM_{2.5}$ under California AAQS and unclassified/attainment under National AAQS. [10] The MDAB is a nonattainment area for PM_{10} under California AAQS and a nonattainment area only in the San Bernardino County portion under National AAQS.[11]

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, O_3 has been tied to crop damage, typically in the form of stunted growth and premature death. O_3 can also act as a corrosive, resulting in property damage such as the degradation of rubber products.[12]

[8] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[9] US Environmental Protection Agency (USEPA). 2020, October 14 (accessed). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

[10] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[11] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[12] US Environmental Protection Agency (USEPA). 2020, October 14 (accessed). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

The MDAB is designated nonattainment under the California AAQS (1-hour and 8-hour) and nonattainment in the southwestern desert of San Bernardino County for National AAQS (8-hour). [13]

Volatile Organic Compounds (VOC) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of O_3, the EKAPCD has established a significance threshold for this pollutant.

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits, and lowered IQ.[14] The MDAB is designated in attainment of the California AAQS and unclassified/attainment under the National AAQS for lead. [15]

TOXIC AIR CONTAMINANTS

The public's exposure to air pollutants classified as toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code §7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

[13] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

[14] US Environmental Protection Agency (USEPA). 2020, October 14 (accessed). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

[15] California Air Resources Board (CARB). 2018b, June 12 (reviewed). Area Designations Maps/State and National. https://ww3.arb.ca.gov/desig/adm/adm.htm.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.[16] Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

CARB has promulgated the following specific rules to limit TAC emissions:

- 13 CCR Chapter 10, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling
- 13 CCR Chapter 10, Section 2480, Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools
- 13 CCR Section 2477 and Article 8, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate

Community Risk

In addition, to reduce exposure to TACs, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* [17] to provide guidance regarding the siting of sensitive land uses in the vicinity of

[16] California Air Resources Board (CARB). 1999. California Air Resources Board (CARB). Final Staff Report: Update to the Toxic Air Contaminant List. https://ww3.arb.ca.gov/toxics/id/finalstaffreport.htm.

[17] California Air Resources Board (CARB). 2005, April. Air Quality and Land Use Handbook: A Community Health Perspective. https://www.arb.ca.gov/ch/handbook.pdf.

freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources. CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases exposure and the potential for adverse health effects. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risks from motor vehicle traffic, DPM from trucks, and benzene and 1,3-butadiene from passenger vehicles. CARB recommendations are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

Air Quality Management Planning

The EKAPCD is the agency responsible for preparing the air quality management plans (AQMP) for the eastern Kern County portion of the MDAB in coordination with the Kern County Council of Governments (KCOG). EKAPCD has adopted the following attainment plans for nonattainment pollutants that are applicable within the project area[18]:

OZONE ATTAINMENT PLANS

- 2017 – Ozone Attainment Plan
- 2017 – Reasonably Available Control Technology SIP
- 2008 – February 2008 Ozone Early Progress Plans
- 2003 – Ozone Attainment Demonstration, Maintenance Plan, and Redesignation Request.

PARTICULATE MATTER ATTAINMENT PLANS

- 2020 – Indian Wells Second 10-Year PM10 Maintenance Plan.
- 2002 – PM_{10} Attainment Demonstration, Maintenance Plan, and Redesignation Request.

[18] California Air Resources Board (CARB). 2020, October 15 (accessed). https://ww2.arb.ca.gov/our-work/programs/california-state-implementation-plans/nonattainment-area-plans/eastern-kern-air

The attainment status for the EKAPCD is shown in Table 2, *Attainment Status of Criteria Pollutants in the Eastern Kern County Portion of the MDAB*. Eastern Kern County is currently designated a "moderate" nonattainment area for California and National O_3 AAQS and nonattainment under the California PM_{10} AAQS.

Table 2 Attainment Status of Criteria Pollutants in the Eastern Kern County Portion of the MDAB

Pollutant	State	Federal – Indian Wells Valley Portion
Ozone – 1-hour	Nonattainment	No Federal Standard
Ozone – 8-hour	Nonattainment	Attainment/Unclassified
PM_{10}	Nonattainment	Attainment Maintenance
$PM_{2.5}$	Unclassified	Attainment/Unclassified
CO	Unclassified	Attainment/Unclassified
NO_2	Attainment	Unclassified
SO_2	Attainment	Unclassified
Lead	Attainment	Attainment/Unclassified

Source: Eastern Kern Air Pollution Control District (EKAPCD). 2018. Eastern Kern APCD Attainment Status. http://www.kernair.org/Documents/Reports/EKAPCD%20Attainment%20Status%202018.pdf

Valley Fever

Valley fever is an infectious disease caused by the fungi *Coccidioides immitis* and *Coccidioides psadasii*. According to the California Department of Public Health, these fungi are a major cause of community-acquired pneumonia in the southwestern United States. Valley fever fungi are most prevalent in the San Joaquin Valley and the Central Valley, where land is arid to semiarid and receives moderate rainfall (5 to 20 inches per year). The Valley West region of Kern County has the highest rate of valley fever in the county, and the mountain and desert regions of Kern County have the lowest.[19] The areas of Kern County that have the most incidents of valley fever exposure are northeast Bakersfield, Lamont-Arvin, Taft, and Edwards Air Force Base. The valley fever fungi have been identified in soil samples taken near the campus of California State University, Bakersfield.

The project site is within the desert region of the Kern County. Several factors indicate a project's potential to expose sensitive receptors to valley fever: disturbance of the topsoil of undeveloped land, dust storms, strong winds, earthquakes, archaeological digs, agricultural activities, and construction activities. Construction activities could potentially result in exposure of sensitive receptors to valley fever in the arid desert areas. Potential risk of exposing sensitive receptors to valley fever could be reduced through application of EKAPCD's fugitive dust control measures, which would reduce fugitive dust emissions as well as exposure of onsite workers.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site are best documented by measurements made by EKAPCD and/or the Mojave Desert Air Quality Management

[19] Kern County Public Health Services Department (KCPHSD). 2014. Valley Fever Website. http://kerncountyvalleyfever.com/.

District. The air quality monitoring station closest to the project site is the Mojave – 923 Poole Street Monitoring Station, which monitors O_3, PM_{10}, $PM_{2.5}$. Information regarding NO_x is supplemented by data from the Edison Monitoring Station. The most current five years of data from these monitoring stations are included in Table 3, *Ambient Air Quality Monitoring Summary*. The data show regular violations of the state and federal O_3, state PM_{10}, and federal $PM_{2.5}$ standards in the last five years.

Table 3 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2014	2015	2016	2017	2018
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	9	1	2	1	8
State 8-hour ≥ 0.07 ppm (days exceed threshold)	88	31	52	35	53
Federal 8-Hour > 0.075 ppm (days exceed threshold)	57	15	29	16	23
Max. 1-Hour Conc. (ppm)	0.104	0.104	0.104	0.097	0.111
Max. 8-Hour Conc. (ppm)	0.095	0.084	0.093	0.085	0.094
Nitrogen Dioxide (NO_2)[2]					
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0	0	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0	0	0	0
Max. 1-Hour Conc. (ppb)	0.0350	0.0465	0.0457	0.0449	0.042
Coarse Particulates (PM_{10})[1]					
State 24-Hour > 50 µg/m^3 (days exceed threshold)	12	5	18	10	19
Federal 24-Hour > 150 µg/m^3 (days exceed threshold)	1	0	0	0	0
Max. 24-Hour Conc. (µg/m^3)	184.2	80.4	139.2	93.4	93.1
Fine Particulates ($PM_{2.5}$)[2]					
Federal 24-Hour > 35 µg/m^3 (days exceed threshold)	1	2	0	0	2
Max. 24-Hour Conc. (µg/m^3)	36.5	42.2	25.7	26.9	39.0

Source: California Air Resources Board (CARB). 2019. Air Pollution Data Monitoring Cards (2014, 2015, 2016, 2017, and 2018). https://www.arb.ca.gov/adam/topfour/topfour1.php

Notes: ppm: parts per million; parts per billion, µg/m^3: micrograms per cubic meter. Data for O_3 and PM_{10} obtained from the Mojave-923 Poole Street Monitoring Station. Data for NO_2 and $PM_{2.5}$ obtained from the Edison Monitoring Station.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases. Land uses identified in environmental justice areas on CalEnviroScreen 3.0 may be disproportionately affected by and vulnerable to poor air quality.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution.

Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public. The nearest sensitive receptors to the proposed project site are the residences along Richard Court to the west and along Gateway Boulevard to the southwest.

Methodology

Projected construction-related air pollutant emissions are calculated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2.25.[20] CalEEMod compiles an emissions inventory of construction (fugitive dust, off-gas emissions, on-road emissions, and off-road emissions), area sources, indirect emissions from energy use, mobile sources, indirect emissions from waste disposal (annual only), and indirect emissions from water/wastewater (annual only) use. The EKAPCD's "Guidelines for the Implementation of the California Environmental Quality Act (CEQA) of 1970, as Amended" (CEQA Guidelines), and EKAPCD's "Addendum to the CEQA Guidelines Addressing GHG Emission Impacts for Stationary Source Projects When Serving as a Lead CEQA Agency" include methodology and thresholds for criteria air pollutant impacts and GHG impacts. The EKAPCD's CEQA Guidelines include significance criteria that would be applicable to the proposed project. In addition, EKAPCD has also identified best management practices to reduce emissions of fugitive dust during construction activities.[21]

Thresholds of Significance

The analysis of the proposed project's air quality impacts follows the guidance, methodologies, and significance thresholds in EKAPCD's *Guidelines for the Implementation of the California Environmental Quality Act (CEQA) of 1970.*[22] CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. The EKAPCD has established thresholds of significance for regional air quality emissions for construction activities and project operation.

REGIONAL SIGNIFICANCE THRESHOLDS

EKAPCD has adopted regional emissions thresholds to determine a project's cumulative impact on air quality in the eastern Kern County portion of the MDAB. Table 4, *EKAPCD Regional Criteria Air Pollutant Thresholds,* lists EKAPCD's regional significance criteria, which are based on EKAPCD's Rule 210.1, "New and Modified Source Review."

[20] California Air Pollution Control Officers Association (CAPCOA). 2017. California Emissions Estimator Model (CalEEMod). Version 2016.3.2. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

[21] Eastern Kern Air Pollution Control District (EKAPCD). 2007. Suggested Air Pollutant Mitigation Measures for Construction Sites for Kern County APCD.

[22] Eastern Kern Air Pollution Control District (EKAPCD). 1999, July 1 (amended). Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970, As Amended. http://www.kernair.org/Documents/CEQA/CEQA_Guidelines%20&%20Charts.pdf

Table 4 EKAPCD Regional Criteria Air Pollutant Threshold

Air Pollutant	Mobile Sources – Maximum Daily	Stationary Sources – Maximum Annual[1, 2]
Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)	137 lbs/day	25 TPY
Nitrogen Oxides (NO_X)	137 lbs/day	25 TPY
Sulfur Oxides (SO_X)	N/A	27 TPY
Particulates (PM_{10})	N/A	15 TPY
Particulates ($PM_{2.5}$)	N/A	N/A

Source:
Eastern Kern Air Pollution Control District (EKAPCD). 1999, July 1 (amended). Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970, As Amended. http://www.kernair.org/Documents/CEQA/CEQA_Guidelines%20&%20Charts.pdf
Eastern Kern Air Pollution Control District (EKAPCD). 2000, May 4. Rule 210.1 New and Modified Stationary Source Review (NSR). http://www.kernair.org/Rule%20Book/2%20Permits/210-1%20New_&_Modified_Stationary_Source_Review.pdf
Notes: lbs: pounds; tpy: tons per year; N/A: not applicable.
[1] For construction emissions. The annual emissions are evaluated on a consecutive 12-month period.
[2] Offset trigger levels set forth in Section III.B.3 of EKAPCD's Rule 210.1.

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. Typically, for an intersection to exhibit a significant CO concentration, it would operate at level of service (LOS) E or worse without improvements.[23] Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.[24]

Localized Significance Criteria

EKAPCD also considers projects that cause or contribute to an exceedance of the California or National AAQS seen in Table 1 to result in significant localized impacts. Emissions that do not exceed the daily or annual emission in Table 4 are considered to result in less than significant localized impacts.

Consistency with Air Quality Management Plans

EKAPCD requires project to be consistent with adopted federal and state Air Quality Management Plans (AQMPs). If a project is deemed consistent with the existing land use plan, it is considered consistent with the AQMPs. Zoning changes, specific plans, general plan amendments, and similar land use plan changes that do

[23] California Department of Transportation (Caltrans). 1997, December. Transportation Project-Level Carbon Monoxide Protocol. UCD-ITS-RR-97-21. Prepared by Institute of Transportation Studies, University of California, Davis.
[24] Bay Area Air Quality Management District (BAAQMD). 2017, May. California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

not increase dwelling unit density, do not increase vehicle trips, and do not increase vehicle miles traveled are also deemed to not exceed this threshold. [25]

GREENHOUSE GAS EMISSIONS

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,[26] carbon (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).[27] The major GHG are briefly described below.

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g. manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases.

[25] Eastern Kern Air Pollution Control District (EKAPCD). 1999, July 1 (amended). Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970, As Amended. http://www.kernair.org/Documents/CEQA/CEQA_Guidelines%20&%20Charts.pdf

[26] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

[27] Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (CARB 2017a). However, state and national GHG inventories do not yet include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

- ***Chlorofluorocarbons (CFCs***) are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.

- ***Perfluorocarbons (PFCs)*** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.

- ***Sulfur Hexafluoride (SF_6)*** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.

- ***Hydrochlorofluorocarbons (HCFCs)*** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- ***Hydrofluorocarbons (HFCs)*** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs (IPCC 2001; USEPA 2020b).

GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 5, *GHG Emissions and Their Relative Global Warming Potential Compared to CO_2*. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under IPCC's Fifth Assessment Report (AR5) GWP values for CH_4, a project that generates 10 MT of CH_4 would be equivalent to 280 MT of CO_2.[28]

[28] CO_2-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

Table 5 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Carbon Dioxide (CO_2)	Methane[1] (CH_4)	Nitrous Oxide (N_2O)
Second Assessment			
Atmospheric Lifetime (Years)	50 to 200	12 (±3)	120
Global Warming Potential Relative to CO_2[2]	1	21	310
Fourth Assessment			
Atmospheric Lifetime (Years)	50 to 200	12	114
Global Warming Potential Relative to CO_2[2]	1	25	298
Fifth Assessment[3]			
Atmospheric Lifetime (Years)	50 to 200	12	121
Global Warming Potential Relative to CO_2[2]	1	28	265

Source: Intergovernmental Panel on Climate Change (IPCC). 1995. Second Assessment Report: Climate Change 1995 https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_sar_wg_I_full_report.pdf; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf; Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press.

Notes:

1 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

2 Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.

3 The GWP values in the IPCC's Fifth Assessment Report (2013)[29] reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2. However, the AR4 GWP were used values to maintain consistency in statewide GHG emissions modeling. In addition, the 2017 Scoping Plan Update was based on the AR4 GWP values.

California's Greenhouse Gas Sources and Relative Contribution

In 2019, the statewide GHG emissions inventory was updated for 2000 to 2017 emissions using the GWPs in IPCC's AR4.[30] Based on these GWPs, California produced 424.10 $MMTCO_2e$ GHG emissions in 2017. California's transportation sector was the single largest generator of GHG emissions, producing 40.1 percent of the state's total emissions. Industrial sector emissions made up 21.1 percent, and electric power generation made up 14.7 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (9.7 percent), agriculture and forestry (7.6 percent) high GWP (4.7 percent), and recycling and waste (2.1 percent).[31]

California's GHG emissions have followed a declining trend since 2007. In 2017, emissions from routine GHG emitting activities statewide were 424 $MMTCO_2e$, 5 $MMTCO_2e$ lower than 2016 levels. This represents an overall decrease of 14 percent since peak levels in 2004 and 7 $MMTCO_2e$ below the 1990 level and the state's 2020 GHG target. During the 2000 to 2017 period, per capita GHG emissions in California have continued to drop from a peak in 2001 of 14.0 $MTCO_2e$ per capita to 10.7 $MTCO_2e$ per capita in 2017, a 24 percent decrease. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product (GDP)) is declining, representing a 41 percent decline since the 2001 peak, while the state's GDP has grown 52 percent during this period. For the

29 Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf.

30 Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (2006).

31 California Air Resources Board (CARB). 2019, August 26. California Greenhouse Emissions for 2000 to 2017: Trends of Emissions and Other Indicators. https://www.arb.ca.gov/cc/inventory/data/data.htm.

first time since California started to track GHG emissions, California uses more electricity from zero-GHG sources (hydro, solar, wind, and nuclear energy). [32]

Regulatory Settings

REGULATION OF GHG EMISSIONS ON A NATIONAL LEVEL

The US Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation. [33]

To regulate GHGs from passenger vehicles, EPA was required to issue an endangerment finding. The finding identifies emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the proposed project's GHG emissions inventory because they constitute the majority of GHG emissions; they are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2 per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2021 to 2026)

The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon in 2025. However, on March 30, 2020, the EPA finalized an updated CAFE and GHG emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021-2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE standards established in 2012. However, consortium of automakers and California have agreed on a voluntary framework to reduce emissions that can serve as an alternative path forward for clean vehicle standards nationwide. Automakers who agreed to the framework are Ford, Honda, BMW of North America, and Volkswagen Group of America. The framework supports continued annual reductions of vehicle greenhouse gas emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and provides industry the certainty

[32] California Air Resources Board (CARB). 2019, August 26. California Greenhouse Emissions for 2000 to 2017: Trends of Emissions and Other Indicators. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[33] US Environmental Protection Agency (USEPA). 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://archive.epa.gov/epapages/newsroom_archive/newsreleases/08d11a451131bca585257685005bf252.html.

needed to make investments and create jobs. This commitment means that the auto companies party to the voluntary agreement will only sell cars in the United States that meet the CAFE standards established in 2021 for model years 2017 to 2025. [34]

EPA Regulation of Stationary Sources under the Clean Air Act (Ongoing)

Pursuant to its authority under the Clean Air Act, the EPA has been developing regulations for new, large, stationary sources of emissions, such as power plants and refineries. Under former President Obama's 2013 Climate Action Plan, the EPA was directed to develop regulations for existing stationary sources as well. On June 19, 2019, the EPA issued the final Affordable Clean Energy (ACE) rule which became effective on August 19, 2019. The ACE rule was crafted under the direction of President Trump's Energy Independence Executive Order. It officially rescinds the Clean Power Plan rule issued during the Obama Administration and sets emissions guidelines for states in developing plans to limit CO_2 emissions from coal-fired power plants.

REGULATION OF GHG EMISSIONS ON A STATE LEVEL

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-3-05, Executive Order B-30-15, Assembly Bill 32 (AB 32), Senate Bill 32 (SB 32) and Senate Bill 375 (SB 375).

Executive Order S-3-05

Executive Order S-3-05, signed June 1, 2005. Executive Order S-3-05 set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

State of California guidance and targets for reductions in GHG emissions are generally embodied in the Global Warming Solutions Act, adopted with passage of AB 32. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 emissions reduction goal established in Executive Order S-03-05.

CARB 2008 Scoping Plan

The final Scoping Plan was adopted by CARB on December 11, 2008. The *2008 Scoping Plan* identified that GHG emissions in California are anticipated to be approximately 596 $MMTCO_2e$ in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state.[35] In order to

[34] California Air Resources Board (CARB). 2019, September 5 (accessed). California and major automakers reach groundbreaking framework agreement on clean emission standards. https://ww2.arb.ca.gov/news/california-and-major-automakers-reach-groundbreaking-framework-agreement-clean-emission.

[35] California Air Resources Board (CARB). 2008, October. Climate Change Proposed Scoping Plan, a Framework for Change. https://ww3.arb.ca.gov/cc/scopingplan/document/psp.pdf.

effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 $MTCO_2e$ per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

First Update to the Scoping Plan

CARB completed a five-year update to the 2008 Scoping Plan, as required by AB 32. The First Update to the Scoping Plan was adopted at the May 22, 2014, board hearing. The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the original 2008 Scoping Plan. As part of the update, CARB recalculated the 1990 GHG emission levels with the updated AR4 GWPs, and the 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, is slightly higher at 431 $MMTCO_2e$. [36]

As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the update also addresses the state's longer-term GHG goals within a post-2020 element. The post-2020 element provides a high-level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the state to adopt a midterm target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with or exceeds the trajectory created by statewide goals. [37] CARB identified that reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California's 2050 climate targets will require significant acceleration of GHG reduction rates. Emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit. [38]

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions in the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in state planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed SB 32 and AB 197 into law, making the Executive Order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on

[36] California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

[37] California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

[38] California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

climate change policies and requires the CARB to prioritize direction emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

2017 Climate Change Scoping Plan Update

Executive Order B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. On December 24, 2017, CARB adopted the 2017 Climate Change Scoping Plan Update, which outlines potential regulations and programs, including strategies consistent with AB 197 requirements, to achieve the 2030 target. The 2017 Scoping Plan establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030. [39]

California's climate strategy will require contributions from all sectors of the economy, including enhanced focus on zero- and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables, such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning, to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten criteria air pollutants and TACs emissions limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks;
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- Continued implementation of SB 375.

[39] California Air Resources Board (CARB). 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to the statewide strategies listed above, the 2017 Climate Change Scoping Plan also identified local governments as essential partners in achieving the State's long-term GHG reduction goals and identified local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends statewide targets of no more than 6 $MTCO_2e$ or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. CARB recommends that local governments evaluate and adopt robust and quantitative locally-appropriate goals that align with the statewide per capita targets and the State's sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percent reductions necessary to reach the 2030 and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to the State's 1990 emissions limit established under AB 32. For CEQA projects, CARB states that lead agencies have discretion to develop evidenced-based numeric thresholds (mass emissions, per capita, or per service population)—consistent with the Scoping Plan and the state's long-term GHG goals. To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.

The Scoping Plan scenario is set against what is called the business-as-usual (BAU) yardstick—that is, what would the GHG emissions look like if the State did nothing at all beyond the existing policies that are required and already in place to achieve the 2020 limit, as shown in Table 6, *2017 Climate Change Scoping Plan Emissions Reductions Gap*. It includes the existing renewables requirements, advanced clean cars, the "10 percent" Low Carbon Fuel Standard (LCFS), and the SB 375 program for more vibrant communities, among others. However, it does not include a range of new policies or measures that have been developed or put into statute over the past two years. Also shown in the table, the known commitments are expected to result in emissions that are 60 $MMTCO_2e$ above the target in 2030. If the estimated GHG reductions from the known commitments are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions in the sectors it covers to ensure the 2030 target is achieved.

Table 6 2017 Climate Change Scoping Plan Emissions Reductions Gap

Modeling Scenario	2030 GHG Emissions $MMTCO_2e$
Reference Scenario (Business-as-Usual)	389
With Known Commitments	320
2030 GHG Target	**260**
Gap to 2030 Target	**60**

Source: California Air Resources Board. 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

Table 7, *2017 Climate Change Scoping Plan Emissions Change by Sector*, provides estimated GHG emissions by sector, compared to 1990 levels, and the range of GHG emissions for each sector estimated for 2030.

Table 7 2017 Climate Change Scoping Plan Emissions Change by Sector

Scoping Plan Sector	1990 $MMTCO_2e$	2030 Proposed Plan Ranges $MMTCO_2e$	% Change from 1990
Agricultural	26	24-25	-8% to -4%
Residential and Commercial	44	38-40	-14% to -9%
Electric Power	108	30-53	-72% to -51%
High GWP	3	8-11	267% to 367%
Industrial	98	83-90	-15% to -8%
Recycling and Waste	7	8-9	14% to 29%
Transportation (including TCU)	152	103-111	-32% to -27%
Net Sink[1]	-7	TBD	TBD
Sub Total	431	294-339	-32% to -21%
Cap-and-Trade Program	NA	24-79	NA
Total	**431**	**260**	**-40%**

Source: California Air Resources Board. 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.
Notes: TCU = Transportation, Communications, and Utilities; TBD: To Be Determined.
[1] Work is underway through 2017 to estimate the range of potential sequestration benefits from the natural and working lands sector.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs). Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target. KCOG is the MPO for Kern County. In September 2010, CARB set per capita GHG emissions reduction targets for 2020 and 2035 for the MPOs, except the MPOs in the San Joaquin Valley region (which includes KCOG) where CARB identified a provisional target for the San Joaquin Valley region. This is because the eight MPOs in the San Joaquin Valley region are anticipated to absorb 22 percent of California population growth. On December 14, 2012, CARB adopted a target recommendation for the San Joaquin Valley MPOs, which is a 5 percent per capita GHG reduction from 2005 in 2020 and a 10 percent per capita GHG reduction from 2005 in 2035 on an aggregate, valley-wide basis. Therefore, an individual target is not proposed for KCOG.[40]

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology and recently released another update in February 2018. The updated targets

[40] California Air Resources Board. 2013, January 15. Staff Report Update on Senate Bill 375 Implementation in the San Joaquin Valley.

consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005. This excludes reductions anticipated from implementation of state technology and fuels strategies and any potential future state strategies such as statewide road user pricing. The proposed targets call for greater per capita GHG emission reductions from SB 375 than are currently in place, which for 2035, translate into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCSs. As proposed, CARB staff's proposed targets would result in an additional reduction of over 8 $MMTCO_2e$ in 2035 compared to the current targets. For the next round of SCS updates, CARB's updated targets for the KCOG region are an 6 percent per capita GHG reduction in 2020 from 2005 levels (compared to the 2010 target of 5 percent) and a 13 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 10 percent).[41] CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018 are subject to these new targets.

KCOG 2014 Regional Transportation Plan/Sustainable Community Strategy

SB 375 requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan (RTP). The KCOG adopted its 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) in August of 2018.[42] The SCS for the Kern region identifies the following:

- A forecast development pattern to accommodate the region's future transportation, employment, and housing needs, while promoting conservation of natural resources and open space areas.
- A transportation network comprising well-maintained public transit, local streets and roads, managed lanes and highways, and bikeways and walkways.
- Strategies to manage demands on the region's transportation roadway system (also known as transportation demand management [TDM]) in ways that reduce or eliminate traffic congestion during peak periods of demand.
- Strategies to manage operations of the region's transportation system (also known as transportation system management, or TSM) to maximize the efficiency of the network and reduce congestion.

The Kern SCS will be updated every four years in conjunction with the RTP updates. Revisions will reflect amendments to local government General Plans and other factors that respond to the changing needs of the cities and the county.

The SCS establishes a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation

[41] California Air Resources Board (CARB). 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets.

[42] Kern Council of Governments. 2018, August 16. 2018 Regional Transportation Plan and Sustainable Communities Strategy. https://www.kerncog.org/wp-content/uploads/2018/10/2018_RTP.pdf

(excluding goods movement). The SCS provides growth strategies to achieve the regional GHG emissions reduction targets. It does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency for governments and developers.

Transportation Sector Specific Regulations

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles (see also the discussion on the update to the Corporate Average Fuel Economy standards under *Federal Laws*, above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new LCFS for transportation fuels sold in the state. Executive Order S-01-07 sets a declining standard for GHG emissions measured in carbon dioxide equivalent gram per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012

On March 23, 2012, the state identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directs the number of zero-emission vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are zero-emission by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions from the transportation sector 80 percent below 1990 levels.

Executive Order N-79-20

On September 23, 2020 Governor Newsom signed Executive Order N-79-20 which identifies a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035. Additionally, this Executive Order identified fleet goals for trucks of 100 percent of drayage trucks be zero emissions by 2035 and 100 percent of medium- and heavy-duty vehicles in the State be zero-emission by 2045, for all operations where feasible. Additionally, the Executive Order identifies a goal for the State to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

Renewable Portfolio Standards

Renewables Portfolio – Carbon Neutrality Regulations Senate Bills 1078, 107, X1-2, and Executive Order S-14-08

A major component of California's Renewable Energy Program is the RPS established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008, which expanded the state's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects, because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon), was signed into law in September 2015. SB 350 establishes tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, which replaces the SB 350 requirement of 45 percent renewable energy by 2027 with the requirement of 50 percent by 2026 and also raises California's RPS requirements for 2050 from 50 percent to 60 percent. SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Furthermore, the bill also establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Executive Order

B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Energy Efficiency Regulations

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2019 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards, which were adopted on May 9, 2018, went into effect on January 1, 2020.

The 2019 standards move towards cutting energy use in new homes by more than 50 percent and will require installation of solar photovoltaic systems for single-family homes and multi-family buildings of 3 stories and less. Four key areas the 2019 standards will focus on include 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements.[43] Under the 2019 standards, nonresidential buildings and multi-family residential buildings of four stories or more will be 30 percent more energy efficient compared to the 2016 standards while single-family homes will be 7 percent more energy efficient.[44] When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards.[45]

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[46] The mandatory provisions of CALGreen became effective January 1, 2011. The CEC adopted the voluntary standards of the 2019 CALGreen on October 3, 2018. The 2019 CALGreen standards became effective January 1, 2020.

[43] California Energy Commission (CEC). 2018. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. http://www.energy.ca.gov/releases/2018_releases/2018-05-09_building_standards_adopted_nr.html.

[44] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

[45] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

[46] The green building standards became mandatory in the 2010 edition of the code.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR §§ 1601–1608) were adopted by the CEC on October 11, 2006 and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Solid Waste Regulations

AB 939 – Integrated Waste Management Act of 1989

California's Integrated Waste Management Act of 1989 (AB 939; Public Resources Code §§ 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses. Section 5.408 of the 2016 and 2019 CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

AB 1327

The California Solid Waste Reuse and Recycling Access Act (AB 1327; Public Resources Code §§ 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

AB 1826

In October of 2014 Governor Brown signed AB 1826, requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

Water Efficiency Regulations

SBX7-7

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

AB 1881 – Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Short-Lived Climate Pollutant Reduction Strategy

Senate Bill 1383

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and CH_4. Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 requires the state board, no later than January 1, 2018, to approve and begin implementing that comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030, as specified. The bill also establishes targets for reducing organic waste in landfill. On March 14, 2017, CARB adopted the "Final Proposed Short-Lived Climate Pollutant Reduction Strategy," which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s despite the tripling of diesel fuel use.[47] In-use on-road rules are expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

[47] California Air Resources Board (CARB). 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm.

Thresholds of Significance

The EKAPCD's "Addendum to CEQA Guidelines Addressing GHG Emission Impacts for Stationary Source Projects" [48] includes methodology and thresholds for GHG emissions from stationary (permitted) sources. Although not directly applicable for land use (development) projects where the EKAPCD is not the lead agency, EKAPCD's significance criteria represent substantial evidence on the threshold at which potential GHG emissions impacts could occur as a result of a project. Therefore, EKAPCD's thresholds for stationary sources are also applied to the proposed project and modified where applicable.

A project is considered to have less than significant or cumulatively considerable impact on GHG emissions if it meets one of the following conditions:

- Project-specific GHG emissions are less than 25,000 tons per year (tpy) (22,680 $MTCO_2e$).
- Project is in compliance with state GHG reduction plan such as AB 32 or future federal GHG reduction plan if it is more stringent than state plan.

[48] Eastern Kern Air Pollution Control District (EKAPCD). 2012, March 8. Addendum to CEQA Guidelines Addressing GHG Emission Impacts for Stationary Source Projects. http://www.kernair.org/Documents/CEQA/EKAPCD%20CEQA%20GHG%20Policy%20Adopted%203-8-12.pdf

Emissions Worksheet

Regional Construction Emissions Worksheet:

Site Preparation

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2021** Summer						
	Fugitive Dust						7.72	4.25
	Off-Road		3.89	40.50	21.15	0.04	2.04	1.88
	Total		**3.89**	**40.50**	**21.15**	**0.04**	**9.77**	**6.13**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.44	0.08	0.00	0.03	0.01
	Worker		0.07	0.04	0.50	0.00	0.14	0.04
	Total		**0.09**	**0.47**	**0.58**	**0.00**	**0.16**	**0.05**
TOTAL			***3.97***	***40.97***	***21.73***	***0.04***	***9.93***	***6.17***
Onsite		**2021** Winter						
	Fugitive Dust						7.72	4.25
	Off-Road		3.89	40.50	21.15	0.04	2.04	1.88
	Total		**3.89**	**40.50**	**21.15**	**0.04**	**9.77**	**6.13**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.44	0.09	0.00	0.03	0.01
	Worker		0.07	0.04	0.41	0.00	0.14	0.04
	Total		**0.08**	**0.48**	**0.50**	**0.00**	**0.16**	**0.05**
TOTAL			***3.97***	***40.98***	***21.66***	***0.04***	***9.93***	***6.17***
Onsite		**2021**						
	Fugitive Dust		0.00	0.00	0.00	0.00	7.72	4.25
	Off-Road		3.89	40.50	21.15	0.04	2.04	1.88
	Total		**3.89**	**40.50**	**21.15**	**0.04**	**9.77**	**6.13**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.44	0.09	0.00	0.03	0.01
	Worker		0.07	0.04	0.50	0.00	0.14	0.04
	Total		**0.09**	**0.48**	**0.58**	**0.00**	**0.16**	**0.05**
TOTAL			***3.97***	***40.98***	***21.73***	***0.04***	***9.93***	***6.17***

Rough Grading

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2021** Summer						
	Fugitive Dust						3.71	1.54
	Off-Road		4.19	46.40	30.88	0.06	1.99	1.83
	Total		**4.19**	**46.40**	**30.88**	**0.06**	**5.69**	**3.36**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.44	0.08	0.00	0.03	0.01
	Worker		0.08	0.04	0.56	0.00	0.15	0.04
	Total		**0.09**	**0.48**	**0.63**	**0.00**	**0.18**	**0.05**
TOTAL			***4.29***	***46.88***	***31.51***	***0.06***	***5.87***	***3.41***
Onsite		**2021** Winter						
	Fugitive Dust						3.71	1.54
	Off-Road		4.19	46.40	30.88	0.06	1.99	1.83
	Total		**4.19**	**46.40**	**30.88**	**0.06**	**5.69**	**3.36**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.44	0.09	0.00	0.03	0.01
	Worker		0.08	0.05	0.46	0.00	0.15	0.04
	Total		**0.09**	**0.49**	**0.55**	**0.00**	**0.18**	**0.05**
TOTAL			***4.28***	***46.89***	***31.43***	***0.06***	***5.87***	***3.41***
Onsite		**2021**						
	Fugitive Dust		0.00	0.00	0.00	0.00	3.71	1.54
	Off-Road		4.19	46.40	30.88	0.06	1.99	1.83
	Total		**4.19**	**46.40**	**30.88**	**0.06**	**5.69**	**3.36**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.44	0.09	0.00	0.03	0.01
	Worker		0.08	0.05	0.56	0.00	0.15	0.04
	Total		**0.09**	**0.49**	**0.63**	**0.00**	**0.18**	**0.05**
TOTAL			***4.29***	***46.89***	***31.51***	***0.06***	***5.87***	***3.41***

Building Construction

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2021 Summer**						
	Off-Road		1.90	17.43	16.58	0.03	0.96	0.90
	Total		**1.90**	**17.43**	**16.58**	**0.03**	**0.96**	**0.90**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.30	10.23	1.80	0.03	0.62	0.20
	Worker		0.99	0.52	6.72	0.02	1.85	0.50
	Total		**1.29**	**10.75**	**8.52**	**0.05**	**2.47**	**0.70**
TOTAL			***3.19***	***28.18***	***25.09***	***0.08***	***3.43***	***1.60***
Onsite		**2021 Winter**						
	Off-Road		1.90	17.43	16.58	0.03	0.96	0.90
	Total		**1.90**	**17.43**	**16.58**	**0.03**	**0.96**	**0.90**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.32	10.31	2.14	0.03	0.62	0.20
	Worker		0.91	0.60	5.52	0.02	1.85	0.50
	Total		**1.23**	**10.90**	**7.66**	**0.04**	**2.47**	**0.70**
TOTAL			***3.14***	***28.34***	***24.23***	***0.07***	***3.43***	***1.60***
Onsite		**2021**						
	Off-Road		1.90	17.43	16.58	0.03	0.96	0.90
	Total		**1.90**	**17.43**	**16.58**	**0.03**	**0.96**	**0.90**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.32	10.31	2.14	0.03	0.62	0.20
	Worker		0.99	0.60	6.72	0.02	1.85	0.50
	Total		**1.29**	**10.90**	**8.52**	**0.05**	**2.47**	**0.70**
TOTAL			***3.19***	***28.34***	***25.09***	***0.08***	***3.43***	***1.60***

Building Construction 2022

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022 Summer**						
	Off-Road		1.71	15.62	16.36	0.03	0.81	0.76
	Total		**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.28	9.68	1.66	0.03	0.62	0.20
	Worker		0.91	0.47	6.15	0.02	1.85	0.50
	Total		**1.19**	**10.15**	**7.81**	**0.05**	**2.47**	**0.70**
TOTAL			***2.90***	***25.77***	***24.18***	***0.07***	***3.27***	***1.46***
Onsite		**2022 Winter**						
	Off-Road		1.71	15.62	16.36	0.03	0.81	0.76
	Total		**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.30	9.74	1.99	0.03	0.62	0.20
	Worker		0.85	0.53	5.02	0.02	1.85	0.50
	Total		**1.15**	**10.28**	**7.01**	**0.04**	**2.47**	**0.70**
TOTAL			***2.85***	***25.89***	***23.37***	***0.07***	***3.28***	***1.46***
Onsite		**2022**						
	Off-Road		1.71	15.62	16.36	0.03	0.81	0.76
	Total		**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.30	9.74	1.99	0.03	0.62	0.20
	Worker		0.91	0.53	6.15	0.02	1.85	0.50
	Total		**1.19**	**10.28**	**7.81**	**0.05**	**2.47**	**0.70**
TOTAL			***2.90***	***25.89***	***24.18***	***0.07***	***3.28***	***1.46***

Building Construction 2023

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023 Summer**						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.20	7.42	1.40	0.03	0.60	0.18
	Worker		0.85	0.42	5.64	0.02	1.85	0.50
	Total		**1.05**	**7.84**	**7.04**	**0.05**	**2.45**	**0.68**
TOTAL			***2.62***	***22.22***	***23.28***	***0.07***	***3.15***	***1.34***
Onsite		**2023 Winter**						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.21	7.44	1.64	0.03	0.60	0.18
	Worker		0.79	0.48	4.59	0.02	1.85	0.50
	Total		**1.00**	**7.92**	**6.22**	**0.04**	**2.45**	**0.68**
TOTAL			***2.57***	***22.30***	***22.47***	***0.07***	***3.15***	***1.34***
Onsite		**2023**						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.21	7.44	1.64	0.03	0.60	0.18
	Worker		0.85	0.48	5.64	0.02	1.85	0.50
	Total		**1.05**	**7.92**	**7.04**	**0.05**	**2.45**	**0.68**
TOTAL			***2.62***	***22.30***	***23.28***	***0.07***	***3.15***	***1.34***

Paving

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Summer						
	Off-Road		1.03	10.19	14.58	0.02	0.51	0.47
	Paving		0.53				0.00	0.00
	Total		**1.57**	**10.19**	**14.58**	**0.02**	**0.51**	**0.47**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.05	0.03	0.35	0.00	0.11	0.03
	Total		**0.05**	**0.03**	**0.35**	**0.00**	**0.11**	**0.03**
TOTAL			***1.62***	***10.22***	***14.93***	***0.02***	***0.62***	***0.50***
Onsite		**2023** Winter						
	Off-Road		1.03	10.19	14.58	0.02	0.51	0.47
	Paving		0.53				0.00	0.00
	Total		**1.57**	**10.19**	**14.58**	**0.02**	**0.51**	**0.47**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.05	0.03	0.28	0.00	0.11	0.03
	Total		**0.05**	**0.03**	**0.28**	**0.00**	**0.11**	**0.03**
TOTAL			***1.61***	***10.22***	***14.87***	***0.02***	***0.62***	***0.50***
Onsite		**2023**						
	Off-Road		1.03	10.19	14.58	0.02	0.51	0.47
	Paving		0.53	0.00	0.00	0.00	0.00	0.00
	Total		**1.57**	**10.19**	**14.58**	**0.02**	**0.51**	**0.47**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.05	0.03	0.35	0.00	0.11	0.03
	Total		**0.05**	**0.03**	**0.35**	**0.00**	**0.11**	**0.03**
TOTAL			***1.62***	***10.22***	***14.93***	***0.02***	***0.62***	***0.50***

Architectural Coating 2023		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2023** Summer						
	Archit. Coating	80.94				0.00	0.00
	Off-Road	0.19	1.30	1.81	0.00	0.07	0.07
	Total	**81.14**	**1.30**	**1.81**	**0.00**	**0.07**	**0.07**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.17	0.08	1.12	0.00	0.37	0.10
	Total	**0.17**	**0.08**	**1.12**	**0.00**	**0.37**	**0.10**
TOTAL		***81.30***	***1.39***	***2.93***	***0.01***	***0.44***	***0.17***
Onsite	**2023** Winter						
	Archit. Coating	80.94				0.00	0.00
	Off-Road	0.19	1.30	1.81	0.00	0.07	0.07
	Total	**81.14**	**1.30**	**1.81**	**0.00**	**0.07**	**0.07**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.16	0.09	0.91	0.00	0.37	0.10
	Total	**0.16**	**0.09**	**0.91**	**0.00**	**0.37**	**0.10**
TOTAL		***81.29***	***1.40***	***2.72***	***0.01***	***0.44***	***0.17***
Onsite	**2023**						
	Archit. Coating	80.94	0.00	0.00	0.00	0.00	0.00
	Off-Road	0.19	1.30	1.81	0.00	0.07	0.07
	Total	**81.14**	**1.30**	**1.81**	**0.00**	**0.07**	**0.07**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.17	0.09	1.12	0.00	0.37	0.10
	Total	**0.17**	**0.09**	**1.12**	**0.00**	**0.37**	**0.10**
TOTAL		***81.30***	***1.40***	***2.93***	***0.01***	***0.44***	***0.17***

Maximum Daily Emissions (lb/day)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Site Preparation	***4***	***41***	***22***	***0***	***10***	***6***
Rough Grading	***4***	***47***	***32***	***0***	***6***	***3***
Building Construction 2021	***3***	***28***	***25***	***0***	***3***	***2***
Building Construction 2022	***3***	***26***	***24***	***0***	***3***	***1***
Building Construction 2023	***3***	***22***	***23***	***0***	***3***	***1***
Building Construction 2023, Paving, and Architectural Coating	***86***	***34***	***41***	***0***	***4***	***2***
MAX DAILY EMISSIONS	**86**	**47**	**41**	**0**	**10**	**6**
EKAPCD Regional Thresholds (lb/day)	**137**	**137**	**NA**	**NA**	**NA**	**NA**
Exceeds Thresholds?	No	No	No	No	No	No

Annual Emissions (tons/year)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
2021	***0***	***3***	***2***	***0***	***0***	***0***
2022	***0***	***3***	***3***	***0***	***0***	***0***
2023	***2***	***1***	***2***	***0***	***0***	***0***
ANNUAL EMISSIONS	**2**	**3**	**3**	**0**	**0**	**0**
EKAPCD Regional Thresholds (tons/year)	**25**	**25**	**NA**	**27**	**15**	**NA**
Exceeds Thresholds?	No	No	No	No	No	No

Regional Operation Emissions Worksheet: Buildout Year 2022[1]

[1] CalEEMod, Version 2016.3.2.25

Proposed Net Operations (Daily Emissions)

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.49	0.00	0.18	0.00	0.00	0.00
Energy	0.03	0.28	0.24	0.00	0.02	0.02
Total	**3.52**	**0.29**	**0.42**	**0.00**	**0.02**	**0.02**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.49	0.00	0.18	0.00	0.00	0.00
Energy	0.03	0.28	0.24	0.00	0.02	0.02
Total	**3.52**	**0.29**	**0.42**	**0.00**	**0.02**	**0.02**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.49	0.00	0.18	0.00	0.00	0.00
Energy	0.03	0.28	0.24	0.00	0.02	0.02
Total	**3.52**	**0.29**	**0.42**	**0.00**	**0.02**	**0.02**
Regional Thresholds (lb/day)	**137**	**137**	**NA**	**NA**	**NA**	**NA**
Exceeds Thresholds?	No	No	No	No	No	No

Proposed Net Operations (Annual Emissions)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0.64	0.00	0.02	0.00	0.00	0.00
Energy	0.01	0.05	0.04	0.00	0.00	0.00
Water					0.00	0.00
Total	**0.64**	**0.05**	**0.06**	**0.00**	**0.00**	**0.00**
EKAPCD Regional Thresholds (tons/year)	**25**	**25**	**NA**	**27**	**15**	**NA**
Exceeds Thresholds?	No	No	No	No	No	No

GHG Emissions Inventory

Proposed Project Buildout

Construction

	$MTCO_2e$ Total Project*
2021	461
2022	850
2023	395
Total Construction	**1,311**

*CalEEMod, Version 2016.3.2.25

Operation*

Proposed Project		
Area	0	$MTCO_2e$/Year**
Energy	234	$MTCO_2e$/Year
Water	18	$MTCO_2e$/Year
Amortized Construction Emissions***	44	$MTCO_2e$/Year
Total	**296**	**$MTCO_2e$/Year**
Net Emissions	**296**	
EKAPCD Bright-Line Screening Threshold	22,680	$MTCO_2e$/Year
Exceed Threshold?	**No**	

*CalEEMod, Version 2016.3.2.25

** $MTCO_2e$=metric tons of carbon dioxide equivalent.

*** Total construction emissions are amortized over 30 years per SCAQMD methodology; SCAQMD. 2009, November 19. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 14. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf?sfvrsn=2.

Assumptions Worksheet

CalEEMod Inputs - Richmond Elementary School Replacement Project, Construction

Name:	Richmond Elementary School Replacement Project
Project Number:	SSSD-06
Project Location:	S Richmond Rd & North Gold Canyon Street, Ridgecrest, CA
County:	Kern
Climate Zone:	7
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Southern California Edison
Air Basin:	Mojave Desert Air Basin (MDAB)
Air District:	Eastern Kern Air Pollution Control District (EKAPCD)

Project Site Acreage	77.00
Disturbed Site Acreage	40.00

Project Components	SQFT	Acres
Building A: Administration, Food services / Cafeteria, Gymnasium / Adaptive Physical Education	29,563	0.68
Building B: Information, Library, Kindergarten	22,748	0.52
Building C: Classrooms	18,814	0.43
Building D: Classrooms	23,661	0.54
Building E: STEAM Building (Science, Technology, Engineering, Arts and Mathematics)	5,067	0.12
TOTAL BUILDING SQFT	**99,853**	**2.29**
Parking Lot	60,520	1.39
Total Other Asphalt Surfaces	240,430	5.52
Hardscape	174,800	4.01
Landscape	94,500	2.17
Turf Fields	329,000	7.55
Additional Non-Asphalt Surfaces	743,297	17.06
Subtotal Other	**1,642,547**	**37.71**
Total	**1,742,400**	**40.00**

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	Elementary School	99.853	1000 sqft	2.29	99,853
Parking	Surface Parking	60.520	1000 sqft	1.39	60,520
Parking	Other Asphalt Surfaces	240.430	1000 sqft	5.52	240,430
Parking*	Other Non-asphalt Surfaces	1,341.597	1000 sqft	30.80	174,800
				40.00	

*This category does not include vertical building square footage; and therefore, the "land use square feet" was zeroed out with the exception of the hardscape area so that construction worker trips are not overestimated.

Architectural Coating

	Percent Painted	
Interior Painted:	100%	
Exterior Painted:	100%	
KCAPCD Rule 410.1A	**g/L**	
Interior Paint VOC content:	250	CalEEMod Default
Exterior Painting VOC content:	250	CalEEMod Default

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Elementary School	99,853	2.0	199,706	149,780	49,927
			199,706	**149,780**	**49,927**
Parking					
Paved Area	629,950	6%	37,797	-	37,797
			37,797		**37,797**

[1]CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[3] Assumes that all parking, non-parking asphalt, and turf areas will be striped. CalEEMod methodology assumes 6% of surface area is striped.

EKAPCD Rule 402, Fugitive Dust

Replace Ground Cover	PM10:	5	% Reduction
Replace Ground Cover	PM2.5:	5	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph
Clean Paved Road*		9	% PM Reduction

** percentage reduction based on mitigation study for SCAQMD projects*

Construction Activities and Schedule Assumptions: Richmond Elementary School Replacement Project

* based on construction duration (24 months, starting Summer 2021) provided by District

CalEEMod Defaults

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Site Preparation	Site Preparation	6/1/2021	7/12/2021	30
Grading	Grading	7/13/2021	10/25/2021	75
Building Construction	Building Construction	10/26/2021	8/26/2024	740
Architectural Coating	Architectural Coating	6/11/2024	8/26/2024	55
Paving	Paving	6/11/2024	8/26/2024	55

Normalization Calculations *

CalEEMod Defaults Construction Duration (Library)			**Assumed Construction Duration**	
1182	days of construction		6/1/2021	6/1/2023
3.24	years of construction		730	days
38.86	months of construction		24.00	months
		Norm Factor:	0.62	

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Site Preparation	Site Preparation	6/1/2021	6/25/2021	19
Grading	Grading	6/26/2021	8/31/2021	47
Building Construction	Building Construction	9/1/2021	6/1/2023	457
Architectural Coating	Architectural Coating	4/15/2023	6/1/2023	34
Paving	Paving	4/15/2023	6/1/2023	34

CalEEMod Inputs - Richmond Elementary School Replacement Project, Operation

Name:	Richmond Elementary School Replacement Project
Project Number:	SSSD-06
Project Location:	S Richmond Rd & North Gold Canyon Street, Ridgecrest, CA
County:	Kern
Climate Zone:	7
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Southern California Edison
Air Basin:	Mojave Desert Air Basin (MDAB)
Air District:	Eastern Kern Air Pollution Control District (EKAPCD)

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	Elementary School	99.853	1000 sqft	2.29	99,853
Parking	Surface Parking	60.520	1000 sqft	1.39	60,520
Parking [2]	Other Asphalt Surfaces	240.430	1000 sqft	5.52	240,430
Parking [2]	Other Non-asphalt Surfaces	1,341.597	1000 sqft	30.80	174,800
				40.00	

Trips

Assumes that there would be no new student trips as all students would be relocated to the proposed project site from other schools in the district.

Water Use

Land Use	Indoor	Outdoor	Total (gal/yr)
Elementary School	0.00	6,717,724.00	6,717,724.00

Assumes that students are already generating indoor water use at their current facilties (no net increase in indoor water)

*Assumes 100% aerobic treatment.

Solid Waste

Land Use	Total Solid Waste (tons/yr)
Elementary School	0.00

Assumes that students are already generating solid waste at their current facilties (no net increase in solid waste disposal)

Architectural Coatings See construction assumptions

Electricity (Buildings)

Modeling is conservative because the carbon intensity of electricity does not account for additional reductions from the 33% RPS and 50% RPS under SB 350.

Buildings constructed after January 1, 2020 are required to meet the 2019 Building and Energy Efficiency Standards. The 2019 Standards are 30% more energy efficient for non-residential buildings and 7% more energy efficient for single family residential buildings than the 2016 Building and Energy Efficiency Standards.

The project includes solar voltaic electricity generation from panels over the parking lot. Because the replacement school would be constructed in accordance with the latest building codes, it would likely require less electricity than the damaged school.

Additional Electricity Reductions[2]	**10.7%**	more efficient than 2019 Title 24 electricity rates
Additional Natural Gas Reductions[2]	**1%**	more efficient than 2019 Title 24 natural gas rates

Sources:

[1] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. Accessed on April 3, 2019. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

[2] NORESCO. 2020. 2019 Update to the California Energy Efficiency Standards for Residential and Non-Residential Buildings

Default CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
Elementary School	**1.95**	1.95	3.44	**10.24**	0.46
Parking Lot	**0.00**	0.00	0.35	**0.00**	0.00

Adjusted CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
Elementary School	**1.74**	1.95	3.44	**10.14**	0.46
Parking Lot	**0.00**	0.00	0.35	**0.00**	0.00

**Based on methodology above, only Title-24 energy for single family housing and the clubhouse has been adjusted.*

Southern California Edison Carbon Intensity Factors

	lbs/MWh
CO2:[1,2]	531.44
CH4:[3]	0.029
N2O:[3]	0.00617

[1] Based on CO_2e intensity factor of 534 pounds per megawatt hour; Southern California Edison. 2019, May. 2018 Sustainability Report. https://www.edison.com/content/dam/eix/documents/sustainability/eix-2019-sustainability-report.pdf.

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265
Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).		

EMFAC2017 Derived CalEEMod Annual Emission Rates: Year 2023[1,2]

Season	Pollutant	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	OBUS	UBUS	MCY	SBUS	MH
Annual	CH4_IDLEX	0	0	0	0	0.0038682	0.002173564	0.003469807	0.03357026	0.0091191	0	0	0.0220857	0
Annual	CH4_RUNEX	0.0021381	0.0044073	0.0044968	0.0044529	0.0135665	0.00854827	0.002410939	0.001705288	0.0079388	0.9260029	0.3358725	0.0040368	0.0072355
Annual	CH4_STREX	0.0520087	0.0727425	0.0828535	0.0897307	0.0137956	0.006133796	0.009738772	5.88024E-08	0.0234114	0.0377009	0.2721308	0.0017628	0
Annual	CO_IDLEX	0	0	0	0	0.1540905	0.113289772	0.365321175	10.64451049	0.7821098	0	0	1.1944344	0
Annual	CO_RUNEX	0.5792729	0.9801315	0.9739222	0.9431821	1.3324423	0.85134905	0.313992189	0.203032662	0.8371318	6.589477	22.695919	0.2523699	0.5884514
Annual	CO_STREX	2.2352636	2.4509638	2.9335394	3.3692693	0.9482769	0.405197883	1.137481931	0.000511719	2.4238879	2.4858117	9.1762835	0.2402192	0
Annual	CO2_NBIO_IDLEX	0	0	0	0	9.7339373	15.78597831	71.53586355	1728.349984	119.54272	0	0	326.46546	0
Annual	CO2_NBIO_RUNEX	254.13748	303.2603	330.16502	400.58139	760.37957	747.1920921	1108.062191	1304.974559	1532.1466	1414.6885	212.94779	1065.034	1049.5232
Annual	CO2_NBIO_STREX	53.201414	64.734326	71.685626	86.537721	8.9247807	4.919584736	9.108010955	0.002821634	19.215426	29.368198	63.81737	1.4446428	0
Annual	NOX_IDLEX	0	0	0	0	0.1032701	0.145161215	0.422348628	8.545442581	0.4828324	0	0	3.5690801	0
Annual	NOX_RUNEX	0.0376345	0.0894103	0.106384	0.1010539	2.0802931	1.887432591	1.418394968	2.286082427	1.215786	0.2682788	1.2060218	4.5645836	5.9543006
Annual	NOX_STREX[3]	0.1859544	0.2618143	0.3409679	0.3717101	0.2533458	0.122793977	1.583350017	2.24427395	0.8520645	0.3091825	0.272669	0.9201181	0
Annual	PM10_IDLEX	0	0	0	0	0.001198	0.001684259	0.000431268	0.00313949	0.0001676	0	0	0.0039363	0
Annual	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.061693414	0.13034	0.115229	0.01176	0.7448002	0.13034
Annual	PM10_PMTW	0.008	0.008	0.008	0.008	0.010322	0.011192228	0.012000003	0.035971534	0.012	0.0108403	0.004	0.0112244	0.016
Annual	PM10_RUNEX	0.0013471	0.0017128	0.0014709	0.0015144	0.0230245	0.025739298	0.008294525	0.027732264	0.0077452	0.0032291	0.0018079	0.0341631	0.1543751
Annual	PM10_STREX	0.0018214	0.0024448	0.002053	0.0020313	0.0002514	8.30624E-05	0.00012416	2.60185E-08	0.0001992	0.0002096	0.0033113	1.785E-05	0
Annual	PM25_IDLEX	0	0	0	0	0.0011462	0.001611399	0.000412611	0.003003677	0.0001603	0	0	0.003766	0
Annual	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.026440035	0.05586	0.0493839	0.00504	0.3192001	0.05586
Annual	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025805	0.002798057	0.003000001	0.008992883	0.003	0.0027101	0.001	0.0028061	0.004
Annual	PM25_RUNEX	0.001242	0.001576	0.0013538	0.0013989	0.0219826	0.024609443	0.007928366	0.026532575	0.0073892	0.0030567	0.0016965	0.0326763	0.1476969
Annual	PM25_STREX	0.0016748	0.002248	0.0018878	0.0018681	0.0002312	7.63728E-05	0.00011416	2.39231E-08	0.0001832	0.0001927	0.0031302	1.641E-05	0
Annual	ROG_DIURN	0.057794	0.135218	0.1235154	0.12013	0.0030808	0.000973262	0.000609298	2.46147E-08	0.0025262	0.0051174	1.449539	0.0001636	0
Annual	ROG_HTSK	0.105378	0.2051134	0.1854567	0.1818596	0.09216	0.031352401	0.021016344	5.99006E-07	0.0259477	0.0270605	0.9826341	0.0010675	0
Annual	ROG_IDLEX	0	0	0	0	0.0184678	0.013494891	0.017431325	0.720801525	0.0640403	0	0	0.1081896	0
Annual	ROG_RESTL	0.0454235	0.0973088	0.0965531	0.1012659	0.0013819	0.000471163	0.000286543	1.22552E-08	0.0009757	0.0014431	0.8266679	6.969E-05	0
Annual	ROG_RUNEX	0.0082211	0.0188207	0.0191501	0.0192507	0.1627477	0.153751014	0.020081447	0.021050533	0.0422902	0.0327684	2.3030875	0.0765732	0.1557759
Annual	ROG_RUNLS	0.2175431	0.7205049	0.6354155	0.5752714	0.7004916	0.188504633	0.116527849	1.66473E-06	0.3390996	0.154082	2.4618768	0.0070883	0
Annual	ROG_STREX	0.2307227	0.3578417	0.4059917	0.4537145	0.0722166	0.030926138	0.051273075	3.06919E-07	0.1175902	0.156639	2.0656056	0.009053	0
Annual	SO2_IDLEX	0	0	0	0	9.369E-05	0.00015018	0.000678648	0.016326216	0.0011355	0	0	0.0030931	0
Annual	SO2_RUNEX	0.0024828	0.0029636	0.003226	0.0039111	0.0073769	0.00716684	0.010569982	0.012322826	0.0148859	0.0099015	0.0021073	0.0101349	0.0099218
Annual	SO2_STREX	0.0005199	0.0006326	0.0007006	0.0008457	8.832E-05	4.86833E-05	9.01312E-05	2.79224E-08	0.0001902	0.0002906	0.0006315	1.43E-05	0
Annual	TOG_DIURN	0.0578286	0.1352991	0.1235894	0.1202021	0.0030808	0.000973262	0.000609298	2.46147E-08	0.0025262	0.0051174	1.449539	0.0001636	0
Annual	TOG_HTSK	0.1054412	0.2052365	0.185568	0.1819687	0.09216	0.031352401	0.021016344	5.99006E-07	0.0259477	0.0270605	0.9826341	0.0010675	0
Annual	TOG_IDLEX	0	0	0	0	0.0254373	0.017530179	0.023607554	0.82066926	0.0814762	0	0	0.150032	0
Annual	TOG_RESTL	0.0454507	0.0973672	0.0966111	0.1013266	0.0013819	0.000471163	0.000286543	1.22552E-08	0.0009757	0.0014431	0.8266679	6.969E-05	0
Annual	TOG_RUNEX	0.0119478	0.0274651	0.0279299	0.0279394	0.1981491	0.177600702	0.025810298	0.024699772	0.0594727	0.9667692	2.7999915	0.0879293	0.1773405
Annual	TOG_RUNLS	0.2176736	0.7209372	0.6357967	0.5756166	0.7004916	0.188504633	0.116527849	1.66473E-06	0.3390996	0.154082	2.4618768	0.0070883	0
Annual	TOG_STREX	0.2527881	0.392065	0.4448201	0.4971001	0.0790681	0.033860229	0.056137564	3.36038E-07	0.1287464	0.1715	2.2465239	0.0099119	0
Summer	CH4_IDLEX	0	0	0	0	0.0038808	0.00218027	0.003300705	0.035569401	0.0092485	0	0	0.0221144	0
Summer	CH4_RUNEX	0.0025039	0.0051073	0.0052265	0.005193	0.0139016	0.008612592	0.002479537	0.001705426	0.0082	0.9261052	0.3246954	0.004062	0.0072355
Summer	CH4_STREX	0.0421883	0.0585621	0.0668776	0.0725499	0.0129154	0.005745174	0.009108417	5.45722E-08	0.0216712	0.0327185	0.2207767	0.0013399	0
Summer	CO_IDLEX	0	0	0	0	0.1540905	0.113289772	0.314465581	10.50606728	0.7746483	0	0	1.1532436	0

Summer	CO_RUNEX	0.7230262	1.2031649	1.2013811	1.1601929	1.3632777	0.856691426	0.321473604	0.203099808	0.8638462	6.5945904	22.276989	0.2539245	0.5884514
Summer	CO_STREX	1.7388819	1.8993732	2.2683695	2.5943333	0.8634265	0.369748168	1.033566816	0.000464997	2.1503623	1.9275223	7.9703784	0.1447255	0
Summer	CO2_NBIO_IDLEX	0	0	0	0	9.7339373	15.78597831	71.59449007	1705.841732	118.13315	0	0	335.41327	0
Summer	CO2_NBIO_RUNEX	279.90138	329.85275	356.68377	427.40757	760.43668	747.2018137	1108.075477	1304.974668	1532.1942	1414.6979	211.93389	1065.0368	1049.5232
Summer	CO2_NBIO_STREX	52.248325	63.599381	70.337209	84.980624	8.7739336	4.856405495	8.931668666	0.002747507	18.751586	28.411342	60.547209	1.2859436	0
Summer	NOX_IDLEX	0	0	0	0	0.1032701	0.145161215	0.414985361	8.123083356	0.4588357	0	0	3.6462372	0
Summer	NOX_RUNEX	0.0336702	0.0790205	0.0943699	0.0897321	1.9524607	1.779774112	1.332434795	2.157496236	1.1206308	0.2515374	1.0162791	4.2961507	5.6101099
Summer	NOX_STREX[3]	0.1681151	0.2365729	0.3081426	0.3359122	0.2358605	0.114332694	1.577350714	2.244273856	0.835499	0.2857796	0.2480444	0.9185569	0
Summer	PM10_IDLEX	0	0	0	0	0.001198	0.001684259	0.000366621	0.002786316	0.0001489	0	0	0.0033272	0
Summer	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.061693414	0.13034	0.115229	0.01176	0.7448002	0.13034
Summer	PM10_PMTW	0.008	0.008	0.008	0.008	0.010322	0.011192228	0.012000003	0.035971534	0.012	0.0108403	0.004	0.0112244	0.016
Summer	PM10_RUNEX	0.0013471	0.0017128	0.0014709	0.0015144	0.0230245	0.025739298	0.008294525	0.027732264	0.0077452	0.0032291	0.0018079	0.0341631	0.1543751
Summer	PM10_STREX	0.0018214	0.0024448	0.002053	0.0020313	0.0002514	8.30624E-05	0.00012416	2.60185E-08	0.0001992	0.0002096	0.0033113	1.785E-05	0
Summer	PM25_IDLEX	0	0	0	0	0.0011462	0.001611399	0.000350761	0.002665781	0.0001425	0	0	0.0031833	0
Summer	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.026440035	0.05586	0.0493839	0.00504	0.3192001	0.05586
Summer	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025805	0.002798057	0.003000001	0.008992883	0.003	0.0027101	0.001	0.0028061	0.004
Summer	PM25_RUNEX	0.001242	0.001576	0.0013538	0.0013989	0.0219826	0.024609443	0.007928366	0.026532575	0.0073892	0.0030567	0.0016965	0.0326763	0.1476969
Summer	PM25_STREX	0.0016748	0.002248	0.0018878	0.0018681	0.0002312	7.63728E-05	0.00011416	2.39231E-08	0.0001832	0.0001927	0.0031302	1.641E-05	0
Summer	ROG_DIURN	0.1429303	0.3382081	0.3050367	0.2934498	0.0076527	0.002396706	0.001535336	6.37617E-08	0.006189	0.0122856	3.8646595	0.0003953	0
Summer	ROG_HTSK	0.1266901	0.2605407	0.2293706	0.2164339	0.1166073	0.039079087	0.026125326	9.37466E-07	0.0299524	0.0326364	1.5707157	0.0011958	0
Summer	ROG_IDLEX	0	0	0	0	0.0184678	0.013494891	0.016937393	0.763805669	0.0662748	0	0	0.1079422	0
Summer	ROG_RESTL	0.1099517	0.237885	0.2320696	0.2405924	0.0033334	0.001127668	0.000717497	3.3814E-08	0.0023353	0.0033214	2.3696423	0.0001665	0
Summer	ROG_RUNEX	0.0094688	0.0215549	0.0219687	0.0220885	0.1646553	0.154041702	0.020412626	0.02105121	0.043523	0.0330545	2.2029948	0.0766689	0.1557759
Summer	ROG_RUNLS	0.2162631	0.7180926	0.6327294	0.5730844	0.7067831	0.190847412	0.118441356	1.65695E-06	0.3418311	0.1506982	2.4483914	0.0063534	0
Summer	ROG_STREX	0.1840836	0.2836986	0.3225328	0.360551	0.0673447	0.028844021	0.047808553	2.8618E-07	0.1085688	0.1352109	1.6563933	0.006868	0
Summer	SO2_IDLEX	0	0	0	0	9.369E-05	0.00015018	0.00067932	0.016113565	0.0011222	0	0	0.0031777	0
Summer	SO2_RUNEX	0.0027346	0.0032235	0.0034852	0.0041732	0.0073775	0.007166936	0.010570114	0.012322827	0.0148864	0.0099016	0.0020973	0.0101349	0.0099218
Summer	SO2_STREX	0.0005106	0.0006215	0.0006874	0.0008305	8.683E-05	4.80581E-05	8.83861E-05	2.71888E-08	0.0001856	0.0002812	0.0005992	1.273E-05	0
Summer	TOG_DIURN	0.1430159	0.3384109	0.3052197	0.2936258	0.0076527	0.002396706	0.001535336	6.37617E-08	0.006189	0.0122856	3.8646595	0.0003953	0
Summer	TOG_HTSK	0.126766	0.260697	0.2295082	0.2165637	0.1166073	0.039079087	0.026125326	9.37466E-07	0.0299524	0.0326364	1.5707157	0.0011958	0
Summer	TOG_IDLEX	0	0	0	0	0.0254373	0.017530179	0.022819464	0.869627907	0.0840201	0	0	0.1497504	0
Summer	TOG_RESTL	0.1100176	0.2380277	0.2322088	0.2407368	0.0033334	0.001127668	0.000717497	3.3814E-08	0.0023353	0.0033214	2.3696423	0.0001665	0
Summer	TOG_RUNEX	0.0137688	0.0314566	0.0320448	0.0320744	0.2009326	0.178024874	0.026293552	0.024700761	0.0612715	0.9671867	2.6824456	0.088069	0.1773405
Summer	TOG_RUNLS	0.2163929	0.7185235	0.6331091	0.5734282	0.7067831	0.190847412	0.118441356	1.65695E-06	0.3418311	0.1506982	2.4483914	0.0063534	0
Summer	TOG_STREX	0.2016887	0.310831	0.3533794	0.3950286	0.073734	0.031580572	0.052344348	3.13332E-07	0.1188692	0.1480389	1.8015793	0.0075196	0

Winter	CH4_IDLEX	0	0	0	0	0.0038697	0.002174311	0.003719327	0.030720691	0.0089767	0	0	0.0220985	0
Winter	CH4_RUNEX	0.0020647	0.0042642	0.0043495	0.0042954	0.0135808	0.008552288	0.002412059	0.000979127	0.0079482	0.9260068	0.3321274	0.0040364	0.0072355
Winter	CH4_STREX	0.051734	0.0723106	0.0823889	0.0892137	0.0137001	0.006092576	0.009643609	5.83021E-08	0.0233473	0.0373782	0.2624061	0.0017903	0
Winter	CO_IDLEX	0	0	0	0	0.1540905	0.113289772	0.436424001	10.83420031	0.7924139	0	0	1.251317	0
Winter	CO_RUNEX	0.5351863	0.9107613	0.9036172	0.8742667	1.3333754	0.851530219	0.314143736	0.200981686	0.8377351	6.5895645	21.8189	0.2523356	0.5884514
Winter	CO_STREX	2.2050312	2.4176342	2.8968414	3.3258736	0.9330065	0.399192141	1.11637839	0.000502255	2.4031794	2.4208129	8.7688898	0.2417942	0
Winter	CO2_NBIO_IDLEX	0	0	0	0	9.7339373	15.78597831	71.44988001	1759.18176	121.48928	0	0	314.10895	0
Winter	CO2_NBIO_RUNEX	246.05822	294.92095	321.84957	392.16622	760.38135	747.1924498	1108.062477	1304.340222	1532.1477	1414.6887	211.44553	1065.0339	1049.5232
Winter	CO2_NBIO_STREX	53.147177	64.67062	71.615832	86.455609	8.8987569	4.909304834	9.07310829	0.002806625	19.181483	29.260331	62.906687	1.4476185	0
Winter	NOX_IDLEX	0	0	0	0	0.1032701	0.145161215	0.432516245	9.126910415	0.5159708	0	0	3.4625299	0
Winter	NOX_RUNEX	0.0355097	0.0845518	0.1004901	0.0954889	2.0498301	1.861225694	1.396969893	2.256753651	1.194603	0.2649031	1.1713887	4.5043787	5.8656563
Winter	NOX_STREX[3]	0.183886	0.25902	0.3372795	0.3676699	0.2505147	0.121415602	1.582445169	2.244273936	0.8496077	0.3069543	0.27007	0.9201516	0
Winter	PM10_IDLEX	0	0	0	0	0.001198	0.001684259	0.000520542	0.003619779	0.0001934	0	0	0.0047773	0
Winter	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.061681044	0.13034	0.115229	0.01176	0.7448002	0.13034
Winter	PM10_PMTW	0.008	0.008	0.008	0.008	0.010322	0.011192228	0.012000003	0.035964321	0.012	0.0108403	0.004	0.0112244	0.016
Winter	PM10_RUNEX	0.0013471	0.0017128	0.0014709	0.0015144	0.0230245	0.025739298	0.008294525	0.027731712	0.0077452	0.0032291	0.0018079	0.0341631	0.1543751
Winter	PM10_STREX	0.0018214	0.0024448	0.002053	0.0020313	0.0002514	8.30624E-05	0.00012416	2.60185E-08	0.0001992	0.0002096	0.0033113	1.785E-05	0
Winter	PM25_IDLEX	0	0	0	0	0.0011462	0.001611399	0.000498023	0.003463189	0.000185	0	0	0.0045707	0
Winter	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.026434733	0.05586	0.0493839	0.00504	0.3192001	0.05586
Winter	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025805	0.002798057	0.003000001	0.00899108	0.003	0.0027101	0.001	0.0028061	0.004
Winter	PM25_RUNEX	0.001242	0.001576	0.0013538	0.0013989	0.0219826	0.024609443	0.007928366	0.026532047	0.0073892	0.0030567	0.0016965	0.0326763	0.1476969
Winter	PM25_STREX	0.0016748	0.002248	0.0018878	0.0018681	0.0002312	7.63728E-05	0.00011416	2.39231E-08	0.0001832	0.0001927	0.0031302	1.641E-05	0
Winter	ROG_DIURN	0.0559965	0.1353722	0.1199199	0.1133625	0.0032937	0.00098631	0.000640816	2.58791E-08	0.0026134	0.0048073	1.5912303	0.0001587	0
Winter	ROG_HTSK	0.1138609	0.2302425	0.204538	0.1956187	0.1094177	0.035063066	0.023231157	7.08074E-07	0.0277944	0.0289727	1.2727317	0.0011101	0
Winter	ROG_IDLEX	0	0	0	0	0.0184678	0.013494891	0.01812683	0.661408056	0.0609544	0	0	0.1085312	0
Winter	ROG_RESTL	0.0373199	0.0795963	0.079791	0.0842686	0.0012112	0.00040276	0.000244607	9.66726E-09	0.0008835	0.0012707	0.594826	6.118E-05	0
Winter	ROG_RUNEX	0.0079261	0.018164	0.0184805	0.0185127	0.1628156	0.153767386	0.020092203	0.021003575	0.0423345	0.0327776	2.2714832	0.0765719	0.1557759
Winter	ROG_RUNLS	0.2470708	0.8470011	0.744049	0.6687414	0.7573192	0.205300842	0.127515229	1.85025E-06	0.3625925	0.1853416	2.7894119	0.0089271	0
Winter	ROG_STREX	0.2290034	0.3547951	0.4027405	0.4499928	0.0716747	0.030699614	0.05084051	3.0433E-07	0.1172568	0.1551973	1.9857738	0.0091958	0
Winter	SO2_IDLEX	0	0	0	0	9.369E-05	0.00015018	0.00067767	0.016619877	0.0011539	0	0	0.0029764	0
Winter	SO2_RUNEX	0.0024038	0.0028821	0.0031448	0.0038288	0.0073769	0.007166844	0.010569985	0.012322826	0.0148859	0.0099015	0.0020924	0.0101349	0.0099218
Winter	SO2_STREX	0.0005194	0.000632	0.0006999	0.0008449	8.806E-05	4.85816E-05	8.97858E-05	2.77738E-08	0.0001898	0.0002896	0.0006225	1.433E-05	0
Winter	TOG_DIURN	0.0560301	0.1354535	0.1199918	0.1134305	0.0032937	0.00098631	0.000640816	2.58791E-08	0.0026134	0.0048073	1.5912303	0.0001587	0
Winter	TOG_HTSK	0.1139292	0.2303807	0.2046607	0.195736	0.1094177	0.035063066	0.023231157	7.08074E-07	0.0277944	0.0289727	1.2727317	0.0011101	0
Winter	TOG_IDLEX	0	0	0	0	0.0254373	0.017530179	0.024715432	0.752962725	0.0779631	0	0	0.1504209	0
Winter	TOG_RESTL	0.0373423	0.079644	0.0798388	0.0843192	0.0012112	0.00040276	0.000244607	9.66726E-09	0.0008835	0.0012707	0.594826	6.118E-05	0
Winter	TOG_RUNEX	0.0115174	0.0265066	0.0269527	0.026867	0.1982481	0.177624592	0.025825993	0.023916991	0.0595373	0.9667827	2.7623038	0.0879274	0.1773405
Winter	TOG_RUNLS	0.2472191	0.8475093	0.7444954	0.6691427	0.7573192	0.205300842	0.127515229	1.85025E-06	0.3625925	0.1853416	2.7894119	0.0089271	0
Winter	TOG_STREX	0.2509044	0.388727	0.4412579	0.4930229	0.0784747	0.033612213	0.055663959	3.33203E-07	0.1283814	0.1699215	2.1597489	0.0100682	0

1 Source: California Air Resources Board. EMFAC2017 Web Database. https://www.arb.ca.gov/emfac/2017/; California Air Pollution Control Officers Association (CAPCOA). 2017, November. California Emissions Estimator Model User's Guide, Version 2016.3.2, Appendix A.

2 Unless otherwise noted, per CalEEMod methodology, the calculated CalEEMod emission rates are derived from the emission rates obtained using the EMFAC2017 Web Database for the Los Angeles (SC) region .

3 Because EMFAC2017 provides vehicle trips data for MHDT and HHDT diesel trucks, the formula provided in Appendix A of the CalEEMod User's Guide in calculating the NO_X STREX emission rates are utilized.

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Kern (MD)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_TW	PM2.5_BW	PM10_RUN	PM10_IDL	PM10_STR	PM10_TW	PM10_BW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNL	ROG_RESTL	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_RESTL	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	SOx_STREX
Kern (MD)	2023	HHDT	Aggregate	Aggregate	GAS	0.192363	66.38558	3.8488	2.481277	0	0.022299	0.00106	0	0.000397	0.005	0.02646	0.001153	0	0.000432	0.02	0.06174	1823.278	0	46.82463	0.05448	0	0.000976	0.115244	0	0.001085	0.23044	0	0.005093	0.00994	0.027626	0.004069	0.008173	0.336257	0	0.005576	0.00994	0.027626	0.004069	0.008173	23.19649	0	8.491905	0.018043	0	0.000463
Kern (MD)	2023	HHDT	Aggregate	Aggregate	DSL	4791.073	8154008	63850.82	2.286033	113.8966	2.244958	0.026539	0.038964	0	0.008993	0.02644	0.027739	0.041771	0	0.035973	0.061693	1304.599	23037.47	0	0.000975	0.446313	0	0.205059	3.621169	0	0.020991	9.608998	0	0	0	0	0	0.023896	10.93911	0	0	0	0	0	0.199149	141.8847	0	0.012325	0.217647	0
Kern (MD)	2023	HHDT	Aggregate	Aggregate	NG	4.010308	163.4119	15.6402	2.45564	28.17317	0	0.002639	0.093298	0	0.009	0.02646	0.002759	0.097517	0	0.036	0.06174	3166.145	4008.089	0	3.624468	1.452403	0	0.645439	0.817075	0	0.234437	0.101956	0	0	0	0	0	3.907144	1.574806	0	0	0	0	0	10.24142	22.03632	0	0	0	0
Kern (MD)	2023	LDA	Aggregate	Aggregate	GAS	63945.61	2749374	300016	0.037735	0	0.192106	0.00119	0	0.001726	0.002	0.01575	0.001294	0	0.001877	0.008	0.03675	256.8352	0	54.31545	0.002202	0	0.053767	0.004447	0	0.026584	0.00833	0	0.238522	0.108838	0.224897	0.220133	0.279824	0.01215	0	0.26115	0.108838	0.224897	0.220133	0.279824	0.594649	0	2.304601	0.002542	0	0.000537
Kern (MD)	2023	LDA	Aggregate	Aggregate	DSL	825.3014	35289.33	3841.647	0.08857	0	0	0.006991	0	0	0.002	0.01575	0.007307	0	0	0.008	0.03675	202.8123	0	0	0.000607	0	0	0.031879	0	0	0.013064	0	0	0	0	0	0	0.014873	0	0	0	0	0	0.19298	0	0	0.001917	0	0
Kern (MD)	2023	LDA	Aggregate	Aggregate	ELEC	1258.982	57067.85	6300.017	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0
Kern (MD)	2023	LDT1	Aggregate	Aggregate	GAS	7806.961	303500.6	35640.24	0.089889	0	0.263665	0.001555	0	0.002258	0.002	0.01575	0.001691	0	0.002456	0.008	0.03675	301.8886	0	64.42574	0.004443	0	0.073308	0.007244	0	0.029749	0.018945	0	0.360623	0.206672	0.726105	0.447624	0.621928	0.085507	0	0.394836	0.206672	0.726105	0.447624	0.621928	0.985507	0	2.463364	0.002987	0	0.000638
Kern (MD)	2023	LDT1	Aggregate	Aggregate	DSL	4.487571	83.61047	15.05567	0.76141	0	0	0.106684	0	0	0.002	0.01575	0.111508	0	0	0.008	0.03675	419.8723	0	0	0.005648	0	0	0.065998	0	0	0.121589	0	0	0	0	0	0	0.138421	0	0	0	0	0	0.720127	0	0	0.003969	0	0
Kern (MD)	2023	LDT1	Aggregate	Aggregate	ELEC	51.41243	2466.152	261.9746	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0
Kern (MD)	2023	LDT2	Aggregate	Aggregate	GAS	26506.16	1022151	121083.9	0.107563	0	0.346099	0.001335	0	0.001911	0.002	0.01575	0.001452	0	0.002079	0.008	0.03675	329.0774	0	71.90925	0.004559	0	0.084159	0.007966	0	0.035439	0.019344	0	0.41239	0.188332	0.645429	0.447935	0.572905	0.02822	0	0.451514	0.188332	0.645429	0.447935	0.572905	0.984773	0	2.971745	0.003256	0	0.000712
Kern (MD)	2023	LDT2	Aggregate	Aggregate	DSL	148.8725	6832.594	724.2836	0.045296	0	0	0.005151	0	0	0.002	0.01575	0.005384	0	0	0.008	0.03675	265.3141	0	0	0.000602	0	0	0.041704	0	0	0.012971	0	0	0	0	0	0	0.014766	0	0	0	0	0	0.111459	0	0	0.002508	0	0
Kern (MD)	2023	LDT2	Aggregate	Aggregate	ELEC	234.1383	8127.496	1183.848	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0
Kern (MD)	2023	LHDT1	Aggregate	Aggregate	GAS	2334.034	76889.19	34773.63	0.38791	0.038971	0.550508	0.002693	0	0.000502	0.002	0.03276	0.002929	0	0.000546	0.008	0.07644	1016.578	122.0465	19.3931	0.018763	0.118145	0.029977	0.021309	0.002941	0.040411	0.095656	0.445386	0.156923	0.200259	1.522133	0.044736	0.099736	0.139581	0.649906	0.171811	0.200259	1.522133	0.044736	0.099736	1.792589	3.724606	2.060558	0.01006	0.001208	0.000192
Kern (MD)	2023	LHDT1	Aggregate	Aggregate	DSL	3242.592	106397.1	40787.73	3.303314	2.378427	0	0.035922	0.02671	0	0.003	0.03276	0.037547	0.027918	0	0.012	0.07644	575.2343	138.978	0	0.009811	0.005098	0	0.090419	0.021845	0	0.211232	0.10976	0	0	0	0	0	0.240474	0.124954	0	0	0	0	0	0.999912	0.909745	0	0.005438	0.001314	0
Kern (MD)	2023	LHDT2	Aggregate	Aggregate	GAS	284.8848	9969.52	4244.358	0.261688	0.038561	0.539214	0.002001	0	0.000335	0.002	0.03822	0.002176	0	0.000365	0.008	0.08918	1155.486	139.944	21.60292	0.008806	0.121723	0.026935	0.016454	0.003049	0.040946	0.039604	0.442007	0.135803	0.137675	0.827763	0.030825	0.063673	0.05779	0.644975	0.148687	0.137675	0.827763	0.030825	0.063673	0.735274	3.757601	1.779309	0.011434	0.001385	0.000214
Kern (MD)	2023	LHDT2	Aggregate	Aggregate	DSL	1144.272	39398.28	14393.51	2.298818	2.35478	0	0.03033	0.026246	0	0.003	0.03822	0.031702	0.027433	0	0.012	0.08918	643.8754	222.2801	0	0.008483	0.005098	0	0.101208	0.034939	0	0.182635	0.10976	0	0	0	0	0	0.207918	0.124954	0	0	0	0	0	0.880721	0.909745	0	0.006087	0.002101	0
Kern (MD)	2023	MCY	Aggregate	Aggregate	GAS	5235.505	54951.3	10471.01	1.206022	0	0.272669	0.001697	0	0.00313	0.001	0.00504	0.001808	0	0.003311	0.004	0.01176	212.9478	0	63.81737	0.335873	0	0.272131	0.068834	0	0.01533	2.303088	0	2.065606	0.982634	2.461877	1.653336	2.899078	2.799992	0	2.246524	0.982634	2.461877	1.653336	2.899078	22.69592	0	9.176283	0.002107	0	0.000632
Kern (MD)	2023	MDV	Aggregate	Aggregate	GAS	20195.89	708422.1	91224.12	0.102991	0	0.385143	0.001281	0	0.001931	0.002	0.01575	0.001393	0	0.002099	0.008	0.03675	399.353	0	88.6113	0.004612	0	0.093039	0.008034	0	0.037149	0.01966	0	0.47044	0.188526	0.596478	0.474211	0.562454	0.028623	0	0.515064	0.188526	0.596478	0.474211	0.562454	0.971774	0	3.484065	0.003952	0	0.000877
Kern (MD)	2023	MDV	Aggregate	Aggregate	DSL	561.407	23050.55	2659.088	0.060822	0	0	0.005195	0	0	0.002	0.01575	0.00543	0	0	0.008	0.03675	368.9549	0	0	0.0005	0	0	0.057995	0	0	0.010775	0	0	0	0	0	0	0.012267	0	0	0	0	0	0.184569	0	0	0.003488	0	0
Kern (MD)	2023	MDV	Aggregate	Aggregate	ELEC	138.1548	4906.513	703.7465	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0	0.004888	0	0.009466	0.025195	0	0	0	0
Kern (MD)	2023	MH	Aggregate	Aggregate	GAS	835.0562	6595.51	83.53902	0.606535	0	0.337748	0.001792	0	0.000354	0.003	0.05586	0.001949	0	0.000384	0.012	0.13034	1834.297	0	26.78113	0.021266	0	0.033489	0.033829	0	0.033273	0.096723	0	0.146302	0.113034	2.746229	0.056205	0.16964	0.141138	0	0.160183	0.113034	2.746229	0.056205	0.16964	2.470852	0	3.213926	0.018152	0	0.000265
Kern (MD)	2023	MH	Aggregate	Aggregate	DSL	314.7186	2569.471	31.47186	5.954301	0	0	0.147697	0	0	0.004	0.05586	0.154375	0	0	0.016	0.13034	1049.523	0	0	0.007235	0	0	0.16497	0	0	0.155776	0	0	0	0	0	0	0.177341	0	0	0	0	0	0.588451	0	0	0.009922	0	0
Kern (MD)	2023	MHDT	Aggregate	Aggregate	GAS	138.5248	11765.05	2771.605	0.430851	0.08901	0.364394	0.001373	0	0.000486	0.003	0.05586	0.001494	0	0.000528	0.012	0.13034	1718.332	534.2646	38.76626	0.014451	0.272944	0.041451	0.02247	0.008103	0.030539	0.069735	0.999093	0.218233	0.089451	0.495975	0.024402	0.051888	0.101757	1.457874	0.238937	0.089451	0.495975	0.024402	0.051888	1.596904	14.31659	4.841443	0.017004	0.005287	0.000384
Kern (MD)	2023	MHDT	Aggregate	Aggregate	DSL	1031.964	77473.45	9025.125	1.568363	4.816062	1.95769	0.008924	0.004717	0	0.003	0.05586	0.009327	0.00493	0	0.012	0.13034	1015.387	746.0341	0	0.000583	0.003026	0	0.159605	0.117266	0	0.012541	0.065151	0	0	0	0	0	0.014277	0.074169	0	0	0	0	0	0.11917	2.254334	0	0.009593	0.007048	0
Kern (MD)	2023	OBUS	Aggregate	Aggregate	GAS	51.86083	3765.729	1037.632	0.582223	0.064759	0.325363	0.001007	0	0.000254	0.003	0.05586	0.001095	0	0.000276	0.012	0.13034	1782.194	379.3748	26.65977	0.014805	0.205022	0.032481	0.028204	0.005634	0.027187	0.068662	0.741741	0.163146	0.036	0.470472	0.027086	0.070126	0.100192	1.082347	0.178625	0.036	0.470472	0.027086	0.070126	1.485784	5.747386	3.362938	0.017636	0.003754	0.000264
Kern (MD)	2023	OBUS	Aggregate	Aggregate	DSL	38.15796	3555.697	401.9938	1.886773	18.12831	2.211593	0.014148	0.006048	0	0.003	0.05586	0.014788	0.006322	0	0.012	0.13034	1267.329	3994.502	0	0.000667	0.065398	0	0.199207	0.62788	0	0.01436	1.408007	0	0	0	0	0	0.016348	1.602908	0	0	0	0	0	0.150164	21.69615	0	0.011973	0.037738	0
Kern (MD)	2023	SBUS	Aggregate	Aggregate	GAS	13.35045	1085.819	53.4018	0.12769	0.92653	0.515684	0.001133	0	0.000521	0.002	0.3192	0.001232	0	0.000567	0.008	0.7448	839.8027	2507.806	45.88738	0.003042	2.661905	0.055993	0.013409	0.098924	0.54674	0.012164	10.64152	0.287559	0.033908	0.225153	0.008854	0.02078	0.01775	15.52808	0.314841	0.033908	0.225153	0.008854	0.02078	0.199484	82.24088	7.630281	0.008311	0.024817	0.000454
Kern (MD)	2023	SBUS	Aggregate	Aggregate	DSL	142.3625	4514.336	1642.843	5.631775	42.4386	0.933265	0.040263	0.044872	0	0.003	0.3192	0.042084	0.046901	0	0.012	0.7448	1119.208	3654.65	0	0.004276	0.013523	0	0.175924	0.57446	0	0.092065	0.291137	0	0	0	0	0	0.104809	0.331437	0	0	0	0	0	0.26509	6.519281	0	0.010574	0.034527	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	GAS	6.126097	601.8404	24.50439	0.212241	0	0.680216	0.001551	0	0.000424	0.002443	0.046041	0.001687	0	0.000461	0.009773	0.107429	1650.919	0	64.61144	0.004796	0	0.082944	0.019137	0	0.063426	0.015131	0	0.344613	0.059534	0.338988	0.0127	0.022409	0.022078	0	0.377308	0.059534	0.338988	0.0127	0.022409	0.270039	0	5.468904	0.016337	0	0.000639
Kern (MD)	2023	UBUS	Aggregate	Aggregate	DSL	2.759736	184.9822	11.03894	0.409637	0	0	0.00755	0	0	0.003	0.050446	0.007891	0	0	0.012	0.117708	919.9817	0	0	0.02872	0	0	0.144608	0	0	0.046889	0	0	0	0	0	0	0.080054	0	0	0	0	0	0.248856	0	0	0.008697	0	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	ELEC	0.142342	3.047238	0.569369	0	0	0	0	0	0	0.003	0.05586	0	0	0	0.012	0.13034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	NG	4.44953	365.6258	17.79812	0.291238	0	0	0.003287	0	0	0.003	0.054295	0.003436	0	0	0.012	0.126688	1287.919	0	0	2.904042	0	0	0.262551	0	0	0.05493	0	0	0	0	0	0	2.978458	0	0	0	0	0	20.25447	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Kern (MD)
Calendar Year: 2023
Season: Summer
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_TIR	PM2.5_BRW	PM10_RUN	PM10_IDL	PM10_STR	PM10_TIR	PM10_BRW	PM_PMT	PM10_PMI	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNL	ROG_REST	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_RESTI	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Kern (MD)	2023	HHDT	Aggregate	Aggregate	Aggregate	GAS	0.192363	66.38558	3.8488	2.123021	0	0.020737	0.00106	0	0.000397	0.005	0.02646	0.001153	0	0.000432	0.02	0.06174	1824.622	0	45.5945	0.056178	0	0.000906	0.103369	0	0.001058	0.238768	0	0.004749	0.015557	0.027497	0.011227	0.021171	0.348409	0	0.0052	0.015557	0.027497	0.011227	0.021171	24.02147	0	7.716565	0.018056	0	0.000451
Kern (MD)	2023	HHDT	Aggregate	Aggregate	Aggregate	DSL	4791.073	815400.8	63850.82	2.157468	108.2663	2.244958	0.026539	0.035472	0	0.008993	0.02644	0.027739	0.037076	0	0.035973	0.061693	1304.559	27737.4	0	0.000975	0.472941	0	0.205059	3.574003	0	0.020991	10.18229	0	0	0	0	0.023896	11.59177	0	0	0	0	0	0	0.199149	140.0401	0	0.012325	0.214812	0
Kern (MD)	2023	HHDT	Aggregate	Aggregate	Aggregate	NG	4.010308	163.4119	15.6402	2.310797	27.92868	0	0.002639	0.078906	0	0.009	0.02646	0.002759	0.082473	0	0.036	0.06174	3166.145	4015.166	0	3.624468	1.479412	0	0.645439	0.818518	0	0.234437	0.097433	0	0	0	0	3.907144	1.596778	0	0	0	0	0	0	10.24142	20.76721	0	0	0	0
Kern (MD)	2023	LDA	Aggregate	Aggregate	Aggregate	GAS	63945.61	2749374	300016	0.033706	0	0.173676	0.00119	0	0.001726	0.002	0.01575	0.001294	0	0.001877	0.008	0.03675	283.1332	0	53.3424	0.00258	0	0.043614	0.004112	0	0.024824	0.009619	0	0.190306	0.13087	0.223574	0.532594	0.691917	0.014031	0	0.208361	0.13087	0.223574	0.532594	0.691917	0.742832	0	1.792822	0.002802	0	0.000528
Kern (MD)	2023	LDA	Aggregate	Aggregate	Aggregate	DSL	825.3014	35289.33	3841.647	0.083454	0	0	0.006991	0	0	0.002	0.01575	0.007307	0	0	0.008	0.03675	202.8123	0	0	0.000607	0	0	0.031879	0	0	0.013064	0	0	0	0	0	0.014873	0	0	0	0	0	0	0	0.19298	0	0	0.001917	0	0
Kern (MD)	2023	LDA	Aggregate	Aggregate	Aggregate	ELEC	1258.982	57067.85	6300.017	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.036021	0.068207	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	LDT1	Aggregate	Aggregate	Aggregate	GAS	7806.961	303500.6	35640.24	0.079431	0	0.238245	0.001555	0	0.002258	0.002	0.01575	0.001691	0	0.002456	0.008	0.03675	328.3708	0	63.2962	0.005149	0	0.059017	0.006659	0	0.0278	0.021702	0	0.285904	0.26253	0.723674	1.094194	1.555535	0.031661	0	0.313028	0.26253	0.723674	1.094194	1.555535	1.209808	0	1.908983	0.003249	0	0.000626
Kern (MD)	2023	LDT1	Aggregate	Aggregate	Aggregate	DSL	4.487571	83.61047	15.05567	0.717429	0	0	0.106684	0	0	0.002	0.01575	0.111508	0	0	0.008	0.03675	419.8723	0	0	0.005648	0	0	0.065998	0	0	0.121589	0	0	0	0	0	0.138421	0	0	0	0	0	0	0	0.720127	0	0	0.003969	0	0
Kern (MD)	2023	LDT1	Aggregate	Aggregate	Aggregate	ELEC	51.41243	2466.152	261.9746	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.036021	0.068207	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	LDT2	Aggregate	Aggregate	Aggregate	GAS	26506.16	1022151	121083.9	0.095399	0	0.31278	0.001335	0	0.001911	0.002	0.01575	0.001452	0	0.002079	0.008	0.03675	355.6495	0	70.55662	0.005299	0	0.067932	0.007332	0	0.033115	0.022204	0	0.327616	0.232937	0.6427	1.076515	1.414807	0.032392	0	0.358697	0.232937	0.6427	1.076515	1.414807	1.214939	0	2.297912	0.003519	0	0.000698
Kern (MD)	2023	LDT2	Aggregate	Aggregate	Aggregate	DSL	148.8725	6832.594	724.2836	0.042679	0	0	0.005151	0	0	0.002	0.01575	0.005384	0	0	0.008	0.03675	265.3141	0	0	0.000602	0	0	0.041704	0	0	0.012971	0	0	0	0	0	0.014766	0	0	0	0	0	0	0	0.111459	0	0	0.002508	0	0
Kern (MD)	2023	LDT2	Aggregate	Aggregate	Aggregate	ELEC	234.1383	8127.496	1183.848	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.036021	0.068207	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	LHDT1	Aggregate	Aggregate	Aggregate	GAS	2334.034	76889.19	34773.63	0.332976	0.038971	0.512513	0.002693	0	0.000502	0.002	0.03276	0.002929	0	0.000546	0.008	0.07644	1016.715	122.0465	19.06532	0.019562	0.118552	0.028065	0.019061	0.003031	0.038772	0.100203	0.445386	0.146337	0.253382	1.535804	0.107913	0.247747	0.146216	0.649906	0.16022	0.253382	1.535804	0.107913	0.247747	1.866094	3.724606	1.876183	0.010061	0.001208	0.000189
Kern (MD)	2023	LHDT1	Aggregate	Aggregate	Aggregate	DSL	3242.592	106397.1	40787.73	3.122801	2.378427	0	0.035922	0.02671	0	0.003	0.03276	0.037547	0.027918	0	0.012	0.07644	575.2343	138.978	0	0.009811	0.005098	0	0.090419	0.021845	0	0.211232	0.10976	0	0	0	0	0.240474	0.124954	0	0	0	0	0	0	0.999912	0.909745	0	0.005438	0.001314	0
Kern (MD)	2023	LHDT2	Aggregate	Aggregate	Aggregate	GAS	284.8848	9969.52	4244.358	0.224534	0.038561	0.502059	0.002001	0	0.000335	0.002	0.03822	0.002176	0	0.000365	0.008	0.08918	1155.535	139.944	21.32549	0.009124	0.122161	0.025228	0.014625	0.003147	0.039348	0.041043	0.442007	0.12666	0.171604	0.838051	0.073775	0.156798	0.05989	0.644975	0.138677	0.171604	0.838051	0.073775	0.156798	0.761729	3.757601	1.623641	0.011435	0.001385	0.000211
Kern (MD)	2023	LHDT2	Aggregate	Aggregate	Aggregate	DSL	1144.272	39398.28	14393.51	2.173319	2.35478	0	0.03033	0.026246	0	0.003	0.03822	0.031702	0.027433	0	0.012	0.08918	643.8754	222.2801	0	0.008483	0.005098	0	0.101208	0.034939	0	0.182635	0.10976	0	0	0	0	0.207918	0.124954	0	0	0	0	0	0	0.880721	0.909745	0	0.006087	0.002101	0
Kern (MD)	2023	MCY	Aggregate	Aggregate	Aggregate	GAS	5235.505	54951.3	10471.01	1.016279	0	0.248044	0.001697	0	0.00313	0.001	0.00504	0.001808	0	0.003311	0.004	0.01176	211.9339	0	60.54721	0.324695	0	0.220777	0.061035	0	0.014681	2.202995	0	1.656393	1.570716	2.448391	4.739285	7.729319	2.682446	0	1.801579	1.570716	2.448391	4.739285	7.729319	22.27699	0	7.970378	0.002097	0	0.000599
Kern (MD)	2023	MDV	Aggregate	Aggregate	Aggregate	GAS	20195.89	708422.1	91224.12	0.091345	0	0.348051	0.001281	0	0.001931	0.002	0.01575	0.001393	0	0.002099	0.008	0.03675	426.8909	0	87.01689	0.005382	0	0.075224	0.007396	0	0.034705	0.02261	0	0.373842	0.224375	0.59421	1.126562	1.373898	0.032918	0	0.409304	0.224375	0.59421	1.126562	1.373898	1.196742	0	2.682726	0.004224	0	0.000861
Kern (MD)	2023	MDV	Aggregate	Aggregate	Aggregate	DSL	561.407	23050.55	2659.088	0.057309	0	0	0.005195	0	0	0.002	0.01575	0.00543	0	0	0.008	0.03675	368.9549	0	0	0.0005	0	0	0.057995	0	0	0.010775	0	0	0	0	0	0.012267	0	0	0	0	0	0	0	0.184569	0	0	0.003488	0	0
Kern (MD)	2023	MDV	Aggregate	Aggregate	Aggregate	ELEC	138.1548	4906.513	703.7465	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.036021	0.068207	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	MH	Aggregate	Aggregate	Aggregate	GAS	835.0562	6595.51	83.53902	0.517484	0	0.313884	0.001792	0	0.000354	0.003	0.05586	0.001949	0	0.000384	0.012	0.13034	1834.491	0	26.15657	0.022125	0	0.030787	0.030298	0	0.032385	0.101489	0	0.134956	0.140943	2.750578	0.134627	0.417559	0.148092	0	0.147759	0.140943	2.750578	0.134627	0.417559	2.580404	0	2.843929	0.018154	0	0.000259
Kern (MD)	2023	MH	Aggregate	Aggregate	Aggregate	DSL	314.7186	2569.471	31.47186	5.61011	0	0	0.147697	0	0	0.004	0.05586	0.154375	0	0	0.016	0.13034	1049.523	0	0	0.007235	0	0	0.16497	0	0	0.155776	0	0	0	0	0	0.177341	0	0	0	0	0	0	0	0.588451	0	0	0.009922	0	0
Kern (MD)	2023	MHDT	Aggregate	Aggregate	Aggregate	GAS	138.5248	11765.05	2771.605	0.368757	0.092154	0.33886	0.001373	0	0.000486	0.003	0.05586	0.001494	0	0.000528	0.012	0.13034	1718.432	556.7224	38.01569	0.014972	0.257713	0.038768	0.020051	0.008707	0.029487	0.072247	0.939151	0.203487	0.111197	0.50412	0.061102	0.130749	0.105422	1.370407	0.222792	0.111197	0.50412	0.061102	0.130749	1.652651	10.41051	4.399151	0.017005	0.005509	0.000376
Kern (MD)	2023	MHDT	Aggregate	Aggregate	Aggregate	DSL	1031.964	77473.45	9025.125	1.478778	4.731468	1.95769	0.008924	0.00401	0	0.003	0.05586	0.009327	0.004191	0	0.012	0.13034	1015.387	743.6897	0	0.000583	0.003138	0	0.159605	0.116898	0	0.012541	0.067551	0	0	0	0	0.014277	0.076902	0	0	0	0	0	0	0.11917	2.197317	0	0.009593	0.007026	0
Kern (MD)	2023	OBUS	Aggregate	Aggregate	Aggregate	GAS	51.86083	3765.729	1037.632	0.498434	0.064759	0.30238	0.001007	0	0.000254	0.003	0.05586	0.001095	0	0.000276	0.012	0.13034	1782.286	379.3748	26.01623	0.015313	0.205734	0.030067	0.025195	0.005852	0.026245	0.071059	0.741741	0.15063	0.041556	0.474261	0.064826	0.171803	0.103689	1.082347	0.164921	0.041556	0.474261	0.064826	0.171803	1.537723	5.747386	2.983444	0.017637	0.003754	0.000257
Kern (MD)	2023	OBUS	Aggregate	Aggregate	Aggregate	DSL	38.15796	3555.697	401.9938	1.77958	17.22296	2.211593	0.014148	0.005374	0	0.003	0.05586	0.014788	0.005617	0	0.012	0.13034	1267.329	3941.321	0	0.000667	0.069314	0	0.199207	0.619521	0	0.01436	1.492313	0	0	0	0	0.016348	1.698885	0	0	0	0	0	0	0.150164	21.41464	0	0.011973	0.037236	0
Kern (MD)	2023	SBUS	Aggregate	Aggregate	Aggregate	GAS	13.35045	1085.819	53.4018	0.108474	0.92653	0.466094	0.001133	0	0.000521	0.002	0.3192	0.001232	0	0.000567	0.008	0.7448	839.8176	2507.806	40.84649	0.003171	2.667011	0.042561	0.011889	0.103207	0.051562	0.012658	10.64152	0.218153	0.037984	0.201807	0.021151	0.05022	0.01847	15.52808	0.23885	0.037984	0.201807	0.021151	0.05022	0.207501	82.24088	4.597034	0.008311	0.024817	0.000404
Kern (MD)	2023	SBUS	Aggregate	Aggregate	Aggregate	DSL	142.3625	4514.336	1642.843	5.303399	43.35793	0.933265	0.040263	0.037929	0	0.003	0.3192	0.042084	0.039644	0	0.012	0.7448	1119.208	3761.263	0	0.004276	0.013386	0	0.175924	0.591218	0	0.092065	0.28819	0	0	0	0	0.104809	0.328082	0	0	0	0	0	0	0.26509	6.028493	0	0.010574	0.035535	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	GAS	6.126097	601.8404	24.50439	0.181768	0	0.628729	0.001551	0	0.000424	0.002443	0.046041	0.001687	0	0.000461	0.009773	0.107429	1650.937	0	62.50631	0.004993	0	0.071982	0.017129	0	0.061257	0.01568	0	0.29747	0.071802	0.331543	0.029229	0.053799	0.02288	0	0.325693	0.071802	0.331543	0.029229	0.053799	0.279857	0	4.240641	0.016337	0	0.000619
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	DSL	2.759736	184.9822	11.03894	0.40618	0	0	0.00755	0	0	0.003	0.050446	0.007891	0	0	0.012	0.117708	919.9817	0	0	0.02872	0	0	0.144608	0	0	0.046889	0	0	0	0	0	0.080054	0	0	0	0	0	0	0	0.248856	0	0	0.008697	0	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	ELEC	0.142342	3.047238	0.569369	0	0	0	0	0	0	0.003	0.05586	0	0	0	0.012	0.13034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	NG	4.44953	365.6258	17.79812	0.290239	0	0	0.003287	0	0	0.003	0.054295	0.003436	0	0	0.012	0.126688	1287.919	0	0	2.904042	0	0	0.262551	0	0	0.05493	0	0	0	0	0	2.978458	0	0	0	0	0	0	0	20.25447	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Kern (MD)
Calendar Year: 2023
Season: Winter
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_TW	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_TWE	PM10_PMI	PM10_PMI	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNL	ROG_RESTL	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_RESTL	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	SOx_STREX
Kern (MD)	2023	HHDT	Aggregate	Aggregate	Aggregate	GAS	0.192363	66.38558	3.8488	2.409571	0	0.022064	0.00106	0	0.000397	0.005	0.02646	0.001153	0	0.000432	0.02	0.06174	1823.297	0	46.57556	0.054509	0	0.000968	0.112911	0	0.001083	0.230582	0	0.00505	0.01175	0.030705	0.00321	0.008593	0.336465	0	0.005529	0.01175	0.030705	0.00321	0.008593	23.20753	0	8.334859	0.018043	0	0.000461
Kern (MD)	2023	HHDT	Aggregate	Aggregate	Aggregate	DSL	4791.073	8154400.8	63850.82	2.257193	121.6718	2.244958	0.026539	0.046168	0	0.008993	0.02644	0.027739	0.048256	0	0.035973	0.061693	1304.559	23451.84	0	0.000975	0.409541	0	0.205059	3.686303	0	0.020991	8.817302	0	0	0	0	0	0.023896	10.03783	0	0	0	0	0	0.199149	144.4319	0	0.012325	0.221561	0
Kern (MD)	2023	HHDT	Aggregate	Aggregate	Aggregate	NG	4.010308	163.4119	15.6402	2.427378	28.5108	0	0.002639	0.113174	0	0	0.009	0.02646	0.002759	0.118291	0	0.036	0.06174	3166.145	3998.317	0	3.624468	1.415104	0	0.645439	0.815083	0	0.234437	0.108202	0	0	0	0	0	3.907144	1.544463	0	0	0	0	0	10.24142	23.78889	0	0	0	0
Kern (MD)	2023	LDA	Aggregate	Aggregate	Aggregate	GAS	63945.61	2749374	300016	0.035558	0	0.189969	0.00119	0	0.001726	0.002	0.01575	0.001294	0	0.001877	0.008	0.03675	248.5884	0	54.26007	0.002126	0	0.053483	0.004241	0	0.026603	0.008025	0	0.236745	0.117607	0.255423	0.18096	0.271265	0.011705	0	0.259204	0.117607	0.255423	0.18096	0.271265	0.549205	0	2.273431	0.00246	0	0.000537
Kern (MD)	2023	LDA	Aggregate	Aggregate	Aggregate	DSL	825.3014	35289.33	3841.647	0.087249	0	0	0.006991	0	0	0	0.002	0.01575	0.007307	0	0	0.008	0.03675	202.8123	0	0	0.000607	0	0	0.031879	0	0	0.013064	0	0	0	0	0	0.014873	0	0	0	0	0	0	0.19298	0	0	0.001917	0	0
Kern (MD)	2023	LDA	Aggregate	Aggregate	Aggregate	ELEC	1258.982	57067.85	6300.017	0	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0	0	0
Kern (MD)	2023	LDT1	Aggregate	Aggregate	Aggregate	GAS	7806.961	303500.6	35640.24	0.084996	0	0.260851	0.001555	0	0.002258	0.002	0.01575	0.001691	0	0.002456	0.008	0.03675	293.5838	0	64.36234	0.004299	0	0.072873	0.006929	0	0.029782	0.018283	0	0.357553	0.231996	0.853585	0.366178	0.622691	0.026673	0	0.391475	0.231996	0.853585	0.366178	0.622691	0.915742	0	2.429866	0.002905	0	0.000637
Kern (MD)	2023	LDT1	Aggregate	Aggregate	Aggregate	DSL	4.487571	83.61047	15.05567	0.750051	0	0	0.106684	0	0	0	0.002	0.01575	0.111508	0	0	0.008	0.03675	419.8723	0	0	0.005648	0	0	0.065998	0	0	0.121589	0	0	0	0	0	0.138421	0	0	0	0	0	0	0.720127	0	0	0.003969	0	0
Kern (MD)	2023	LDT1	Aggregate	Aggregate	Aggregate	ELEC	51.41243	2466.152	261.9746	0	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0	0	0
Kern (MD)	2023	LDT2	Aggregate	Aggregate	Aggregate	GAS	26506.16	1022151	121083.9	0.101592	0	0.342355	0.001335	0	0.001911	0.002	0.01575	0.001452	0	0.002079	0.008	0.03675	320.7452	0	71.83923	0.004409	0	0.083687	0.007614	0	0.035469	0.018664	0	0.409087	0.207714	0.755774	0.370216	0.556293	0.027229	0	0.447898	0.207714	0.755774	0.370216	0.556293	0.913631	0	2.934569	0.003174	0	0.000711
Kern (MD)	2023	LDT2	Aggregate	Aggregate	Aggregate	DSL	148.8725	6832.594	724.2836	0.04462	0	0	0.005151	0	0	0	0.002	0.01575	0.005384	0	0	0.008	0.03675	265.3141	0	0	0.000602	0	0	0.041704	0	0	0.012971	0	0	0	0	0	0.014766	0	0	0	0	0	0	0.111459	0	0	0.002508	0	0
Kern (MD)	2023	LDT2	Aggregate	Aggregate	Aggregate	ELEC	234.1383	8127.496	1183.848	0	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0	0	0
Kern (MD)	2023	LHDT1	Aggregate	Aggregate	Aggregate	GAS	2334.034	76889.19	34773.63	0.376649	0.038971	0.544356	0.002693	0	0.000502	0.002	0.03276	0.002929	0	0.000546	0.008	0.07644	1016.583	122.0465	19.33655	0.018797	0.118193	0.02977	0.02085	0.002957	0.040174	0.095818	0.445386	0.155745	0.237759	1.645617	0.039212	0.10663	0.139817	0.649906	0.170522	0.237759	1.645617	0.039212	0.10663	1.794813	3.724606	2.027376	0.01006	0.001208	0.000191
Kern (MD)	2023	LHDT1	Aggregate	Aggregate	Aggregate	DSL	3242.592	106397.1	40787.73	3.258975	2.378427	0	0.035922	0.02671	0	0.003	0.03276	0.037547	0.027918	0	0.012	0.07644	575.2343	138.978	0	0.009811	0.005098	0	0.090419	0.021845	0	0.211232	0.10976	0	0	0	0	0	0.240474	0.124954	0	0	0	0	0	0.999912	0.909745	0	0.005438	0.001314	0
Kern (MD)	2023	LHDT2	Aggregate	Aggregate	Aggregate	GAS	284.8848	9969.52	4244.358	0.253905	0.038561	0.533161	0.002001	0	0.000335	0.002	0.03822	0.002176	0	0.000365	0.008	0.08918	1155.488	139.944	21.55778	0.008826	0.122172	0.026754	0.01607	0.003067	0.04072	0.039685	0.442007	0.134808	0.153969	0.901519	0.02635	0.064527	0.057908	0.644975	0.147598	0.153969	0.901519	0.02635	0.064527	0.736171	3.757601	1.752936	0.011434	0.001385	0.000213
Kern (MD)	2023	LHDT2	Aggregate	Aggregate	Aggregate	DSL	1144.272	39398.28	14393.51	2.267949	2.35478	0	0.03033	0.026246	0	0.003	0.03822	0.031702	0.027433	0	0.012	0.08918	643.8754	222.2801	0	0.008483	0.005098	0	0.101208	0.034939	0	0.182635	0.10976	0	0	0	0	0	0.207918	0.124954	0	0	0	0	0	0.880721	0.909745	0	0.006087	0.002101	0
Kern (MD)	2023	MCY	Aggregate	Aggregate	Aggregate	GAS	5235.505	54951.3	10471.01	1.171389	0	0.27007	0.001697	0	0.00313	0.001	0.00504	0.001808	0	0.003311	0.004	0.01176	211.4455	0	62.90669	0.332127	0	0.262406	0.067433	0	0.015314	2.271483	0	1.985774	1.272732	2.789412	1.189652	3.182461	2.762304	0	2.159749	1.272732	2.789412	1.189652	3.182461	21.8189	0	8.76889	0.002092	0	0.000623
Kern (MD)	2023	MDV	Aggregate	Aggregate	Aggregate	GAS	20195.89	708422.1	91224.12	0.09724	0	0.380957	0.001281	0	0.001931	0.002	0.01575	0.001393	0	0.002099	0.008	0.03675	390.7146	0	88.52722	0.004449	0	0.092502	0.007674	0	0.037175	0.018893	0	0.466581	0.202792	0.693394	0.394651	0.530813	0.027509	0	0.51084	0.202792	0.693394	0.394651	0.530813	0.900332	0	3.439191	0.003866	0	0.000876
Kern (MD)	2023	MDV	Aggregate	Aggregate	Aggregate	DSL	561.407	23050.55	2659.088	0.059915	0	0	0.005195	0	0	0	0.002	0.01575	0.00543	0	0	0.008	0.03675	368.9549	0	0	0.0005	0	0	0.057995	0	0	0.010775	0	0	0	0	0	0.012267	0	0	0	0	0	0	0.184569	0	0	0.003488	0	0
Kern (MD)	2023	MDV	Aggregate	Aggregate	Aggregate	ELEC	138.1548	4906.513	703.7465	0	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0.004888	0	0.00274	0.017107	0	0	0	0	0	0
Kern (MD)	2023	MH	Aggregate	Aggregate	Aggregate	GAS	835.0562	6595.51	83.53902	0.588699	0	0.334209	0.001792	0	0.000354	0.003	0.05586	0.001949	0	0.000384	0.012	0.13034	1834.299	0	26.73026	0.021279	0	0.033384	0.03313	0	0.033217	0.096776	0	0.145841	0.138766	2.902472	0.052386	0.190128	0.141216	0	0.159677	0.138766	2.902472	0.052386	0.190128	2.471802	0	3.182811	0.018152	0	0.000265
Kern (MD)	2023	MH	Aggregate	Aggregate	Aggregate	DSL	314.7186	2569.471	31.47186	5.865656	0	0	0.147697	0	0	0.004	0.05586	0.154375	0	0	0.016	0.13034	1049.523	0	0	0.007235	0	0	0.16497	0	0	0.155776	0	0	0	0	0	0	0.177341	0	0	0	0	0	0	0.588451	0	0	0.009922	0	0
Kern (MD)	2023	MHDT	Aggregate	Aggregate	Aggregate	GAS	138.5248	11765.05	2771.605	0.418226	0.084609	0.360543	0.001373	0	0.000486	0.003	0.05586	0.001494	0	0.000528	0.012	0.13034	1718.334	502.8238	38.6177	0.01446	0.29534	0.041046	0.021983	0.007755	0.030428	0.069816	1.083012	0.216392	0.098878	0.542741	0.020831	0.054572	0.101876	1.580328	0.236921	0.098878	0.542741	0.020831	0.054572	1.598054	19.78511	4.75162	0.017094	0.004976	0.000382
Kern (MD)	2023	MHDT	Aggregate	Aggregate	Aggregate	DSL	1031.964	77473.45	9025.125	1.545601	4.932882	1.95769	0.008924	0.005693	0	0.003	0.05586	0.009327	0.00595	0	0.012	0.13034	1015.387	749.2736	0	0.000583	0.002872	0	0.159605	0.117775	0	0.012541	0.061837	0	0	0	0	0	0.014277	0.070396	0	0	0	0	0	0.11917	2.333072	0	0.009593	0.007079	0
Kern (MD)	2023	OBUS	Aggregate	Aggregate	Aggregate	GAS	51.86083	3765.729	1037.632	0.565129	0.064759	0.321955	0.001007	0	0.000254	0.003	0.05586	0.001095	0	0.000276	0.012	0.13034	1782.196	379.3748	26.61267	0.014823	0.205048	0.032392	0.027596	0.005674	0.02709	0.068748	0.741741	0.162684	0.038562	0.503066	0.024525	0.072547	0.100318	1.082347	0.178118	0.038562	0.503066	0.024525	0.072547	1.486957	5.747386	3.334207	0.017636	0.003754	0.000263
Kern (MD)	2023	OBUS	Aggregate	Aggregate	Aggregate	DSL	38.15796	3555.697	401.9938	1.861259	19.37855	2.211593	0.014148	0.006979	0	0.003	0.05586	0.014788	0.007295	0	0.012	0.13034	1267.329	4067.942	0	0.000667	0.059991	0	0.199207	0.639424	0	0.01436	1.291583	0	0	0	0	0	0.016348	1.470369	0	0	0	0	0	0.150164	22.0849	0	0.011973	0.038432	0
Kern (MD)	2023	SBUS	Aggregate	Aggregate	Aggregate	GAS	13.35045	1085.819	53.4018	0.124729	0.92653	0.516749	0.001133	0	0.000521	0.002	0.3192	0.001232	0	0.000567	0.008	0.7448	839.8024	2507.806	45.9819	0.00304	2.661515	0.056867	0.013169	0.099453	0.055081	0.012157	10.64152	0.292094	0.035262	0.283559	0.007773	0.020165	0.01774	15.52808	0.319806	0.035262	0.283559	0.007773	0.020165	0.199307	82.24088	7.680308	0.008311	0.024817	0.000455
Kern (MD)	2023	SBUS	Aggregate	Aggregate	Aggregate	DSL	142.3625	4514.336	1642.843	5.557802	41.16906	0.933265	0.040263	0.054459	0	0.003	0.3192	0.042084	0.056922	0	0.012	0.7448	1119.208	3507.423	0	0.004276	0.013712	0	0.175924	0.551318	0	0.092065	0.295207	0	0	0	0	0	0.104809	0.336071	0	0	0	0	0	0.26509	7.197035	0	0.010574	0.033136	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	GAS	6.126097	601.8404	24.50439	0.206207	0	0.675314	0.001551	0	0.000424	0.002443	0.046041	0.001687	0	0.000461	0.009773	0.107429	1650.919	0	64.37412	0.004804	0	0.082234	0.018741	0	0.063468	0.015148	0	0.341441	0.063741	0.40776	0.011182	0.021051	0.022104	0	0.373835	0.063741	0.40776	0.011182	0.021051	0.270207	0	5.325904	0.016337	0	0.000637
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	DSL	2.759736	184.9822	11.03894	0.40871	0	0	0.00755	0	0	0	0.003	0.050446	0.007891	0	0	0.012	0.117708	919.9817	0	0	0.02872	0	0	0.144608	0	0	0.046889	0	0	0	0	0	0.080054	0	0	0	0	0	0	0.248856	0	0	0.008697	0	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	ELEC	0.142342	3.047238	0.569369	0	0	0	0	0	0	0	0.003	0.05586	0	0	0	0.012	0.13034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kern (MD)	2023	UBUS	Aggregate	Aggregate	Aggregate	NG	4.44953	365.6258	17.79812	0.29097	0	0	0.003287	0	0	0.003	0.054295	0.003436	0	0	0.012	0.126688	1287.919	0	0	2.904042	0	0	0.262551	0	0	0.05493	0	0	0	0	0	0	2.978458	0	0	0	0	0	0	20.25447	0	0	0	0	0

CalEEMod Construction Model

Richmond Elementary School Replacement Project

Kern-Mojave Desert County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	99.85	1000sqft	2.29	99,853.00	0
Other Asphalt Surfaces	240.43	1000sqft	5.52	240,430.00	0
Other Non-Asphalt Surfaces	1,341.60	1000sqft	30.80	174,800.00	0
Parking Lot	60.52	1000sqft	1.39	60,520.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	7			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use -

Construction Phase - normalized based on construction duration provided by district

Off-road Equipment -

Off-road Equipment -

Trips and VMT - assuming 4 vt/water truck/day

Grading -

Architectural Coating - assuming only parking, non-parking asphalt, and turf fields will be painted

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - EKAPCD Rule 402, Fugitive Dust

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	28,545.00	37,797.00
tblAreaCoating	Area_Parking	28545	98553
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	30.00	19.00
tblConstructionPhase	NumDays	75.00	47.00
tblConstructionPhase	NumDays	740.00	457.00
tblConstructionPhase	NumDays	55.00	34.00
tblConstructionPhase	NumDays	55.00	34.00
tblLandUse	LandUseSquareFeet	99,850.00	99,853.00
tblLandUse	LandUseSquareFeet	1,341,600.00	174,800.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblProjectCharacteristics	PrecipitationFrequency	32	33
tblProjectCharacteristics	WindSpeed	2.7	2.2
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2855	46.8783	31.5104	0.0754	18.2413	2.0466	20.2879	9.9777	1.8829	11.8606	0.0000	7,521.4369	7,521.4369	1.9557	0.0000	7,543.2291
2022	2.8994	25.7650	24.1757	0.0744	2.6253	0.8456	3.4709	0.7109	0.7957	1.5065	0.0000	7,420.1877	7,420.1877	0.8536	0.0000	7,441.5285
2023	85.5384	33.8261	41.1475	0.1038	3.1429	1.3040	4.4469	0.8481	1.2203	2.0684	0.0000	10,270.6643	10,270.6643	1.5240	0.0000	10,308.7633
Maximum	**85.5384**	**46.8783**	**41.1475**	**0.1038**	**18.2413**	**2.0466**	**20.2879**	**9.9777**	**1.8829**	**11.8606**	**0.0000**	**10,270.6643**	**10,270.6643**	**1.9557**	**0.0000**	**10,308.7633**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2855	46.8783	31.5104	0.0754	7.8850	2.0466	9.9316	4.2891	1.8829	6.1721	0.0000	7,521.4369	7,521.4369	1.9557	0.0000	7,543.2290
2022	2.8994	25.7650	24.1757	0.0744	2.4290	0.8456	3.2746	0.6627	0.7957	1.4583	0.0000	7,420.1877	7,420.1877	0.8536	0.0000	7,441.5285
2023	85.5384	33.8261	41.1475	0.1038	2.9061	1.3040	4.2101	0.7900	1.2203	2.0103	0.0000	10,270.6643	10,270.6643	1.5240	0.0000	10,308.7633
Maximum	**85.5384**	**46.8783**	**41.1475**	**0.1038**	**7.8850**	**2.0466**	**9.9316**	**4.2891**	**1.8829**	**6.1721**	**0.0000**	**10,270.6643**	**10,270.6643**	**1.9557**	**0.0000**	**10,308.7633**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.94**	**0.00**	**38.25**	**50.23**	**0.00**	**37.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Site Preparation	Site Preparation	6/1/2021	6/25/2021	5	19	
2	Grading	Grading	6/26/2021	8/31/2021	5	47	
3	Building Construction	Building Construction	9/1/2021	6/1/2023	5	457	
4	Paving	Paving	4/15/2023	6/1/2023	5	34	
5	Architectural Coating	Architectural Coating	4/15/2023	6/1/2023	5	34	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 117.5

Acres of Paving: 37.71

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 149,780; Non-Residential Outdoor: 49,927; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	242.00	94.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	48.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0129	0.4354	0.0765	1.1700e-003	0.0271	1.1600e-003	0.0283	7.8100e-003	1.1100e-003	8.9200e-003		121.9898	121.9898	8.7100e-003		122.2077
Worker	0.0733	0.0388	0.4999	1.5700e-003	0.1479	9.9000e-004	0.1489	0.0392	9.2000e-004	0.0401		156.2960	156.2960	3.7800e-003		156.3906
Total	**0.0862**	**0.4741**	**0.5764**	**2.7400e-003**	**0.1750**	**2.1500e-003**	**0.1771**	**0.0470**	**2.0300e-003**	**0.0491**		**278.2858**	**278.2858**	**0.0125**		**278.5983**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.7233**	**2.0445**	**9.7678**	**4.2454**	**1.8809**	**6.1263**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0129	0.4354	0.0765	1.1700e-003	0.0254	1.1600e-003	0.0265	7.3800e-003	1.1100e-003	8.4900e-003		121.9898	121.9898	8.7100e-003		122.2077
Worker	0.0733	0.0388	0.4999	1.5700e-003	0.1363	9.9000e-004	0.1373	0.0364	9.2000e-004	0.0373		156.2960	156.2960	3.7800e-003		156.3906

Total	**0.0862**	**0.4741**	**0.5764**	**2.7400e-003**	**0.1617**	**2.1500e-003**	**0.1638**	**0.0438**	**2.0300e-003**	**0.0458**		**278.2858**	**278.2858**	**0.0125**		**278.5983**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0129	0.4354	0.0765	1.1700e-003	0.0271	1.1600e-003	0.0283	7.8100e-003	1.1100e-003	8.9200e-003		121.9898	121.9898	8.7100e-003		122.2077
Worker	0.0814	0.0431	0.5555	1.7400e-003	0.1643	1.1100e-003	0.1654	0.0436	1.0200e-003	0.0446		173.6622	173.6622	4.2000e-003		173.7673
Total	**0.0943**	**0.4785**	**0.6320**	**2.9100e-003**	**0.1914**	**2.2700e-003**	**0.1937**	**0.0514**	**2.1300e-003**	**0.0535**		**295.6520**	**295.6520**	**0.0129**		**295.9750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.7079**	**1.9853**	**5.6932**	**1.5375**	**1.8265**	**3.3640**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0129	0.4354	0.0765	1.1700e-003	0.0254	1.1600e-003	0.0265	7.3800e-003	1.1100e-003	8.4900e-003		121.9898	121.9898	8.7100e-003		122.2077
Worker	0.0814	0.0431	0.5555	1.7400e-003	0.1514	1.1100e-003	0.1526	0.0404	1.0200e-003	0.0414		173.6622	173.6622	4.2000e-003		173.7673
Total	**0.0943**	**0.4785**	**0.6320**	**2.9100e-003**	**0.1768**	**2.2700e-003**	**0.1791**	**0.0478**	**2.1300e-003**	**0.0499**		**295.6520**	**295.6520**	**0.0129**		**295.9750**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3033	10.2314	1.7972	0.0274	0.6374	0.0273	0.6646	0.1835	0.0261	0.2096		2,866.7602	2,866.7602	0.2048		2,871.8801
Worker	0.9850	0.5212	6.7213	0.0211	1.9880	0.0134	2.0014	0.5273	0.0123	0.5396		2,101.3128	2,101.3128	0.0509		2,102.5847
Total	**1.2884**	**10.7526**	**8.5185**	**0.0485**	**2.6253**	**0.0406**	**2.6660**	**0.7108**	**0.0384**	**0.7492**		**4,968.0730**	**4,968.0730**	**0.2557**		**4,974.4648**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3033	10.2314	1.7972	0.0274	0.5965	0.0273	0.6238	0.1735	0.0261	0.1996		2,866.7602	2,866.7602	0.2048		2,871.8801
Worker	0.9850	0.5212	6.7213	0.0211	1.8325	0.0134	1.8459	0.4891	0.0123	0.5015		2,101.3128	2,101.3128	0.0509		2,102.5847
Total	**1.2884**	**10.7526**	**8.5185**	**0.0485**	**2.4290**	**0.0406**	**2.4696**	**0.6627**	**0.0384**	**0.7010**		**4,968.0730**	**4,968.0730**	**0.2557**		**4,974.4648**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2828	9.6842	1.6641	0.0272	0.6374	0.0236	0.6609	0.1836	0.0225	0.2061		2,841.0381	2,841.0381	0.1964		2,845.9474

Worker	0.9104	0.4651	6.1482	0.0203	1.9880	0.0130	2.0010	0.5273	0.0120	0.5393		2,024.8161	2,024.8161	0.0453		2,025.9490
Total	**1.1932**	**10.1494**	**7.8123**	**0.0475**	**2.6253**	**0.0366**	**2.6619**	**0.7109**	**0.0345**	**0.7454**		**4,865.8542**	**4,865.8542**	**0.2417**		**4,871.8963**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2828	9.6842	1.6641	0.0272	0.5966	0.0236	0.6201	0.1735	0.0225	0.1961		2,841.0381	2,841.0381	0.1964		2,845.9474
Worker	0.9104	0.4651	6.1482	0.0203	1.8325	0.0130	1.8455	0.4891	0.0120	0.5011		2,024.8161	2,024.8161	0.0453		2,025.9490
Total	**1.1932**	**10.1494**	**7.8123**	**0.0475**	**2.4290**	**0.0366**	**2.4656**	**0.6627**	**0.0345**	**0.6972**		**4,865.8542**	**4,865.8542**	**0.2417**		**4,871.8963**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1999	7.4213	1.4028	0.0265	0.6374	7.2600e-003	0.6447	0.1836	6.9400e-003	0.1905		2,770.6715	2,770.6715	0.1344		2,774.0302
Worker	0.8453	0.4168	5.6377	0.0195	1.9880	0.0127	2.0006	0.5273	0.0117	0.5390		1,948.4973	1,948.4973	0.0404		1,949.5079
Total	**1.0452**	**7.8381**	**7.0405**	**0.0460**	**2.6254**	**0.0199**	**2.6453**	**0.7109**	**0.0186**	**0.7295**		**4,719.1688**	**4,719.1688**	**0.1748**		**4,723.5381**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061

Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1999	7.4213	1.4028	0.0265	0.5966	7.2600e-003	0.6038	0.1735	6.9400e-003	0.1805		2,770.6715	2,770.6715	0.1344		2,774.0302
Worker	0.8453	0.4168	5.6377	0.0195	1.8325	0.0127	1.8451	0.4891	0.0117	0.5008		1,948.4973	1,948.4973	0.0404		1,949.5079
Total	**1.0452**	**7.8381**	**7.0405**	**0.0460**	**2.4291**	**0.0199**	**2.4490**	**0.6627**	**0.0186**	**0.6813**		**4,719.1688**	**4,719.1688**	**0.1748**		**4,723.5381**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.5325					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5652**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.5325					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5652**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1136	7.9000e-004	0.1144	0.0303	7.2000e-004	0.0310		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1136**	**7.9000e-004**	**0.1144**	**0.0303**	**7.2000e-004**	**0.0310**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.9435					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**81.1351**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1677	0.0827	1.1182	3.8800e-003	0.3943	2.5100e-003	0.3968	0.1046	2.3100e-003	0.1069		386.4788	386.4788	8.0200e-003		386.6793
Total	**0.1677**	**0.0827**	**1.1182**	**3.8800e-003**	**0.3943**	**2.5100e-003**	**0.3968**	**0.1046**	**2.3100e-003**	**0.1069**		**386.4788**	**386.4788**	**8.0200e-003**		**386.6793**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.9435					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**81.1351**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1677	0.0827	1.1182	3.8800e-003	0.3635	2.5100e-003	0.3660	0.0970	2.3100e-003	0.0993		386.4788	386.4788	8.0200e-003		386.6793
Total	**0.1677**	**0.0827**	**1.1182**	**3.8800e-003**	**0.3635**	**2.5100e-003**	**0.3660**	**0.0970**	**2.3100e-003**	**0.0993**		**386.4788**	**386.4788**	**8.0200e-003**		**386.6793**

Richmond Elementary School Replacement Project - Kern-Mojave Desert County, Winter

Richmond Elementary School Replacement Project

Kern-Mojave Desert County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	99.85	1000sqft	2.29	99,853.00	0
Other Asphalt Surfaces	240.43	1000sqft	5.52	240,430.00	0
Other Non-Asphalt Surfaces	1,341.60	1000sqft	30.80	174,800.00	0
Parking Lot	60.52	1000sqft	1.39	60,520.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	7			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use -

Construction Phase - normalized based on construction duration provided by district

Off-road Equipment -

Off-road Equipment -

Trips and VMT - assuming 4 vt/water truck/day

Grading -

Architectural Coating - assuming only parking, non-parking asphalt, and turf fields will be painted

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - EKAPCD Rule 402, Fugitive Dust

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	28,545.00	37,797.00
tblAreaCoating	Area_Parking	28545	98553
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	30.00	19.00
tblConstructionPhase	NumDays	75.00	47.00
tblConstructionPhase	NumDays	740.00	457.00
tblConstructionPhase	NumDays	55.00	34.00
tblConstructionPhase	NumDays	55.00	34.00
tblLandUse	LandUseSquareFeet	99,850.00	99,853.00
tblLandUse	LandUseSquareFeet	1,341,600.00	174,800.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblProjectCharacteristics	PrecipitationFrequency	32	33
tblProjectCharacteristics	WindSpeed	2.7	2.2
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2804	46.8878	31.4255	0.0717	18.2413	2.0467	20.2879	9.9777	1.8830	11.8607	0.0000	7,149.6012	7,149.6012	1.9563	0.0000	7,171.8846
2022	2.8532	25.8906	23.3733	0.0708	2.6253	0.8465	3.4718	0.7109	0.7965	1.5074	0.0000	7,058.6975	7,058.6975	0.8734	0.0000	7,080.5316
2023	85.4812	33.9196	40.0561	0.0997	3.1429	1.3041	4.4470	0.8481	1.2204	2.0685	0.0000	9,856.2705	9,856.2705	1.5345	0.0000	9,894.6319
Maximum	**85.4812**	**46.8878**	**40.0561**	**0.0997**	**18.2413**	**2.0467**	**20.2879**	**9.9777**	**1.8830**	**11.8607**	**0.0000**	**9,856.2705**	**9,856.2705**	**1.9563**	**0.0000**	**9,894.6319**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2804	46.8878	31.4255	0.0717	7.8850	2.0467	9.9317	4.2891	1.8830	6.1721	0.0000	7,149.6012	7,149.6012	1.9563	0.0000	7,171.8846
2022	2.8532	25.8906	23.3733	0.0708	2.4290	0.8465	3.2755	0.6627	0.7965	1.4592	0.0000	7,058.6975	7,058.6975	0.8734	0.0000	7,080.5316
2023	85.4812	33.9196	40.0561	0.0997	2.9061	1.3041	4.2102	0.7900	1.2204	2.0104	0.0000	9,856.2705	9,856.2705	1.5345	0.0000	9,894.6319
Maximum	**85.4812**	**46.8878**	**40.0561**	**0.0997**	**7.8850**	**2.0467**	**9.9317**	**4.2891**	**1.8830**	**6.1721**	**0.0000**	**9,856.2705**	**9,856.2705**	**1.9563**	**0.0000**	**9,894.6319**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.94**	**0.00**	**38.25**	**50.23**	**0.00**	**37.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2021	6/25/2021	5	19	

2	Grading	Grading	6/26/2021	8/31/2021	5	47	
3	Building Construction	Building Construction	9/1/2021	6/1/2023	5	457	
4	Paving	Paving	4/15/2023	6/1/2023	5	34	
5	Architectural Coating	Architectural Coating	4/15/2023	6/1/2023	5	34	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 117.5

Acres of Paving: 37.71

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 149,780; Non-Residential Outdoor: 49,927; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	242.00	94.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	48.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0136	0.4387	0.0911	1.1300e-003	0.0271	1.2000e-003	0.0283	7.8100e-003	1.1500e-003	8.9600e-003		117.8095	117.8095	9.8600e-003		118.0559
Worker	0.0680	0.0444	0.4104	1.3600e-003	0.1479	9.9000e-004	0.1489	0.0392	9.2000e-004	0.0401		135.9457	135.9457	3.2500e-003		136.0270
Total	**0.0816**	**0.4830**	**0.5014**	**2.4900e-003**	**0.1750**	**2.1900e-003**	**0.1772**	**0.0470**	**2.0700e-003**	**0.0491**		**253.7552**	**253.7552**	**0.0131**		**254.0829**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.7233**	**2.0445**	**9.7678**	**4.2454**	**1.8809**	**6.1263**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0136	0.4387	0.0911	1.1300e-003	0.0254	1.2000e-003	0.0266	7.3800e-003	1.1500e-003	8.5300e-003		117.8095	117.8095	9.8600e-003		118.0559
Worker	0.0680	0.0444	0.4104	1.3600e-003	0.1363	9.9000e-004	0.1373	0.0364	9.2000e-004	0.0373		135.9457	135.9457	3.2500e-003		136.0270

Total	**0.0816**	**0.4830**	**0.5014**	**2.4900e-003**	**0.1617**	**2.1900e-003**	**0.1639**	**0.0438**	**2.0700e-003**	**0.0458**		**253.7552**	**253.7552**	**0.0131**		**254.0829**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0136	0.4387	0.0911	1.1300e-003	0.0271	1.2000e-003	0.0283	7.8100e-003	1.1500e-003	8.9600e-003		117.8095	117.8095	9.8600e-003		118.0559
Worker	0.0756	0.0493	0.4559	1.5200e-003	0.1643	1.1100e-003	0.1654	0.0436	1.0200e-003	0.0446		151.0508	151.0508	3.6100e-003		151.1411
Total	**0.0892**	**0.4880**	**0.5470**	**2.6500e-003**	**0.1914**	**2.3100e-003**	**0.1937**	**0.0514**	**2.1700e-003**	**0.0536**		**268.8603**	**268.8603**	**0.0135**		**269.1970**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.7079**	**1.9853**	**5.6932**	**1.5375**	**1.8265**	**3.3640**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0136	0.4387	0.0911	1.1300e-003	0.0254	1.2000e-003	0.0266	7.3800e-003	1.1500e-003	8.5300e-003		117.8095	117.8095	9.8600e-003		118.0559
Worker	0.0756	0.0493	0.4559	1.5200e-003	0.1514	1.1100e-003	0.1526	0.0404	1.0200e-003	0.0414		151.0508	151.0508	3.6100e-003		151.1411
Total	**0.0892**	**0.4880**	**0.5470**	**2.6500e-003**	**0.1768**	**2.3100e-003**	**0.1791**	**0.0478**	**2.1700e-003**	**0.0500**		**268.8603**	**268.8603**	**0.0135**		**269.1970**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3198	10.3084	2.1402	0.0265	0.6374	0.0282	0.6656	0.1835	0.0270	0.2105		2,768.5226	2,768.5226	0.2316		2,774.3129
Worker	0.9146	0.5964	5.5169	0.0183	1.9880	0.0134	2.0014	0.5273	0.0123	0.5396		1,827.7147	1,827.7147	0.0437		1,828.8074
Total	**1.2344**	**10.9048**	**7.6571**	**0.0448**	**2.6253**	**0.0416**	**2.6669**	**0.7108**	**0.0393**	**0.7501**		**4,596.2373**	**4,596.2373**	**0.2753**		**4,603.1203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3198	10.3084	2.1402	0.0265	0.5965	0.0282	0.6247	0.1735	0.0270	0.2005		2,768.5226	2,768.5226	0.2316		2,774.3129
Worker	0.9146	0.5964	5.5169	0.0183	1.8325	0.0134	1.8459	0.4891	0.0123	0.5015		1,827.7147	1,827.7147	0.0437		1,828.8074
Total	**1.2344**	**10.9048**	**7.6571**	**0.0448**	**2.4290**	**0.0416**	**2.4706**	**0.6627**	**0.0393**	**0.7020**		**4,596.2373**	**4,596.2373**	**0.2753**		**4,603.1203**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2985	9.7431	1.9872	0.0262	0.6374	0.0245	0.6618	0.1836	0.0234	0.2070		2,742.9961	2,742.9961	0.2226		2,748.5598

Worker	0.8484	0.5319	5.0227	0.0177	1.9880	0.0130	2.0010	0.5273	0.0120	0.5393		1,761.3678	1,761.3678	0.0389		1,762.3396
Total	**1.1469**	**10.2750**	**7.0099**	**0.0439**	**2.6253**	**0.0375**	**2.6628**	**0.7109**	**0.0354**	**0.7462**		**4,504.3639**	**4,504.3639**	**0.2614**		**4,510.8994**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2985	9.7431	1.9872	0.0262	0.5966	0.0245	0.6210	0.1735	0.0234	0.1969		2,742.9961	2,742.9961	0.2226		2,748.5598
Worker	0.8484	0.5319	5.0227	0.0177	1.8325	0.0130	1.8455	0.4891	0.0120	0.5011		1,761.3678	1,761.3678	0.0389		1,762.3396
Total	**1.1469**	**10.2750**	**7.0099**	**0.0439**	**2.4290**	**0.0375**	**2.4665**	**0.6627**	**0.0354**	**0.6980**		**4,504.3639**	**4,504.3639**	**0.2614**		**4,510.8994**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2111	7.4399	1.6380	0.0256	0.6374	7.3900e-003	0.6448	0.1836	7.0700e-003	0.1906		2,675.5564	2,675.5564	0.1522		2,679.3601
Worker	0.7910	0.4763	4.5851	0.0170	1.9880	0.0127	2.0006	0.5273	0.0117	0.5390		1,695.1679	1,695.1679	0.0346		1,696.0337
Total	**1.0021**	**7.9161**	**6.2232**	**0.0426**	**2.6254**	**0.0201**	**2.6454**	**0.7109**	**0.0187**	**0.7296**		**4,370.7243**	**4,370.7243**	**0.1868**		**4,375.3938**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061

Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2111	7.4399	1.6380	0.0256	0.5966	7.3900e-003	0.6040	0.1735	7.0700e-003	0.1806		2,675.5564	2,675.5564	0.1522		2,679.3601
Worker	0.7910	0.4763	4.5851	0.0170	1.8325	0.0127	1.8451	0.4891	0.0117	0.5008		1,695.1679	1,695.1679	0.0346		1,696.0337
Total	**1.0021**	**7.9161**	**6.2232**	**0.0426**	**2.4291**	**0.0201**	**2.4491**	**0.6627**	**0.0187**	**0.6814**		**4,370.7243**	**4,370.7243**	**0.1868**		**4,375.3938**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.5325					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5652**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0490	0.0295	0.2842	1.0500e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		105.0724	105.0724	2.1500e-003		105.1261
Total	**0.0490**	**0.0295**	**0.2842**	**1.0500e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**105.0724**	**105.0724**	**2.1500e-003**		**105.1261**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.5325					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5652**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0490	0.0295	0.2842	1.0500e-003	0.1136	7.9000e-004	0.1144	0.0303	7.2000e-004	0.0310		105.0724	105.0724	2.1500e-003		105.1261
Total	**0.0490**	**0.0295**	**0.2842**	**1.0500e-003**	**0.1136**	**7.9000e-004**	**0.1144**	**0.0303**	**7.2000e-004**	**0.0310**		**105.0724**	**105.0724**	**2.1500e-003**		**105.1261**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.9435					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**81.1351**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1569	0.0945	0.9095	3.3700e-003	0.3943	2.5100e-003	0.3968	0.1046	2.3100e-003	0.1069		336.2317	336.2317	6.8700e-003		336.4034
Total	**0.1569**	**0.0945**	**0.9095**	**3.3700e-003**	**0.3943**	**2.5100e-003**	**0.3968**	**0.1046**	**2.3100e-003**	**0.1069**		**336.2317**	**336.2317**	**6.8700e-003**		**336.4034**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.9435					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**81.1351**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1569	0.0945	0.9095	3.3700e-003	0.3635	2.5100e-003	0.3660	0.0970	2.3100e-003	0.0993		336.2317	336.2317	6.8700e-003		336.4034
Total	**0.1569**	**0.0945**	**0.9095**	**3.3700e-003**	**0.3635**	**2.5100e-003**	**0.3660**	**0.0970**	**2.3100e-003**	**0.0993**		**336.2317**	**336.2317**	**6.8700e-003**		**336.4034**

Richmond Elementary School Replacement Project - Kern-Mojave Desert County, Annual

Richmond Elementary School Replacement Project

Kern-Mojave Desert County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	99.85	1000sqft	2.29	99,853.00	0
Other Asphalt Surfaces	240.43	1000sqft	5.52	240,430.00	0
Other Non-Asphalt Surfaces	1,341.60	1000sqft	30.80	174,800.00	0
Parking Lot	60.52	1000sqft	1.39	60,520.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	7			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use -

Construction Phase - normalized based on construction duration provided by district

Off-road Equipment -

Off-road Equipment -

Trips and VMT - assuming 4 vt/water truck/day

Grading -

Architectural Coating - assuming only parking, non-parking asphalt, and turf fields will be painted

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - EKAPCD Rule 402, Fugitive Dust

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	28,545.00	37,797.00
tblAreaCoating	Area_Parking	28545	98553
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	30.00	19.00
tblConstructionPhase	NumDays	75.00	47.00
tblConstructionPhase	NumDays	740.00	457.00
tblConstructionPhase	NumDays	55.00	34.00
tblConstructionPhase	NumDays	55.00	34.00
tblLandUse	LandUseSquareFeet	99,850.00	99,853.00
tblLandUse	LandUseSquareFeet	1,341,600.00	174,800.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblProjectCharacteristics	PrecipitationFrequency	32	33
tblProjectCharacteristics	WindSpeed	2.7	2.2
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2731	2.7387	2.0100	5.1200e-003	0.4948	0.1101	0.6050	0.2112	0.1022	0.3135	0.0000	458.6418	458.6418	0.0871	0.0000	460.8193
2022	0.3625	3.3686	3.0374	9.3700e-003	0.3349	0.1100	0.4449	0.0908	0.1035	0.1943	0.0000	847.6591	847.6591	0.1014	0.0000	850.1938
2023	1.5463	1.4135	1.5262	4.3700e-003	0.1490	0.0492	0.1982	0.0404	0.0461	0.0865	0.0000	394.0503	394.0503	0.0503	0.0000	395.3069
Maximum	**1.5463**	**3.3686**	**3.0374**	**9.3700e-003**	**0.4948**	**0.1101**	**0.6050**	**0.2112**	**0.1035**	**0.3135**	**0.0000**	**847.6591**	**847.6591**	**0.1014**	**0.0000**	**850.1938**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2731	2.7387	2.0100	5.1200e-003	0.2710	0.1101	0.3811	0.1067	0.1022	0.2089	0.0000	458.6415	458.6415	0.0871	0.0000	460.8189
2022	0.3625	3.3686	3.0373	9.3700e-003	0.3099	0.1100	0.4199	0.0847	0.1035	0.1882	0.0000	847.6587	847.6587	0.1014	0.0000	850.1935
2023	1.5463	1.4135	1.5262	4.3700e-003	0.1379	0.0492	0.1871	0.0376	0.0461	0.0838	0.0000	394.0502	394.0502	0.0503	0.0000	395.3067
Maximum	**1.5463**	**3.3686**	**3.0373**	**9.3700e-003**	**0.3099**	**0.1101**	**0.4199**	**0.1067**	**0.1035**	**0.2089**	**0.0000**	**847.6587**	**847.6587**	**0.1014**	**0.0000**	**850.1935**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**26.56**	**0.00**	**20.83**	**33.13**	**0.00**	**19.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2021**	**8-31-2021**	1.6256	1.6256

2	**9-1-2021**	**11-30-2021**	1.0218	1.0218
3	**12-1-2021**	**2-28-2022**	0.9541	0.9541
4	**3-1-2022**	**5-31-2022**	0.9427	0.9427
5	**6-1-2022**	**8-31-2022**	0.9418	0.9418
6	**9-1-2022**	**11-30-2022**	0.9333	0.9333
7	**12-1-2022**	**2-28-2023**	0.8424	0.8424
8	**3-1-2023**	**5-31-2023**	2.4032	2.4032
9	**6-1-2023**	**8-31-2023**	0.0426	0.0426
		Highest	2.4032	2.4032

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2021	6/25/2021	5	19	
2	Grading	Grading	6/26/2021	8/31/2021	5	47	
3	Building Construction	Building Construction	9/1/2021	6/1/2023	5	457	
4	Paving	Paving	4/15/2023	6/1/2023	5	34	
5	Architectural Coating	Architectural Coating	4/15/2023	6/1/2023	5	34	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 117.5

Acres of Paving: 37.71

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 149,780; Non-Residential Outdoor: 49,927; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41

Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	242.00	94.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	48.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1716	0.0000	0.1716	0.0943	0.0000	0.0943	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0369	0.3847	0.2010	3.6000e-004		0.0194	0.0194		0.0179	0.0179	0.0000	31.7639	31.7639	0.0103	0.0000	32.0208
Total	**0.0369**	**0.3847**	**0.2010**	**3.6000e-004**	**0.1716**	**0.0194**	**0.1911**	**0.0943**	**0.0179**	**0.1122**	**0.0000**	**31.7639**	**31.7639**	**0.0103**	**0.0000**	**32.0208**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.1900e-003	7.9000e-004	1.0000e-005	2.5000e-004	1.0000e-005	2.6000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0362	1.0362	8.0000e-005	0.0000	1.0382
Worker	6.1000e-004	4.0000e-004	4.0200e-003	1.0000e-005	1.3800e-003	1.0000e-005	1.3900e-003	3.7000e-004	1.0000e-005	3.7000e-004	0.0000	1.2196	1.2196	3.0000e-005	0.0000	1.2203
Total	**7.3000e-004**	**4.5900e-003**	**4.8100e-003**	**2.0000e-005**	**1.6300e-003**	**2.0000e-005**	**1.6500e-003**	**4.4000e-004**	**2.0000e-005**	**4.5000e-004**	**0.0000**	**2.2558**	**2.2558**	**1.1000e-004**	**0.0000**	**2.2585**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0734	0.0000	0.0734	0.0403	0.0000	0.0403	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0369	0.3847	0.2010	3.6000e-004		0.0194	0.0194		0.0179	0.0179	0.0000	31.7639	31.7639	0.0103	0.0000	32.0207
Total	**0.0369**	**0.3847**	**0.2010**	**3.6000e-004**	**0.0734**	**0.0194**	**0.0928**	**0.0403**	**0.0179**	**0.0582**	**0.0000**	**31.7639**	**31.7639**	**0.0103**	**0.0000**	**32.0207**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.1900e-003	7.9000e-004	1.0000e-005	2.4000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0362	1.0362	8.0000e-005	0.0000	1.0382
Worker	6.1000e-004	4.0000e-004	4.0200e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.2196	1.2196	3.0000e-005	0.0000	1.2203
Total	**7.3000e-004**	**4.5900e-003**	**4.8100e-003**	**2.0000e-005**	**1.5100e-003**	**2.0000e-005**	**1.5300e-003**	**4.1000e-004**	**2.0000e-005**	**4.3000e-004**	**0.0000**	**2.2558**	**2.2558**	**1.1000e-004**	**0.0000**	**2.2585**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2038	0.0000	0.2038	0.0845	0.0000	0.0845	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0985	1.0904	0.7256	1.4600e-003		0.0467	0.0467		0.0429	0.0429	0.0000	128.0632	128.0632	0.0414	0.0000	129.0987
Total	**0.0985**	**1.0904**	**0.7256**	**1.4600e-003**	**0.2038**	**0.0467**	**0.2505**	**0.0845**	**0.0429**	**0.1274**	**0.0000**	**128.0632**	**128.0632**	**0.0414**	**0.0000**	**129.0987**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0104	1.9500e-003	3.0000e-005	6.3000e-004	3.0000e-005	6.5000e-004	1.8000e-004	3.0000e-005	2.1000e-004	0.0000	2.5632	2.5632	2.0000e-004	0.0000	2.5681
Worker	1.6700e-003	1.0900e-003	0.0111	4.0000e-005	3.7900e-003	3.0000e-005	3.8100e-003	1.0100e-003	2.0000e-005	1.0300e-003	0.0000	3.3520	3.3520	8.0000e-005	0.0000	3.3540
Total	**1.9800e-003**	**0.0115**	**0.0130**	**7.0000e-005**	**4.4200e-003**	**6.0000e-005**	**4.4600e-003**	**1.1900e-003**	**5.0000e-005**	**1.2400e-003**	**0.0000**	**5.9152**	**5.9152**	**2.8000e-004**	**0.0000**	**5.9221**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0871	0.0000	0.0871	0.0361	0.0000	0.0361	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0985	1.0904	0.7256	1.4600e-003		0.0467	0.0467		0.0429	0.0429	0.0000	128.0631	128.0631	0.0414	0.0000	129.0985
Total	**0.0985**	**1.0904**	**0.7256**	**1.4600e-003**	**0.0871**	**0.0467**	**0.1338**	**0.0361**	**0.0429**	**0.0791**	**0.0000**	**128.0631**	**128.0631**	**0.0414**	**0.0000**	**129.0985**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	3.1000e-004	0.0104	1.9500e-003	3.0000e-005	5.9000e-004	3.0000e-005	6.1000e-004	1.7000e-004	3.0000e-005	2.0000e-004	0.0000	2.5632	2.5632	2.0000e-004	0.0000	2.5681
Worker	1.6700e-003	1.0900e-003	0.0111	4.0000e-005	3.4900e-003	3.0000e-005	3.5200e-003	9.3000e-004	2.0000e-005	9.6000e-004	0.0000	3.3520	3.3520	8.0000e-005	0.0000	3.3540
Total	**1.9800e-003**	**0.0115**	**0.0130**	**7.0000e-005**	**4.0800e-003**	**6.0000e-005**	**4.1300e-003**	**1.1000e-003**	**5.0000e-005**	**1.1600e-003**	**0.0000**	**5.9152**	**5.9152**	**2.8000e-004**	**0.0000**	**5.9221**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0836	0.7670	0.7293	1.1800e-003		0.0422	0.0422		0.0397	0.0397	0.0000	101.9204	101.9204	0.0246	0.0000	102.5351
Total	**0.0836**	**0.7670**	**0.7293**	**1.1800e-003**		**0.0422**	**0.0422**		**0.0397**	**0.0397**	**0.0000**	**101.9204**	**101.9204**	**0.0246**	**0.0000**	**102.5351**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0136	0.4559	0.0857	1.1900e-003	0.0276	1.2200e-003	0.0288	7.9700e-003	1.1600e-003	9.1300e-003	0.0000	112.7826	112.7826	8.6300e-003	0.0000	112.9984
Worker	0.0377	0.0246	0.2506	8.4000e-004	0.0858	5.9000e-004	0.0863	0.0228	5.4000e-004	0.0233	0.0000	75.9406	75.9406	1.8100e-003	0.0000	75.9858
Total	**0.0513**	**0.4806**	**0.3363**	**2.0300e-003**	**0.1133**	**1.8100e-003**	**0.1152**	**0.0308**	**1.7000e-003**	**0.0325**	**0.0000**	**188.7232**	**188.7232**	**0.0104**	**0.0000**	**188.9841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.0836	0.7670	0.7293	1.1800e-003		0.0422	0.0422		0.0397	0.0397	0.0000	101.9203	101.9203	0.0246	0.0000	102.5350
Total	**0.0836**	**0.7670**	**0.7293**	**1.1800e-003**		**0.0422**	**0.0422**		**0.0397**	**0.0397**	**0.0000**	**101.9203**	**101.9203**	**0.0246**	**0.0000**	**102.5350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0136	0.4559	0.0857	1.1900e-003	0.0258	1.2200e-003	0.0271	7.5300e-003	1.1600e-003	8.7000e-003	0.0000	112.7826	112.7826	8.6300e-003	0.0000	112.9984
Worker	0.0377	0.0246	0.2506	8.4000e-004	0.0791	5.9000e-004	0.0797	0.0211	5.4000e-004	0.0217	0.0000	75.9406	75.9406	1.8100e-003	0.0000	75.9858
Total	**0.0513**	**0.4806**	**0.3363**	**2.0300e-003**	**0.1049**	**1.8100e-003**	**0.1067**	**0.0287**	**1.7000e-003**	**0.0304**	**0.0000**	**188.7232**	**188.7232**	**0.0104**	**0.0000**	**188.9841**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0375	1.2737	0.2347	3.4800e-003	0.0815	3.1100e-003	0.0846	0.0235	2.9800e-003	0.0265	0.0000	330.1976	330.1976	0.0245	0.0000	330.8093
Worker	0.1033	0.0649	0.6754	2.3900e-003	0.2534	1.6900e-003	0.2551	0.0673	1.5600e-003	0.0689	0.0000	216.2187	216.2187	4.7500e-003	0.0000	216.3375
Total	**0.1407**	**1.3386**	**0.9101**	**5.8700e-003**	**0.3349**	**4.8000e-003**	**0.3397**	**0.0908**	**4.5400e-003**	**0.0954**	**0.0000**	**546.4163**	**546.4163**	**0.0292**	**0.0000**	**547.1468**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0375	1.2737	0.2347	3.4800e-003	0.0763	3.1100e-003	0.0795	0.0223	2.9800e-003	0.0252	0.0000	330.1976	330.1976	0.0245	0.0000	330.8093
Worker	0.1033	0.0649	0.6754	2.3900e-003	0.2336	1.6900e-003	0.2353	0.0625	1.5600e-003	0.0640	0.0000	216.2187	216.2187	4.7500e-003	0.0000	216.3375
Total	**0.1407**	**1.3386**	**0.9101**	**5.8700e-003**	**0.3099**	**4.8000e-003**	**0.3147**	**0.0847**	**4.5400e-003**	**0.0893**	**0.0000**	**546.4163**	**546.4163**	**0.0292**	**0.0000**	**547.1468**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0857	0.7840	0.8853	1.4700e-003		0.0381	0.0381		0.0359	0.0359	0.0000	126.3336	126.3336	0.0301	0.0000	127.0849
Total	**0.0857**	**0.7840**	**0.8853**	**1.4700e-003**		**0.0381**	**0.0381**		**0.0359**	**0.0359**	**0.0000**	**126.3336**	**126.3336**	**0.0301**	**0.0000**	**127.0849**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0111	0.4078	0.0821	1.4200e-003	0.0342	4.0000e-004	0.0346	9.8700e-003	3.8000e-004	0.0103	0.0000	135.0107	135.0107	7.0200e-003	0.0000	135.1862
Worker	0.0403	0.0244	0.2590	9.6000e-004	0.1062	6.9000e-004	0.1069	0.0282	6.4000e-004	0.0289	0.0000	87.2359	87.2359	1.7800e-003	0.0000	87.2804
Total	**0.0514**	**0.4322**	**0.3412**	**2.3800e-003**	**0.1404**	**1.0900e-003**	**0.1415**	**0.0381**	**1.0200e-003**	**0.0391**	**0.0000**	**222.2466**	**222.2466**	**8.8000e-003**	**0.0000**	**222.4665**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0857	0.7840	0.8853	1.4700e-003		0.0381	0.0381		0.0359	0.0359	0.0000	126.3334	126.3334	0.0301	0.0000	127.0848
Total	**0.0857**	**0.7840**	**0.8853**	**1.4700e-003**		**0.0381**	**0.0381**		**0.0359**	**0.0359**	**0.0000**	**126.3334**	**126.3334**	**0.0301**	**0.0000**	**127.0848**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0111	0.4078	0.0821	1.4200e-003	0.0320	4.0000e-004	0.0324	9.3300e-003	3.8000e-004	9.7100e-003	0.0000	135.0107	135.0107	7.0200e-003	0.0000	135.1862
Worker	0.0403	0.0244	0.2590	9.6000e-004	0.0979	6.9000e-004	0.0986	0.0262	6.4000e-004	0.0268	0.0000	87.2359	87.2359	1.7800e-003	0.0000	87.2804
Total	**0.0514**	**0.4322**	**0.3412**	**2.3800e-003**	**0.1299**	**1.0900e-003**	**0.1310**	**0.0355**	**1.0200e-003**	**0.0365**	**0.0000**	**222.2466**	**222.2466**	**8.8000e-003**	**0.0000**	**222.4665**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0176	0.1733	0.2479	3.9000e-004		8.6700e-003	8.6700e-003		7.9800e-003	7.9800e-003	0.0000	34.0457	34.0457	0.0110	0.0000	34.3210
Paving	9.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0266**	**0.1733**	**0.2479**	**3.9000e-004**		**8.6700e-003**	**8.6700e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**34.0457**	**34.0457**	**0.0110**	**0.0000**	**34.3210**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	4.7000e-004	5.0100e-003	2.0000e-005	2.0500e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6867	1.6867	3.0000e-005	0.0000	1.6875
Total	**7.8000e-004**	**4.7000e-004**	**5.0100e-003**	**2.0000e-005**	**2.0500e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.6867**	**1.6867**	**3.0000e-005**	**0.0000**	**1.6875**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0176	0.1733	0.2479	3.9000e-004		8.6700e-003	8.6700e-003		7.9800e-003	7.9800e-003	0.0000	34.0456	34.0456	0.0110	0.0000	34.3209
Paving	9.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0266**	**0.1733**	**0.2479**	**3.9000e-004**		**8.6700e-003**	**8.6700e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**34.0456**	**34.0456**	**0.0110**	**0.0000**	**34.3209**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	4.7000e-004	5.0100e-003	2.0000e-005	1.8900e-003	1.0000e-005	1.9100e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6867	1.6867	3.0000e-005	0.0000	1.6875

Total	**7.8000e-004**	**4.7000e-004**	**5.0100e-003**	**2.0000e-005**	**1.8900e-003**	**1.0000e-005**	**1.9100e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.6867**	**1.6867**	**3.0000e-005**	**0.0000**	**1.6875**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3760					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2600e-003	0.0222	0.0308	5.0000e-005		1.2000e-003	1.2000e-003		1.2000e-003	1.2000e-003	0.0000	4.3405	4.3405	2.6000e-004	0.0000	4.3470
Total	**1.3793**	**0.0222**	**0.0308**	**5.0000e-005**		**1.2000e-003**	**1.2000e-003**		**1.2000e-003**	**1.2000e-003**	**0.0000**	**4.3405**	**4.3405**	**2.6000e-004**	**0.0000**	**4.3470**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4900e-003	1.5100e-003	0.0160	6.0000e-005	6.5700e-003	4.0000e-005	6.6100e-003	1.7500e-003	4.0000e-005	1.7900e-003	0.0000	5.3973	5.3973	1.1000e-004	0.0000	5.4000
Total	**2.4900e-003**	**1.5100e-003**	**0.0160**	**6.0000e-005**	**6.5700e-003**	**4.0000e-005**	**6.6100e-003**	**1.7500e-003**	**4.0000e-005**	**1.7900e-003**	**0.0000**	**5.3973**	**5.3973**	**1.1000e-004**	**0.0000**	**5.4000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	1.3760					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2600e-003	0.0222	0.0308	5.0000e-005		1.2000e-003	1.2000e-003		1.2000e-003	1.2000e-003	0.0000	4.3405	4.3405	2.6000e-004	0.0000	4.3470
Total	**1.3793**	**0.0222**	**0.0308**	**5.0000e-005**		**1.2000e-003**	**1.2000e-003**		**1.2000e-003**	**1.2000e-003**	**0.0000**	**4.3405**	**4.3405**	**2.6000e-004**	**0.0000**	**4.3470**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4900e-003	1.5100e-003	0.0160	6.0000e-005	6.0600e-003	4.0000e-005	6.1000e-003	1.6200e-003	4.0000e-005	1.6600e-003	0.0000	5.3973	5.3973	1.1000e-004	0.0000	5.4000
Total	**2.4900e-003**	**1.5100e-003**	**0.0160**	**6.0000e-005**	**6.0600e-003**	**4.0000e-005**	**6.1000e-003**	**1.6200e-003**	**4.0000e-005**	**1.6600e-003**	**0.0000**	**5.3973**	**5.3973**	**1.1000e-004**	**0.0000**	**5.4000**

CalEEMod Operations Model