

Rose Glen Specific Plan Residential Project

Air Quality and Greenhouse Gas Emissions Technical Report

November 2021 | 03669.00003.001

Prepared for:

Century Communities
4695 MacArthur Court, Suite 300
Newport Beach, CA 92660

Prepared by:

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La Mesa, CA 91942

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
APN	Assessor's Parcel Number
AQMP	Air Quality Management Plan
C ₂ F ₆	hexafluoroethane
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CF ₄	tetrafluoromethane
CFC	chlorofluorocarbon
CH ₄	methane
City	City of Upland
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
DPM	diesel particulate matter
EO	Executive Order
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
I-	Interstate
IPCC	Intergovernmental Panel on Climate Change
kW	kilowatts
kWhr	kilowatts-hours
LCFS	Low Carbon Fuel Standard
LOS	level of service
LST	localized significance threshold

ACRONYMS AND ABBREVIATIONS (cont.)

mg/m ³	milligrams per cubic meter
MMT	million metric tons
mpg	miles per gallon
mph	miles per hour
MT	metric tons
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NHTSA	National Highway Traffic Safety Administration
NO	nitrogen oxide
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
O ₃	ozone
Pb	lead
PFC	perfluorocarbon
PM ₁₀	particulate matter less than 10 microns
PM _{2.5}	particulate matter less than 2.5 microns
ppm	parts per million
ROG	reactive organic gas
RTP	Regional Transportation Plan
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SF	square feet
SF ₆	hexafluoride
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SRA	source receptor area
TACs	toxic air contaminants
TIA	Traffic Impact Analysis
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled
VOC	volatile organic compound

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EXECUTIVE SUMMARY

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts during construction and operation of the proposed Rose Glen Specific Plan Residential Project (project), located in the City of Upland (City). The project includes construction of 65 two-story single-family detached residential homes.

The project's growth is accounted for in the South Coast Air Quality Management District's (SCAQMD's) Air Quality Management Plan. Therefore, the proposed project would not conflict with or obstruct implementation of the most recent AQMP.

The project would result in emissions of criteria air pollutants during construction and operation. In accordance with SCAQMD Rule 403, fugitive dust control measures including the use of an on-site water truck to wet down active grading areas and roads at least twice daily are incorporated into the project design. Project emissions of criteria pollutants during construction and operations would not exceed the SCAQMD emissions thresholds. Impacts related to cumulatively considerable net increases of criteria pollutant in the region would be less than significant with mitigation incorporated.

Project-generated traffic would not result in a carbon monoxide hot spot. Construction and operation of the project would not result in exposure of sensitive receptors to significant quantities of toxic air contaminants or substantial localized criteria pollutant and precursor concentrations. Impacts related to exposure of sensitive receptors to substantial pollutant concentrations, or other emissions such as odors, would be less than significant.

The project would be required to comply with the 2019 Title 24 Energy Code, including the requirement for on-site solar electricity generation; the 2019 California Green Building Standards Code; the Assembly Bill 341 solid waste diversion target of 75 percent; reduction of potable water use by 20 percent when compared to the statewide average; low-flow water and bathroom fixtures; reduction of wastewater generation by 20 percent; weather-based irrigation systems; and provide areas for storage and collection of recyclables and yard waste.

The project-related construction activities are estimated to generate 780 metric tons (MT) of carbon dioxide equivalent (CO₂e), or 26 MT per year of CO₂e emissions per year for 30 years. The project-related operational and amortized construction GHG emissions for the first full year of operation (estimated to be 2025) would be 683 MT CO₂e. Implementation of the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant. The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and the impact would be less than significant.

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1.0 INTRODUCTION

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts during construction and operation of the proposed Rose Glen Specific Plan Residential Project (project).

1.1 PROJECT LOCATION

The project site is located at 1400 East Arrow Highway in the city of Upland in the southwest region of San Bernardino County. The Assessor's Parcel Number (APN) is 1046-481-14-0000. See Figure 1, *Project Location*, and Figure 2, *Project Vicinity (Aerial Photograph)*. The project is located 2.43 miles south of Interstate 210 (I-210, Foothill Freeway) and 1.04 miles north of Interstate 10 (I-10, San Bernardino Freeway) within an unsectioned portion of Township 1 South, Range 7 West, on the U.S. Geological Survey (USGS) 7.5' Ontario quadrangle. The project site is bordered by East Arrow Highway to the north, residential properties and Olivewood Drive to the east, a commercial property to the west, and residential properties to the south.

1.2 PROJECT DESCRIPTION

The proposed project would demolish the structures on the subject property and replace them with 65 two-story single family detached residential homes. The homes, which will be designed in the Spanish/Santa Barbara architectural style, will range from 1,544 to 1,547 square feet (sf), and extend to a maximum height of 40 feet. Additional project features include 30,000 square feet of open space that encompasses 20,600 sf of private open space and 9,400 sf of common open space. A total of 162 parking spaces would be provided, that would be divided between the private two-car garages and dedicated guest parking that would be allocated throughout the site. The existing eight-foot block wall that separates the project site from the residential land uses to the east would remain, as would an existing six-foot wall along the project's southern edge. Site access would be via a gated entrance along East Arrow Highway with a secondary emergency access only along 14th Avenue. A network of internal private drives would provide access to the individual homes (Figure 3, *Site Plan*).

To accommodate the residences, the project would require a General Plan land use amendment and a zone change from the current Light Industrial/Business Park designation and Light Industrial Zoning to Specific Plan and RM-20 Residential, MF 20 dwelling units (du) per acre.

1.3 CONSTRUCTION ACTIVITIES AND PHASING

Project construction is assumed to occur over an approximately two-year period starting in January 2023. Activities include demolition, site preparation, grading, installation of underground utilities and infrastructure, paving, construction of residences, and architectural coating (e.g., painting). Demolition would include the removal of 5,000 sf of structures and 213,444 sf of asphalt. In addition, 2,727 cubic yards of soil would be imported to the site during grading. Construction of the homes is slated to begin in July 2023 with construction lasting approximately 18 months. Project completion is anticipated to be December 2024.

Project construction would be required to implement all applicable fugitive dust best available control measures specified in Table 1 of the SCAQMD Rule 403, *Fugitive Dust* (SCAQMD 2005), including, but not

limited to: the use of an on-site water truck to wet down exposed areas at least twice daily, maintaining a 12 percent moisture content to unpaved roads, and limiting vehicle speeds to 15 miles per hour (mph).

2.0 REGULATORY SETTING

2.1 AIR QUALITY

The project site is located within the South Coast Air Basin (SCAB). Air quality in the SCAB is regulated by the U.S. Environmental Protection Agency (USEPA) at the federal level, by the California Air Resources Board (CARB) at the state level, and by the SCAQMD at the regional level.

2.1.1 Air Pollutants of Concern

2.1.1.1 Criteria Pollutants

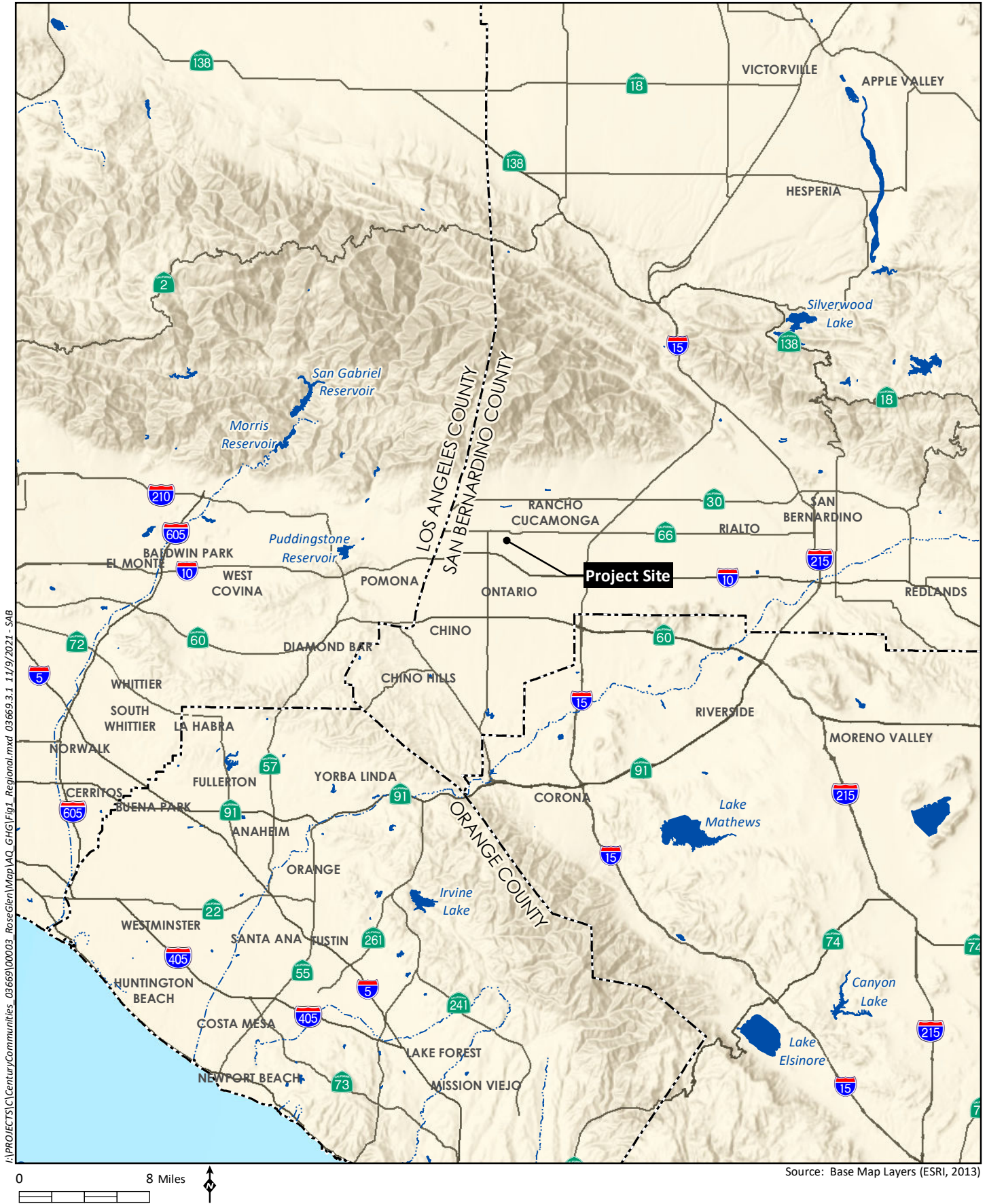
Criteria pollutants are defined by state and federal law as a risk to the health and welfare of the general public. In general, criteria air pollutants include the following compounds:

- Ozone (O₃)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO₂)
- Particulate matter (PM), which is further subdivided:
 - Coarse PM, 10 micrometers or less in diameter (PM₁₀)
 - Fine PM, 2.5 micrometers or less in diameter (PM_{2.5})
- Sulfur dioxide (SO₂)
- Lead (Pb)

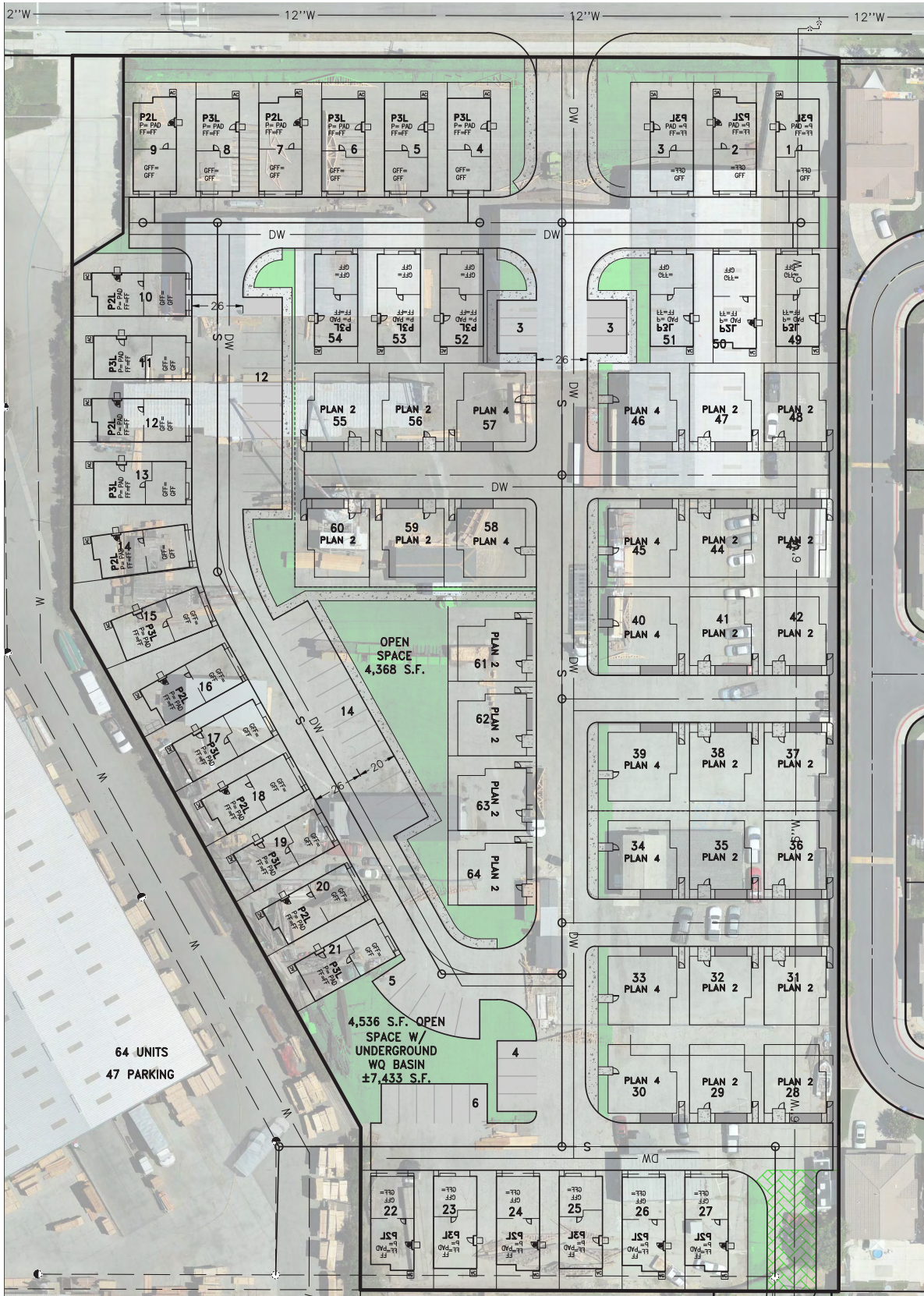
Criteria pollutants can be emitted directly from sources (primary pollutants; e.g., CO, SO₂, PM₁₀, PM_{2.5}, and lead), or they may be formed through chemical and photochemical reactions of precursor pollutants in the atmosphere (secondary pollutants; e.g., ozone, NO₂, PM₁₀, and PM_{2.5}). PM₁₀ and PM_{2.5} can be both primary and secondary pollutants. The principal precursor pollutants of concern are reactive organic gases ([ROGs] also known as volatile organic compounds [VOCs])¹ and nitrogen oxides (NO_x).

The descriptions of sources and general health effects for each of the criteria air pollutants are shown in Table 1, *Summary of Common Sources and Human Health Effects of Criteria Air Pollutants*, based on information provided by the California Air Pollution Control Officers Association ([CAPCOA] 2021a). Specific adverse health effects on individuals or population groups induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables such as cumulative concentrations, local meteorology and atmospheric conditions, and the number and characteristics of exposed individuals (e.g., age, gender). Criteria pollutant precursors (ROG and NO_x) affect air quality on a regional scale, typically after significant delay and distance from the pollutant source emissions. Health effects related to ozone and NO₂ are, therefore, the product of emissions generated by numerous

¹ CARB defines and uses the term ROGs while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.







Source: Hunsaker 2021

sources throughout a region. Emissions of criteria pollutants from vehicles traveling to or from the project site (mobile emissions) are distributed nonuniformly in location and time throughout the region, wherever the vehicles may travel. As such, specific health effects from these criteria pollutant emissions cannot be meaningfully correlated to the incremental contribution from the project.

Table 1
SUMMARY OF COMMON SOURCES AND HUMAN HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Pollutant	Major Man-Made Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO ₂)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to climate change and nutrient overloading, which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O ₃)	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrogen oxides (NO _x) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles, and dyes.
Particulate Matter (PM ₁₀ and PM _{2.5})	Produced by power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and other sources.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO ₂)	A colorless, nonflammable gas formed when fuel containing sulfur is burned, when gasoline is extracted from oil, or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid, which can damage marble, iron, and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron, and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2021a

2.1.1.2 Toxic Air Contaminants

The Health and Safety Code (§39655, subd. (a).) defines a toxic air contaminant (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 pursuant to subsection (b) of Section 112 of the Federal Clean Air Act (CAA) (42 United States Code Section 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is referred to as diesel particulate matter (DPM). Almost all DPM is 10 microns or less in diameter, and 90 percent of DPM is less than 2.5 microns in diameter (CARB 2021a). Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. In 1998, CARB identified DPM as a TAC based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM has a notable effect on California’s population—it is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM (CARB 2021a).

2.1.2 Federal Air Quality Regulations

2.1.2.1 Federal Clean Air Act

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the CAA of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several criteria pollutants. Table 2, *Ambient Air Quality Standards*, shows the federal and state ambient air quality standards for these pollutants.

Table 2
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards Primary ¹	Federal Standards Secondary ²
O ₃	1 Hour	0.09 ppm (180 µg/m ³)	–	–
	8 Hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)	Same as Primary
PM ₁₀	24 Hour	50 µg/m ³	150 µg/m ³	Same as Primary
	AAM	20 µg/m ³	–	Same as Primary
PM _{2.5}	24 Hour	–	35 µg/m ³	Same as Primary
	AAM	12 µg/m ³	12.0 µg/m ³	15.0 µg/m ³
CO	1 Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	–
	8 Hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)	–	–
NO ₂	1 Hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³)	–
	AAM	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary
SO ₂	1 Hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m ³)
	24 Hour	0.04 ppm (105 µg/m ³)	–	–
Lead	30-day Avg.	1.5 µg/m ³	–	–
	Calendar Quarter	–	1.5 µg/m ³	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m ³	Same as Primary
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	No Federal Standards	No Federal Standards
Sulfates	24 Hour	25 µg/m ³	No Federal Standards	No Federal Standards
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	No Federal Standards	No Federal Standards
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m ³)	No Federal Standards	No Federal Standards

Source: CARB 2016

¹ National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

² National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

O₃ = ozone; ppm: parts per million; µg/m³ = micrograms per cubic meter; PM₁₀ = particulate matter with an aerodynamic diameter of 10 microns or less; AAM = Annual Arithmetic Mean; PM_{2.5} = fine particulate matter;

CO = carbon monoxide; mg/m³ = milligrams per cubic meter; NO₂ = nitrogen dioxide; SO₂ = sulfur dioxide;

km = kilometer; – = No Standard

The USEPA has classified air basins (or portions thereof) as being in “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each criteria air pollutant, based on whether or not the NAAQS have been achieved. Upon attainment of a standard for which an area was previously designated nonattainment, the area will be classified as a maintenance area. If an area is designated unclassified, it

is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. The project site is located within the Riverside County portion of the SCAB and, as such, is in an area designated as a nonattainment area for certain pollutants that are regulated under the CAA. Table 3, *South Coast Air Basin Attainment Status*, lists the federal and state attainment status of the SCAB for the criteria pollutants. With respect to federal air quality standards, the USEPA classifies the SCAB as in attainment for PM₁₀, CO, NO₂, SO₂, and lead, and in nonattainment for 8-hour ozone and PM_{2.5}.

Table 3
SOUTH COAST AIR BASIN ATTAINMENT STATUS
(RIVERSIDE COUNTY PORTION)

Criteria Pollutant	Federal Designation	State Designation
O ₃ (1-hour)	(No federal standard)	Nonattainment
O ₃ (8-hour)	Extreme Nonattainment	Nonattainment
CO	Attainment (Maintenance)	Attainment
PM ₁₀	Attainment (Maintenance)	Nonattainment
PM _{2.5}	Serious Nonattainment	Nonattainment
NO ₂	Attainment (Maintenance)	Attainment
SO ₂	Unclassifiable/Attainment	Unclassifiable/Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Attainment
Visibility	(No federal standard)	Attainment

Source: SCAQMD 2016a

2.1.3 California Air Quality Regulations

2.1.3.1 California Clean Air Act

The federal CAA allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the CalEPA, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California Ambient Air Quality Standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In addition to primary and secondary AAQS, the state has established a set of episode criteria for ozone, CO, NO₂, SO₂, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Table 3, above, lists the state attainment status of the SCAB for the criteria pollutants. Under state designation, the SCAB is currently in attainment for CO, NO₂, SO₂, and lead; and in nonattainment for ozone, PM₁₀, and PM_{2.5}.

2.1.3.2 State Implementation Plan

The CAA requires areas with unhealthy levels of ozone, inhalable particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop plans, known as State Implementation Plans (SIPs). SIPs

are comprehensive plans that describe how an area will attain the NAAQS. The 1990 amendments to the CAA set deadlines for attainment based on the severity of an area's air pollution problem.

SIPs are not single documents—they are a compilation of new and previously submitted plans, programs (e.g., monitoring, modeling, permitting), district rules, state regulations and federal controls. Many of California's SIPs rely on a core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations and limits on emissions from consumer products. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB forwards the SIP revisions to the USEPA for approval and publication in the Federal Register. The Code of Federal Regulations (CFR) Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items that are included in the California SIP (CARB 2009). At any one time, several California submittals are pending USEPA approval.

2.1.3.3 California Energy Code

California Code of Regulations (CCR) Title 24 Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results primarily in GHG emissions. The California Energy Code is discussed in further detail in Section 2.2.4, below.

2.1.4 Local Regulations

2.1.4.1 South Coast Air Quality Management District

Air quality in the non-desert portion of Riverside County is regulated by the SCAQMD. As a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), County transportation commissions, and local governments and cooperates actively with all federal and state government agencies. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary.

Air Quality Management Plan

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMP).

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, which is a regional and multi-agency effort (SCAQMD, CARB, SCAG, and USEPA). The 2016 AQMP represents a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures. The plan seeks to achieve multiple goals in partnership with other entities promoting reductions in criteria pollutant, GHGs, and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017).

The AQMP, in combination with those from all other California nonattainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the California SIP. The SIP relies on the same information from SCAG to develop emission inventories and emission reduction strategies that

are included in the attainment demonstration for the air basin. The current federal and state attainment status for the SCAB is presented above, in Table 3.

Rules and Regulations

The following rules promulgated by the SCAQMD would be applicable to construction and/or operation of the project.

Rule 401 – Visible Emissions: Limits the allowable opacity of air contaminant emissions from any single source (SCAQMD 2001).

Rule 402 – Nuisance: Prohibits the discharge of air contaminants, including odors, which cause injury, detriment, nuisance, or annoyance to any considerable number of persons (SCAQMD 1976).

Rule 403 – Fugitive Dust: Requires actions to prevent, reduce or mitigate anthropogenic fugitive dust emissions, including emissions from construction activities. Project construction would be required to implement all applicable fugitive dust best available control measures specified in Table 1 in the rule (SCAQMD 2005).

Rule 445 – Wood Burning Devices: Controls the operation sale, and installation of wood-burning devices. Permanently installed wood-burning devices (e.g., fireplace, woodstoves) are prohibited in all new development (SCAQMD 2020).

Rule 113 – Architectural Coating: Establishes VOC limits for architectural coatings (e.g., paints, stains, preservatives). Effective January 1, 2019, building interior and exterior paint is limited to a maximum VOC content of 50 grams per liter (SCAQMD 2016b).

2.2 GREENHOUSE GASES

2.2.1 Climate Change Overview

Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as GHGs because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The temperature record shows a decades-long trend of warming, with 2020 global surface temperatures ranking as tied with 2016 for the warmest year on record since 1880 with an increase of 1.84 degrees Fahrenheit compared to the 1951-1980 average (National Aeronautics and Space Administration [NASA] 2021). GHG emissions from human activities are the most significant driver of observed climate change since the mid-20th century (United Nations Intergovernmental Panel on Climate Change [IPCC] 2013). The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a “high confidence” that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to

pre-industrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalent (CO₂e) by the year 2100 (IPCC 2014).

2.2.2 Types of Greenhouse Gases

The GHGs defined under California's AB 32 include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Carbon Dioxide. CO₂ is the most important and common anthropogenic GHG. CO₂ is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO₂ include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO₂ concentrations remained steady prior to the current period for approximately 10,000 years. The atmospheric CO₂ concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (approximately 280 ppm in 1750). In September 2021, the CO₂ concentration was 413 ppm, a 48 percent increase since 1750 (National Oceanic and Atmospheric Administration [NOAA] 2021).

Methane. CH₄ is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

Nitrous Oxide. N₂O is produced by both natural and human-related sources. N₂O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste. Primary human-related sources of N₂O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Hydrofluorocarbons. Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the 1989 Montreal Protocol.

Sulfur Hexafluoride. SF₆ is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF₆ is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHG emissions to disperse around the globe. Because GHG emissions vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO₂. For example, a gas with a GWP of 10 is 10 times more potent than CO₂ over 100 years. CO₂e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO₂e.

Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's Second Assessment Report (SAR). In 2007, IPCC updated the GWP values based on the latest science at the time in its Fourth Assessment Report (AR4). The updated GWPs in the IPCC AR4 have begun to be used in recent GHG emissions inventories. In 2013, IPCC again updated the GWP values based on the latest science in its Fifth Assessment Report (AR5) (IPCC 2013). However, United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines for national inventories require the use of GWP values from the AR4. To comply with international reporting standards under the UNFCCC, official emission estimates for California and the U.S. are reported using AR4 GWP values, and statewide and national GHG inventories have not yet updated their GWP values to the AR5 values. Project GHG emissions in this analysis are reported using the AR4 GWP values.

By applying the GWP ratios, project-related CO₂e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO₂ over a 100-year period is used as a baseline. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 4, *Global Warming Potentials and Atmospheric Lifetimes*.

Table 4
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	IPCC SAR GWP	IPCC AR4 GWP	IPCC AR5 GWP
Carbon Dioxide (CO ₂)	50-200	1	1	1
Methane (CH ₄)	12	21	25	28
Nitrous Oxide (N ₂ O)	114	310	298	265
HFC-134a	14	1,300	1,430	1,300
PFC: Tetrafluoromethane (CF ₄)	50,000	6,500	7,390	6,630
PFC: Hexafluoroethane (C ₂ F ₆)	10,000	9,200	12,200	11,100
Sulfur Hexafluoride (SF ₆)	3,200	23,900	22,800	23,500

Source: IPCC 2007

IPCC = Intergovernmental Panel on Climate Change; GWP = global warming potential; HFC = hydrofluorocarbon;

PFC = perfluorocarbon

2.2.3 Federal Greenhouse Gas Regulations

2.2.3.1 Federal Clean Air Act

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency* that CO₂ is an air pollutant, as defined under the CAA, and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO₂, CH₄, N₂O, HFC, PFC, and SF₆) threaten the public health and welfare of the American people (USEPA 2021). This action was a prerequisite to finalizing the USEPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA).

2.2.3.2 Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA worked together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. The USEPA established the first-ever

national GHG emissions standards under the CAA, and the NHTSA established CAFE standards under the Energy Policy and Conservation Act. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025. On March 3, 2020, the agencies released the final Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule). The purpose of the SAFE Vehicles Rule is “to correct the national automobile fuel economy and GHG emissions standards to give the American people greater access to safer, more affordable vehicles that are cleaner for the environment.” The direct effect of the rule is to eliminate the standards that were put in place to gradually raise average fuel economy for passenger cars and light trucks under test conditions from 37 miles per gallon (mpg) in 2020 to 50 mpg in 2025. The new SAFE Vehicles Rule freezes the average fuel economy level standards indefinitely at the 2020 levels. The new SAFE Vehicles Rule also results in the withdraw of the waiver previously provided to California for that State’s GHG and zero emissions vehicle (ZEV) programs under Section 209 of the CAA (USEPA and NHTSA 2020). The combined USEPA GHG standards and NHTSA CAFE standards resolve previously conflicting requirements under both federal programs and the standards of the State of California and other states that have adopted the California standards. The SAFE Vehicles Rule Part I (SAFE-1), which withdraws the waiver, was published in September 2019 and Part II (SAFE-2), which finalizes the regulation, was published in April 2020. On April 26, 2021, the USEPA published the Notice of Reconsideration of Previous Withdrawal of a Waiver for California’s Advanced Clean Car Program. The purpose of this Notice of Reconsideration is to seek comment on a number of issues in the SAFE-1 action including:

- Whether it was proper for the USEPA to reconsider a previously issued CAA waiver.
- Whether USEPA’s actions to withdraw California’s waiver was appropriate.
- Whether the SAFE-1 interpretation of the CAA that enabled USEPA to withdraw California’s waiver was appropriate.
- Whether the SAFE-1 interpretation of CAA Section 177 that could disallow other states’ ability to adopt California GHG emission standards was appropriate.

2.2.4 California Greenhouse Gas Regulations

2.2.4.1 California Code of Regulations, Title 24, Part 6

CCR Title 24 Part 6: California’s Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California’s energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space or water heating) results in GHG emissions.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Title 24 standards went into effect on January 1, 2020. The 2019 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvement to the residential standards is a requirement for onsite photovoltaic electricity generation (e.g., solar panels) for most

new or modified residential building up to three stories high (California Energy Commission [CEC] 2019a).

The standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards—the energy budgets—that vary by climate zone (of which there are 16 in California) and building type; thus, the standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

2.2.4.2 California Green Building Standards Code

The California Green Building Standards Code (CALGreen; CCR Title 24, Part 11) is a code with mandatory requirements for all nonresidential buildings (including industrial buildings) and residential buildings for which no other state agency has authority to adopt green building standards. The current 2019 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings went into effect on January 1, 2020 (California Building Standards Commission [CBSC] 2019).

The development of CALGreen is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

CALGreen contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

2.2.4.3 Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

2.2.4.4 Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed by AB 32 to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

2.2.4.5 Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing GHGs emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

2.2.4.6 Senate Bill 32

Approved by Governor Brown in September 2016, Senate Bill (SB) 32 (Amendments to the California Global Warming Solutions Action of 2006) extends California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EO B-30-15 of 80 percent below 1990 emissions levels by 2050.

2.2.4.7 Assembly Bill 197

A condition of approval for SB 32 was the passage of AB 197. AB 197 requires that CARB consider the social costs of GHG emissions and prioritize direct reductions in GHG emissions at mobile sources and large stationary sources. AB 197 also gives the California legislature more oversight over CARB through the addition of two legislatively appointed members to the CARB Board and the establishment a legislative committee to make recommendations about CARB programs to the legislature.

2.2.4.8 Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. In January 2012, CARB approved a new emissions-control program 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 packet of standards called Advanced Clean Cars (CARB 2021b).

2.2.4.9 Assembly Bill 341

The state legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the diversion target to 75 percent statewide. AB 341 requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The final regulation was approved by the Office of Administrative Law on May 7, 2012 and went into effect on July 1, 2012.

2.2.4.10 Executive Order S-01-07

This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. CARB is therefore continuing to implement the LCFS statewide.

2.2.4.11 Senate Bill 350

Approved by Governor Brown on October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers resource needs, reduce GHG emissions, and increase the use of clean energy.

2.2.4.12 Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act of 2008, supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPOs). CARB periodically reviews and updates the targets, as needed.

Each of California's MPOs must prepare a Sustainable Communities Strategy (SCS) as an integral part of its regional transportation plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. CARB must review the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional GHG targets. If the combination of measures in the SCS would not meet the regional targets, the MPO must prepare a separate alternative planning strategy (APS) to meet the targets. The APS is not a part of the RTP. Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline CEQA processing.

2.2.4.13 Senate Bill 100

Approved by Governor Brown on September 10, 2018, SB 100 extends the renewable electricity procurement goals and requirements of SB 350. SB 100 requires that all retail sale of electricity to California end-use customers be procured from 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045.

2.2.4.14 California Air Resources Board: Scoping Plan

On December 11, 2008, the CARB adopted the Scoping Plan (CARB 2008) as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy. Relative to transportation, the Scoping Plan includes nine measures or recommended actions related to reducing VMT and vehicle GHGs through fuel and efficiency measures. These measures would be implemented statewide rather than on a project-by-project basis.

In response to EO B-30-15 and SB 32, all state agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the Scoping Plan to reflect the 2030 target and, therefore, is moving forward with the update process (CARB 2014). The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue driving down emissions. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target set by EO B-30-15 and codified by SB 32. The 2017 Climate Change Scoping Plan Update, Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, was adopted in December 2017. The Scoping Plan Update establishes a proposed framework for California to meet a 40 percent reduction in GHGs by 2030 compared to 1990 levels (CARB 2017).

The 2017 Scoping Plan includes guidance to local governments in Chapter 5, including plan-level GHG emissions reduction goals and methods to reduce communitywide GHG emissions. In its guidance, 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." CARB further states that "it is appropriate for local jurisdictions to derive evidence-based local per capita goals [or some other metric] that the local jurisdiction deems appropriate, such as mass emissions or per service population, based on local emissions sectors and population projections that are consistent with the framework used to develop the statewide per capita targets" (CARB 2017).

3.0 EXISTING CONDITIONS

3.1 CLIMATE AND METEOROLOGY

The project site is in the SCAB, which consists of all or part of four counties: Los Angeles, San Bernardino, Riverside, and Orange. The distinctive climate of the SCAB is determined by its terrain and geographic location. The SCAB is a coastal plain with connecting broad valleys and low hills. It is bound by the Pacific Ocean to the southwest and high mountains around the rest of its perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light, average wind speeds.

The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling toward the sea. Local canyons can also alter wind direction, with wind tending to flow parallel to the canyons. The vertical dispersion of air

pollutants in the SCAB is hampered by the presence of persistent temperature inversions. High pressure systems, such as the semi-permanent high-pressure zone in which the SCAB is located, are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. Such inversions restrict the vertical dispersion of air pollutants released into the marine layer and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog. The basin-wide occurrence of inversions at 3,500 feet above mean sea level or less averages 191 days per year (SCAQMD 1993).

The predominant wind direction in the vicinity of the project site is from the west and the average wind speed is approximately 5.5 mph, as measured at the Cable Airport, approximately 3.3 miles northwest of the project site (Iowa Environmental Mesonet [IEM] 2021). The annual average maximum temperature in the project area, as measured at the Upland 3 N climatic station, approximately 2.6 miles north of the project site, is approximately 76.6 degrees Fahrenheit (°F), and the annual average minimum temperature is approximately 48.0°F. Total precipitation in the project area averages approximately 20.3 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer (Western Regional Climate Center [WRCC] 2021).

3.2 EXISTING AIR QUALITY

3.2.1 Criteria Pollutants

3.2.1.1 Attainment Designations

Attainment designations are discussed in Section 2.1 and Table 2. The SCAB is a federal and state nonattainment area for 8-hour ozone and PM_{2.5}. The SCAB is also a state nonattainment area for 1-hour ozone and PM₁₀.

3.2.1.2 Monitored Air Quality

The SCAQMD maintains monitoring stations to measure ambient concentrations of pollutants in the SCAB. The nearest monitoring station, approximately 0.3 miles north of the project site, is the Upland monitoring station. Table 5, *Air Quality Monitoring Data*, presents a summary of the ambient pollutant concentrations monitored at the Upland air quality monitoring stations during the most recent three years (2018 through 2020) for which the SCAQMD has reported data.

Table 5
AIR QUALITY MONITORING DATA

Pollutant Standard	2018	2019	2020
<i>Ozone (O₃)</i>			
Maximum concentration 1-hour period (ppm)	0.133	0.131	0.158
Maximum concentration 8-hour period (ppm)	0.112	0.107	0.124
Days above 1-hour state standard (>0.09 ppm)	25	31	82
Days above 8-hour state/federal standard (>0.070 ppm)	54	54	118
<i>Coarse Particulate Matter (PM₁₀)</i>			
Maximum 24-hour concentration (µg/m ³)	156.6	125.9	174.8
Measured Days above 24-hr state standard (>50 µg/m ³)	*	*	*
Measured Days above 24-hr federal standard (>150 µg/m ³)	1	0	1

Pollutant Standard	2018	2019	2020
<i>Fine Particulate Matter (PM_{2.5})</i>			
Maximum 24-hour concentration (µg/m ³)	47.9	91.1	74.0
Measured Days above 24-hour federal standard (>35 µg/m ³)	*	*	*
<i>Nitrogen Dioxide (NO₂)</i>			
Maximum 1-hour concentration (ppm)	0.058	0.057	0.055
Days above state 1-hour standard (0.18 ppm)	0	0	0
Days above federal 1-hour standard (0.100 ppm)	0	0	0
Annual average (ppm)	0.014	*	0.013
Exceed annual federal standard (0.053 ppm)	No	No	No
Exceed annual state standard (0.030 ppm)	No	No	No

Source: CARB 2021c

ppb = parts per billion; ppm = parts per million; µg/m³ = micrograms per cubic meter, * = insufficient data available.

As shown in Table 5, The 1- and 8-hour ozone standards were exceeded numerous times in each of the sample years. There is insufficient PM₁₀, and PM_{2.5} data available for much of the sample period. Data for NO₂ showed no exceedances.

3.2.2 Greenhouse Gases

In 2018, total GHG emissions worldwide were estimated at 48,900 million metric tons (MMT) of CO₂e emissions (Climate Watch 2021). The U.S. contributed the second largest portion (12 percent) of global GHG emissions in 2018 with 5,790 MMT CO₂e, of which 82 percent was CO₂ emission (Climate Watch 2021). On a national level, 91 percent of GHG emissions were associated with transportation and electricity generation (Climate Watch 2021).

CARB performed statewide inventories for the years 1990 to 2017, as shown in Table 6, *California Greenhouse Gas Emissions by Sector*. The inventory is divided into six broad sectors of economic activity: agriculture, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO₂e.

Table 6
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR

Sector	Emissions (MMT CO ₂ e)			
	1990	2000	2010	2019
Agriculture and Forestry	18.9 (4%)	31.0 (7%)	33.7 (8%)	31.8 (8%)
Commercial	14.4 (3%)	14.1 (3%)	20.1 (4%)	24.2 (6%)
Electricity Generation	110.5 (26%)	105.4 (22%)	90.6 (20%)	59.0 (14%)
Industrial	105.3 (24%)	105.8 (22%)	101.8 (23%)	99.9 (24%)
Residential	29.7 (7%)	31.7 (7%)	32.1 (7%)	33.0 (8%)
Transportation	150.6 (35%)	183.2 (39%)	170.2 (38%)	170.3 (41%)
Unspecified Remaining	1.3 (<1%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
TOTAL	430.7	471.1	448.5	418.1

Source: CARB 2007 and CARB 2021d

MMT = million metric tons; CO₂e = carbon dioxide equivalent

As shown in Table 6, statewide GHG source emissions totaled 431 MMT CO₂e in 1990, 471 MMT CO₂e in 2000, 449 MMT CO₂e in 2010, and 418 MMT CO₂e in 2019. Transportation-related emissions

consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions (CARB 2007 and CARB 2021).

4.0 METHODOLOGY AND SIGNIFICANCE CRITERIA

4.1 METHODOLOGY

Criteria pollutant and GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod), Version 2020.4.0 CalEEMod is a computer model used to estimate air emissions resulting from land development projects throughout the state of California. CalEEMod was developed by CAPCOA in collaboration with the California air quality management and pollution control districts, primarily the SCAQMD. The calculation methodology, source of emission factors used, and default data is described in the CalEEMod User's Guide, and Appendices A, D, and E (CAPCOA 2021b).

In brief, CalEEMod is a computer model that estimates criteria air pollutant and greenhouse gas emissions from mobile (i.e., vehicular) sources, area sources (fireplaces, woodstoves, and landscape maintenance equipment), energy use (electricity and natural gas used in space heating, ventilation, and cooling; lighting; and plug-in appliances), water use and wastewater generation, and solid waste disposal. Emissions are estimated based on land use information input to the model by the user.

In the first module, the user defines the specific land uses that will occur at the project site. The user also selects the appropriate land use setting (urban or rural), operational year, location, climate zone, and utility provider. The input land uses, size features, and population are used throughout CalEEMod in determining default parameters and calculations in each of the subsequent modules. The input land use information consists of land use subtypes (such as the residential subtypes of single-family residential and multi-family medium-rise residential) and their unit or square footage quantities.

Subsequent modules include construction (including off-road vehicle emissions), mobile (on-road vehicle emissions), area sources (architectural coatings [painting], consumer products [cleansers, aerosols, solvents]), water and wastewater, and solid waste. Each module comprises multiple components including an associated mitigation module to account for further reductions in the reported baseline calculations. Other inputs include trip generation rates, trip lengths, vehicle fleet mix (percentage autos, trucks, etc.), trip distribution (percent work to home, etc.), duration of construction phases, construction equipment usage, grading areas, season, and ambient temperature, as well as other parameters.

In various places the user can input additional information and/or override the default assumptions to account for project- or location-specific parameters. For this assessment, the default parameters were not changed unless otherwise noted. The CalEEMod output files are included in Appendix A to this report.

4.1.1 Construction Emissions

CalEEMod has the capability to calculate reductions in construction emissions from the effects of dust control, diesel-engine classifications, and other selected emissions reduction measures. In compliance with SCAQMD Rule 403, fugitive dust emissions calculations assume application of water on exposed surface a minimum of two times per day, enforcing a 15-mph speed limit on unpaved surfaces, and maintaining a minimum 12 percent moisture content in unpaved roads and parking areas within the

project site. Based on CalEEMod, Version 2020.4.0 defaults, the control efficiency for watering two times per day is 55 percent.

CalEEMod estimates construction emissions for each year of construction activity based on the annual construction equipment profile and other factors determined as needed to complete all phases of construction by the target completion year. As such, each year of construction activity has varying quantities of GHG emissions. Per SCAQMD guidance, total construction GHG emissions resulting from the project are amortized over 30 years and added to operational GHG emissions.

4.1.1.1 Construction Activities

Construction emissions were estimated based on the timeline provided by the project applicant, which assumes construction would occur over an approximately two-year period commencing with demolition in January 2023. The quantity, duration, and intensity of construction activity influence the amount of construction emissions and related pollutant concentrations that occur at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction activity is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced because of: (1) a more modern and cleaner-burning construction equipment fleet mix than assumed in CalEEMod; and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval).

Construction activities would include demolition, site preparation, grading, installation of underground utilities, paving, building construction, and architectural coatings. Construction is assumed to occur five days per week with equipment operating up to eight hours per day. Based on project-specific information provided by Century Communities, demolition would involve the removal of an approximately 5,000 square-foot structure and grading would involve the import of 2,727 cubic yards of fill material. Architectural coatings would occur concurrently with building construction—residences would be painted in sequence as they are completed. The construction schedule assumed in the modeling is shown in Table 7, *Anticipated Construction Schedule*.

Table 7
ANTICIPATED CONSTRUCTION SCHEDULE

Construction Activity	Construction Period Start	Construction Period End	Number of Working Days
Demolition	1/1/2023	1/20/2023	15
Site Preparation	1/23/2023	1/27/2023	5
Grading	1/30/2023	2/28/2023	22
Underground Utilities	3/1/2023	5/31/2023	66
Paving	6/1/2023	6/30/2023	22
Building Construction	7/1/2023	12/31/2024	392
Architectural Coatings	9/1/2024	12/31/2023	87

Source: Century Communities; CalEEMod

4.1.1.2 Construction Off-Road Equipment

Construction would require the use of heavy off-road equipment. Construction equipment estimates are based on default values in CalEEMod, with additional equipment added for excavation for underground utilities (based on assumptions used for similar projects). Table 8, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each stage of construction.

Table 8
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Equipment	Horsepower	Number	Hours/Day
<i>Demolition</i>			
Concrete/Industrial Saw	81	1	8
Excavators	158	1	8
Rubber Tired Dozers	247	2	8
<i>Site Preparation</i>			
Rubber Tired Dozers	247	3	8
Tractors/Loaders/Backhoes	97	4	8
<i>Grading</i>			
Excavators	158	1	8
Graders	187	1	8
Rubber Tired Dozers	247	1	8
Tractors/Loaders/Backhoes	97	3	8
<i>Underground Utilities</i>			
Tractors/Loaders/Backhoes	97	3	8
<i>Paving</i>			
Cement and Mortar Mixers	9	2	6
Pavers	130	1	8
Paving Equipment	132	2	6
Rollers	80	2	6
Tractors/Loaders/Backhoes	97	1	8
<i>Building Construction</i>			
Cranes	231	1	7
Forklifts	89	3	8
Generator Sets	84	1	8
Tractors/Loaders/Backhoes	97	3	7
Welders	46	1	8
<i>Architectural Coating</i>			
Air Compressors	78	1	6

Source: CalEEMod

4.1.1.3 Construction On-Road Trips

Worker commute trips and vendor delivery trips were modeled based on CalEEMod defaults. Worker trips are anticipated to vary between 8 and 72 trips per day, depending on construction activity. Demolition will result in 11 truckloads for debris hauling. Soil import during grading will require 170 truckloads. The CalEEMod default worker, vendor and haul trip distances were used in the model.

4.1.2 Operation Emissions

Operational impacts were estimated using CalEEMod. Operational sources of emissions include area, energy, transportation, water use, and solid waste.

4.1.2.1 Area Source Emissions

Area sources include emissions from landscaping equipment, the use of consumer products, the reapplication of architectural coatings for maintenance, and hearths. Emissions associated with area sources were estimated using the CalEEMod default values with the exception of hearths—in accordance with SCAQMD Rule 445, the project would not include wood burning stoves or fireplaces (SCAQMD 2020).

4.1.2.2 Energy Emissions

Development within the project would use electricity for lighting, heating, and cooling. Direct emissions from the burning of natural gas may result from furnaces, hot water heaters, and kitchen appliances. Electricity generation typically entails the combustion of fossil fuels, including natural gas and coal, which is then transmitted to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant).

Energy source emissions were estimated assuming implementation of energy-reducing project design features to comply with the 2019 Title 24 standards which include a requirement for new residential buildings with three or fewer residential floors to have on-site generation of electricity through photovoltaic (solar) panels. Based on an average area of the project homes, the project's residential buildings (65 dwelling units) total approximately 100,458 SF of conditioned space and would require solar panels producing a minimum of 155 kilowatts (kW).² The annual electricity generated by a rooftop mounted solar power system varies by the climate, amount of sunlight available per day, the pitch and orientation of the roof, and the efficiency of the electrical transmission. Assuming a capacity factor (CF) of 20 percent, which accounts for climate, daylight hours, roof pitch and orientation, and transmission loss, the power produced by the project's solar panels would be approximately 271,102 kilowatt-hours (kWhr) per year.³

4.1.2.3 Vehicular (Mobile) Sources

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on the trip generation rate from the Traffic Impact Analysis (TIA) prepared for the project, the project would generate 476 average daily trips (Kimley-Horn 2021). Trip distances and purposes were based on CalEEMod defaults.

² Per the 2019 Title 24 residential building energy efficiency requirements, the minimum solar electrical generation required is calculated by $kW = (CFA \times A)/1000 + (DU \times B)$, where CFA is the conditioned floor area, A is 0.672 (climate zone 10 adjustment factor), DU is the total number of dwelling units, and B is 1.41 (climate zone 10 dwelling unit factor).

³ Solar kWhr per year can be calculated by: $kWhr/year = \text{Power Output (kW)} \times 24 \text{ hours/day} \times 365.24 \text{ days/year} \times CF$, where CF is a capacity factor which accounts for climate, daylight hours, roof pitch and orientation, and transmission loss. For typical California residential systems, the CF can range between 17% and 22.5%. A CF of 20% was used in the project calculations.

4.1.2.4 Solid Waste Sources

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. CalEEMod determines the GHG emissions associated with disposal of solid waste into landfills. Portions of these emissions are biogenic. CalEEMod methods for quantifying GHG emissions from solid waste are based on the IPCC method using the degradable organic content of waste. A conservative 25 percent solid waste diversion rate was applied in CalEEMod to account for mandatory compliance with AB 341 which is not included in the model defaults.

4.1.2.5 Water Sources

Water-related GHG emissions are from the conveyance and treatment of water. CalEEMod uses the CEC's 2006 *Refining Estimates of Water-Related Energy Use in California* to establish default water-related emission factors. Modeling was conducted using these defaults and a 20 percent reduction in potable water use and wastewater generation in accordance with 2019 CALGreen requirements not accounted for in the model defaults.

4.1.3 Localized Significance Threshold Methodology

As part of the SCAQMD's environmental justice program, more attention has been focused on localized air quality effects. Also, while regional impact analysis is based on attaining or maintaining regional emissions standards, localized impact analysis compares the concentration of a pollutant at a receptor site to a health-based standard.

SCAQMD has developed a localized significance threshold (LST) methodology and mass rate look-up tables by source receptor area (SRA) that can be used by public agencies to determine whether a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard; they are developed based on the ambient concentrations of that pollutant for each SRA (SCAQMD 2009). The LST methodology translates the concentration standards into emissions thresholds that are a function of project site area, source to receptor distance, and the location within the SCAB. The LST methodology is recommended to be limited to projects of 5 acres or less and to avoid the need for complex dispersion modeling. For projects that exceed 5 acres, such as the proposed project, the 5-acre LST look-up values can be used as a screening tool to determine which pollutants require detailed analysis (Sun 2017). This approach is conservative as it assumes that all on-site emissions would occur within a 5-acre area and over-predicts potential localized impacts (i.e., more pollutant emissions occurring within a smaller area and within closer proximity to potential sensitive receptors). If a project exceeds the LST look up values, then the SCAQMD recommends that project-specific localized air quality modeling be performed.

The proposed project is within SRA 32, Northwest San Bernardino Valley. The closest sensitive receptors are single-family residences adjacent to the eastern and southern boundaries of the project site. Therefore, the LSTs in SRA 32 for receptors located within 82 feet (25 meters) are used for project sites less than or equal to 5 acres.

4.2 SIGNIFICANCE CRITERIA

4.2.1 Air Quality

Thresholds used to evaluate potential air quality and odor impacts are based on applicable criteria in the State's California Environmental Quality Act (CEQA) Guidelines Appendix G. A significant air quality and/or odor impact could occur if the implementation of the proposed project would:

1. Conflict with or obstruct implementation of the SCAQMD Air Quality Management Plan, or applicable portions of the SIP; or
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the SCAB is non-attainment under an applicable NAAQS or CAAQS; or
3. Expose sensitive receptors to substantial pollutant concentrations; or
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. The SCAQMD has established significance thresholds to assess the regional and localized impacts of project-related air pollutant emissions. The significance thresholds are updated, as needed, to appropriately represent the most current technical information and attainment status in the SCAB. Table 9, *SCAQMD Thresholds of Significance*, presents the most current significance thresholds, including regional daily thresholds for short-term construction and long-term operational emissions; maximum incremental cancer risk and hazard indices for TACs; and maximum ambient concentrations for exposure of sensitive receptors to localized pollutants. A project with daily emission rates, risk values, or concentrations below these thresholds is generally considered to have a less than significant effect on air quality.

Table 9
SCAQMD THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction	Operation
Mass Daily Thresholds (pounds per day)		
VOC	75	55
NO _x	100	55
CO	550	550
PM ₁₀	150	150
PM _{2.5}	55	55
SO _x	150	150
Lead	3	3
Toxic Air Contaminants		
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Ambient Air Quality for Criteria Pollutants		
NO ₂	1-hour average ≥ 0.18 ppm Annual average ≥ 0.03 ppm	
CO	1-hour average ≥ 20.0 ppm (state) 8-hour average ≥ 9.0 ppm (state/federal)	
PM ₁₀	24-hour average ≥ 10.4 µg/m ³ (construction) 24-hour average ≥ 2.5 µg/m ³ (operation) Annual average ≥ 1.0 µg/m ³	
PM _{2.5}	24-hour average ≥ 10.4 µg/m ³ (construction) 24-hour average ≥ 2.5 µg/m ³ (operation)	
SO ₂	1-hour average ≥ 0.075 ppm 24-hour average ≥ 0.04 ppm	

Source: SCAQMD 2015

lbs/day = pounds per day; VOC = volatile organic compound; NO_x = nitrogen oxides; CO = carbon monoxide; PM₁₀ = respirable particulate matter with a diameter of 10 microns or less; PM_{2.5} = fine particulate matter with a diameter of 2.5 microns or less; SO_x = sulfur oxides; TACs = toxic air contaminants; GHG = greenhouse gas emissions; MT/yr = metric tons per year; CO₂e = carbon dioxide equivalent; NO₂ = nitrogen dioxide; ppm = parts per million; µg/m³ = micrograms per cubic meter

4.2.2 Greenhouse Gases

Given the relatively small levels of emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Therefore, the potential for a significant GHG impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

- (1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

- (2) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

CEQA Section 15064.4 states that a CEQA lead agency “should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project.” It also states that the lead agency has the discretion to determine the methodology to assess the significance of GHG emissions on the environment. Accordingly, the following section describes the threshold of significance applied to the project.

On December 30, 2009, the Natural Resources Agency adopted amendments to the State CEQA Guidelines that became effective on March 18, 2010. The amendments to the State CEQA Guidelines include new requirements for evaluating GHG emissions. Pursuant to the amended State CEQA Guidelines, a lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

The extent to which the project may increase (or reduce) GHG emissions compared to the existing environmental setting;

Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and/or

The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The City, as a lead agency, may assess the significance of GHG emissions by determining a project’s consistency with a local GHG reduction plan that qualifies under Section 15183.5 of the CEQA Guidelines.

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting held in September 2010 (Meeting No. 15), the SCAQMD proposed to adopt a tiered approach for evaluating GHG emissions for development projects where the SCAQMD is not the lead agency:

Tier 1. Exemptions: If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.

Tier 2. Consistency with a Locally Adopted GHG Reduction Plan: If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project’s geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.

Tier 3. Numerical Screening Threshold: If GHG emissions are less than the numerical screening-level threshold, project-level and cumulative GHG emissions are less than significant.

For projects that are not exempt or where no qualifying GHG reduction plans are directly applicable, the SCAQMD requires an assessment of GHG emissions. SCAQMD, under Option 1, proposed a “bright-line” screening-level threshold of 3,000 MT CO₂e per year for all land use types or, under Option 2, the following land-use-specific thresholds: 1,400 MT CO₂e for commercial projects, 3,500 MT CO₂e for

residential projects, or 3,000 MT CO₂e for mixed-use projects. This bright-line threshold is based on a review of the OPR database of CEQA projects. Based on that review of 711 CEQA projects, 90 percent of CEQA projects would exceed the bright-line thresholds identified above. Therefore, projects that do not exceed the bright-line threshold would have a nominal and therefore less than cumulatively considerable impact on GHG emissions.

Tier 4. Performance Standards: If emissions exceed the numerical screening threshold, a more detailed review of the project's GHG emissions is warranted. The SCAQMD has proposed an efficiency target for projects that exceed the bright-line threshold. The current recommended approach is per-capita efficiency targets. The SCAQMD is not recommending use of a percent emissions reduction target. Instead, the SCAQMD proposes proposed a 2020 efficiency target of 4.8 MT CO₂e per year per service population for project-level analyses and 6.6 MT CO₂e per year per service population for plan-level projects (e.g., program-level projects such as General Plans). The GHG efficiency metric divides annualized GHG emissions by the service population, which is the sum of residents and employees, per the following equation:

$$\text{Rate of Emission} = \text{GHG Emissions (MT CO}_2\text{e/yr)} \div \text{Service Population}$$

The efficiency evaluation consists of comparing the project's efficiency metric to efficiency targets. Efficiency targets represent the maximum quantity of emissions each resident and employee in California could emit in various years based on emission levels necessary to achieve the statewide GHG emissions reduction goals. A project that results in a lower rate of emissions would be more efficient than a project with a higher rate of emissions, based on the same service population. The metric considers GHG reduction measures integrated into a project's design and operation (or through mitigation). The per capita efficiency targets are based on the AB 32 GHG reduction target and 2020 GHG emissions inventory prepared for CARB's 2008 Scoping Plan.

Because the project would begin operations in the post-2020 timeframe, the 2020 numerical screening threshold of 3,000 MT CO₂e and the efficiency target of 4.8 MT CO₂e per year per service population would need to be adjusted to reflect the State's post-2020 GHG reduction goals.

CARB has completed a Scoping Plan, which will be utilized by the SCAQMD to establish the 2030 GHG efficiency threshold. SCAQMD has yet to publish a quantified GHG efficiency threshold for the 2030 target. A scaled threshold consistent with State goals detailed in SB 32, Executive Order B-30-15, and Executive Order S-3-05 to reduce GHG emissions by 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050, respectively, was developed for 2025, when the proposed project is anticipated to be operational. Though the SCAQMD has not published a quantified threshold beyond 2020, this assessment uses a threshold of 2,324 MT CO₂e per year or 3.7 MT CO₂e/yr/SP, which was calculated for the buildout year of 2025 based on the GHG reduction goals of SB 32 and Executive Order B-30-15.

For the purpose of this analysis, the proposed project will first be compared to the adjusted screening-level Tier 3 Numerical Screening Threshold of 2,324 MT CO₂e per year for all land use types. If it is determined that the proposed project is estimated to exceed this screening threshold, it will then be compared to the efficiency-based threshold.

5.0 AIR QUALITY IMPACT ANALYSIS

This section evaluates potential direct impacts of the proposed project related to the air pollutant emissions. Project-level air quality modeling was completed as part of this analysis. Complete modeling results are included as Appendix A of this report.

5.1 ISSUE 1: CONSISTENCY WITH AIR QUALITY PLANS

5.1.1 Impacts

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, economy, community development, and environment. With regard to air quality planning, SCAG has prepared the RTP/SCS, a long-range transportation plan that uses growth forecasts to project trends out over a 20-year period to identify regional transportation strategies to address mobility needs. These growth forecasts form the basis for the land use and transportation control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. Both the RTP/SCS and AQMP are based, in part, on projections originating with County and City General Plans.⁴

The project site is designated as LI-BP in the General Plan and is zoned as LI; the project would require a General Plan Amendment and zone change to Specific Plan and RM-20 Residential, MF 20 dwelling units (du) per acre.

The City of Upland has recognized the potential for the project site to accommodate residential land uses as is demonstrated in the parcel specific analysis of potential housing sites that the City prepared to identify underutilized sites designated for residential or mixed-use development to meet the Regional Housing Needs Assessment (RHNA) targets for the 2021-2029 planning period. This analysis, which is also included as Appendix B to the City's General Plan Housing Element Update, that is undergoing the approval process, did not allocate a residential density to the site, but did identify the parcel as suitable for residential development (City 2021).

Specifically, the RHNA for the 2021-2029 planning period assigned Upland a new housing need of 5,686 units. As stated in the Housing Element Update, to address the current shortfall in capacity for potential housing development the City will process zoning amendments for sufficient sites with appropriate densities during 2022-2024 to fully accommodate the City's remaining housing need. Rezoned sites will be selected from the candidate sites as identified in the parcel specific analysis and will comply with the requirements of Government Code §65583.2(h) and (i), that outlines the stipulations for suitable housing sites.

By developing an underutilized site and helping the City meet its housing needs, the project would be consistent with the growth assumption used to develop the region's AQMP. As such, residential growth in the City as a result of the project, and the related changes in regional emissions, are accounted for in the AQMP, which is crafted to bring the basin into attainment for all criteria pollutants. Additionally, as detailed in Section 5.2, below, the project would not result in any construction or operational period

⁴ SCAG serves as the federally designated metropolitan planning organization for the southern California region.

emissions in exceedance of established thresholds. Therefore, the proposed project would not conflict with or obstruct implementation of the AQMP.

5.1.2 Significance of Impacts

Implementation of the project would not conflict with or obstruct implementation of the SCAQMD's AQMP, and the impact would be less than significant.

5.1.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

5.1.4 Significance After Mitigation

Impacts related to conflicts with the applicable air quality plan would be less than significant.

5.2 ISSUE 2: CUMULATIVELY CONSIDERABLE NET INCREASE OF NONATTAINMENT CRITERIA POLLUTANTS

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the SCAB. The region is a federal and/or state nonattainment area for ozone, PM₁₀ and PM_{2.5}. In accordance with CEQA Guidelines Section 15064(h)(3), the SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State Clean Air Acts. If a project conflicts with the AQMP, which is intended to bring the SCAB into attainment for all criteria pollutants, that project can be considered cumulatively considerable. Additionally, if the mass regional emissions calculated for a project exceed the applicable SCAQMD daily significance thresholds that are designed to assist the region in attaining the applicable state and national ambient air quality standards, that project can be considered cumulatively considerable. As discussed in Issue 1, above, the project would not conflict with or obstruct implementation of the AQMP. A comparison of the project mass regional emissions with the applicable SCAQMD daily significance thresholds is provided below.

5.2.1 Impacts

The project would generate criteria pollutants and precursors in the short-term during construction and the long-term during operation. To determine whether a project would result in cumulatively considerable emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation, a project's emissions are evaluated based on the quantitative emission thresholds established by the SCAQMD (as shown in Table 9).

5.2.1.1 Construction

The project's construction emissions were estimated using the CalEEMod model as described in Section 4.1.1. Additional details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A.

The results of the calculations for project construction are shown in Table 10, *Unmitigated Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions for comparison with the SCAQMD thresholds.

Table 10
DAILY CONSTRUCTION EMISSIONS

Phase	ROG (lb/day)	NO _x (lb/day)	CO (lb/day)	SO _x (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Demolition	2.33	21.70	20.16	0.04	1.34	1.00
Site Preparation	2.73	27.57	18.80	0.04	10.31	5.77
Grading	1.80	19.77	15.74	0.04	4.43	2.39
Underground Utilities	0.48	4.61	6.92	0.01	0.32	0.23
Paving	1.16	8.84	12.81	0.02	0.66	0.46
Building Construction	1.86	15.19	18.74	0.04	1.62	0.91
Architectural Coatings	5.10	1.25	2.22	<0.01	0.22	0.10
Maximum Daily Emissions^{1,2}	6.84	27.57	20.72	0.04	10.31	5.77
<i>SCAQMD Thresholds</i>	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Source: CalEEMod; USEPA AP-42 (output data is provided in Appendix A)

¹ Maximum daily emissions of ROG and CO would occur during concurrent building construction and architectural coatings.

² Totals may not sum due to rounding.

lb/day = pounds per day; ROG = reactive organic gas; NO_x = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM₁₀ = particulate matter 10 microns or less in diameter; PM_{2.5} = particulate matter 2.5 microns or less in diameter

As shown in Table 10, project emissions during construction would not exceed the daily thresholds set by the SCAQMD.

5.2.1.2 Operation

The project's operational emissions were estimated using the CalEEMod model as described in Section 4.1.2. Model outputs are provided in Appendix A. Table 11, *Daily Operational Emissions*, presents the summary of operational emissions for the project. The data are presented as the maximum anticipated daily emissions for comparison with the SCAQMD thresholds.

Table 11
DAILY OPERATIONAL EMISSIONS

Category	ROG (lb/day)	NO _x (lb/day)	CO (lb/day)	SO _x (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Area	1.59	0.06	5.36	<0.01	0.03	0.03
Energy	0.04	0.35	0.15	<0.01	0.03	0.03
Mobile	1.50	2.02	14.63	0.03	3.46	0.94
Maximum Daily Emissions¹	3.13	2.43	20.14	0.04	3.52	1.00
<i>SCAQMD Thresholds</i>	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Source: CalEEMod (output data is provided in Appendix A)

¹ Totals may not sum due to rounding.

lb/day = pounds per day; ROG = reactive organic gas; NO_x = nitrogen oxides; CO = carbon monoxide; SO₂ = sulfur dioxide; PM₁₀ = particulate matter 10 microns or less in diameter; PM_{2.5} = particulate matter 2.5 microns or less in diameter

As shown in Table 11, project emissions during operation would not exceed the daily thresholds set by the SCAQMD.

5.2.2 Significance of Impacts

Construction and operation of the project would not result in criteria pollutant and precursor pollutant emissions that would exceed the SCAQMD significance thresholds, and the impact would be less than significant.

5.2.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

5.2.4 Significance After Mitigation

The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the SCAB is non-attainment, and the impact would be less than significant.

5.3 ISSUE 3: IMPACTS TO SENSITIVE RECEPTORS

5.3.1 Impacts

5.3.1.1 Construction Activities

Criteria Pollutants

The localized effects from the on-site portion of daily construction emissions were evaluated at sensitive receptor locations potentially impacted by the project according to the SCAQMD's LST method, described above. The proposed project is within SRA 32, Northwest San Bernardino Valley. Consistent with the LST guidelines, when quantifying mass emissions for localized analysis, only emissions that occur on site are considered. Emissions related to off-site delivery/haul truck activity and construction worker trips are not considered in the evaluation of construction-related localized impacts, as these do not contribute to emissions generated on a project site. The closest sensitive receptors are residences adjacent to the east and southern boundaries of the project site. Therefore, the LSTs in SRA 24 for receptors located less than 82 feet (25 meters) are used for project sites greater than 5 acres. Table 12, *Maximum Localized Daily Construction Emissions*, shows the localized construction emissions.

Table 12
MAXIMUM LOCALIZED DAILY CONSTRUCTION EMISSIONS

Activity	NO _x (lb/day)	CO (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Demolition	21.48	19.64	1.15	0.95
Site Preparation	27.52	18.24	10.11	5.71
Grading	17.94	14.75	3.97	2.26
Underground Utilities	4.59	6.67	0.23	0.21
Paving	8.79	12.19	0.44	0.40
Building Construction	14.38	16.24	0.70	0.66
Architectural Coatings	1.22	1.81	0.06	0.06
Maximum Daily Emissions	27.52	19.64	10.11	5.71
<i>SCAQMD LST Thresholds</i>	<i>270</i>	<i>2,193</i>	<i>16</i>	<i>9</i>
Exceed LST?	No	No	No	No

Source: CalEEMod (output data is provided in Appendix A)

lb/day = pounds per day; NO_x = nitrogen oxides; CO = carbon monoxide; PM₁₀ = particulate matter 10 microns or less in diameter; PM_{2.5} = particulate matter 2.5 microns or less in diameter

As shown in Table 12, localized emissions for all criteria pollutants would remain below their respective SCAQMD LSTs. Therefore, construction of the project would not result in exposure of sensitive receptors to substantial localized concentrations of criteria pollutants and precursors.

Toxic Air Contaminants

Implementation of the project would result in the use of heavy-duty construction equipment, haul trucks, on-site generators, and construction worker vehicles. These vehicles and equipment could generate the TAC DPM. Generation of DPM from construction projects typically occurs in a localized area (e.g., at the project site) for a short period of time. Because construction activities and subsequent emissions vary depending on the phase of construction (e.g., grading, building construction), the construction-related emissions to which nearby receptors are exposed to would also vary throughout the construction period. During some equipment-intensive phases such as grading, construction-related emissions would be higher than other less equipment-intensive phases such as building construction. Concentrations of mobile-source DPM emissions are typically reduced by 70 percent at approximately 500 feet (CARB 2005).

The dose (of TAC) to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed quantity of emissions would result in higher health risks. Current models and methodologies for conducting cancer health risk assessments are associated with longer-term exposure periods (typically 30 years for individual residents based on guidance from OEHHA) and are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models and methodologies do not correlate well with the temporary and highly variable nature of construction activities. Cancer potency factors are based on animal lifetime studies or worker studies where there is long-term exposure to the carcinogenic agent. There is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime (Office of Environmental Health Hazard Assessment [OEHHA] 2015). Considering this information, the highly dispersive nature of DPM, and the fact that construction activities would occur at various locations throughout the project site, it is not anticipated that construction of the project would expose sensitive receptors to substantial DPM concentrations.

5.3.1.2 Operational Activities

CO Hotspots

Vehicle exhaust is the primary source of CO. In an urban setting, the highest CO concentrations are generally found within close proximity to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increase. Project-generated traffic has the potential of contributing to localized “hotspots” of CO off-site. Because CO is a byproduct of incomplete combustion, exhaust emissions are worse when fossil-fueled vehicles are operated inefficiently, such as in stop-and-go traffic or through heavily congested intersections, where the level of service (LOS) is severely degraded.

CARB recommends evaluation of the potential for the formation of locally high concentrations of CO, known as CO hot spots. A CO hot spot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. To verify that the project would not cause or contribute to a violation of the 1-hour and 8-hour CO standards, an evaluation of the potential for CO hot spots at nearby intersections was conducted.

The TIA (Kimley-Horn 2021) evaluated whether there would be a change in the LOS at the intersections affected by the proposed project. In accordance with the Transportation Project-Level Carbon Monoxide Protocol, CO hot spots are typically evaluated when: (a) the LOS of an intersection decreases to a LOS E or worse because of the project; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, schools, hospitals, etc., are located in the vicinity of the affected intersection or roadway segment (California Department of Transportation [Caltrans] 1998).

According to the TIA, all of the analyzed intersections are forecast to operate at LOS C or better in the project opening year condition, without implementation of the project. Implementation of the project would not result in the LOS of any of the analyzed intersections degrading (Kimley-Horn 2021). Therefore, consistent with the CO Protocol, operation of the project would not result in exposure of sensitive receptors to substantial localized CO concentrations.

New Sensitive Receptors

As a residential development, the project would site new sensitive receptors. The CARB siting recommendations within the Air Quality and Land Use Handbook suggest a detailed health risk assessment should be conducted for proposed sensitive receptors within 1,000 feet of a warehouse distribution center, within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater), 50 feet of a typical gas dispensing facilities or within 300 feet of a dry cleaning facility that uses perchloroethylene (PCE), among other siting recommendations (CARB 2005). There are no facilities of this type within 1,000 feet of the project site. In addition, the closest high-volume roadway (more than 10,000 ADT) would be Interstate 10, approximately 0.9 mile southwest of the project site. Therefore, future project residents would not be exposed to substantial concentrations of TACs.

5.3.2 Significance of Impacts

Implementation of the project would not expose sensitive receptors to substantial pollutant concentrations, and the impact would be less than significant.

5.3.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

5.3.4 Significance After Mitigation

Implementation of the project would not expose sensitive receptors to substantial pollutant concentrations, and the impact would be less than significant.

5.4 ISSUE 4: OTHER EMISSIONS (SUCH AS THOSE LEADING TO ODORS)

5.4.1 Impacts

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations (SCAQMD 1993). The project, involving a residential development, would not include any of these uses nor are there any of these land uses in the project vicinity.

Emissions from construction equipment, such as diesel exhaust, and VOCs from architectural coatings and paving activities may generate odors; however, these odors would be temporary, intermittent, and not expected to affect a substantial number of people. Additionally, noxious odors would be confined to the immediate vicinity of construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern. Furthermore, short-term construction-related odors are expected to cease upon the drying or hardening of the odor-producing materials. Long-term operation of the project would not be a substantial source of objectionable odors. Therefore, the project would not create objectionable odors affecting a substantial number of people, and the impact would be less than significant.

5.4.2 Significance of Impacts

Implementation of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and the impact would be less than significant.

5.4.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

5.4.4 Significance After Mitigation

Implementation of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and the impact would be less than significant.

6.0 GREENHOUSE GAS IMPACT ANALYSIS

This section evaluates potential impacts of the proposed project related to the generation of GHG emissions. Complete modeling results are included as Appendix A of this report.

6.1 ISSUE 1: GREENHOUSE GAS EMISSIONS

6.1.1 Construction Emissions

Project construction GHG emissions were estimated using the CalEEMod model as described in Section 4.1. Project-specific input was based on general information provided in Section 1.0 and default model settings to estimate reasonably conservative conditions. Additional details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A.

Emissions of GHGs related to the construction of the project would be temporary. As shown in Table 13, *Estimated Construction GHG Emissions*, total GHG emissions associated with construction of the project are estimated at 780 MT CO₂e. For construction emissions, SCAQMD guidance recommends that the emissions be amortized (i.e., averaged) over 30 years and added to operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 26 MT CO₂e emissions per year.

Table 13
ESTIMATED CONSTRUCTION GHG EMISSIONS

Year/Activity	Emissions (MT CO ₂ e)
Demolition	27.31
Site Preparation	8.82
Grading	40.26
Underground Utilities	29.47
Paving	20.06
Building Construction	637.33
Architectural Coatings	16.27
TOTAL¹	779.52
<i>Amortized Construction Emissions²</i>	<i>25.98</i>

Source: CalEEMod (output data is provided in Appendix A)

¹ Totals may not sum due to rounding.

² Construction emissions are amortized over 30 years in accordance with SCAQMD guidance.

GHG = greenhouse gas; MT = metric tons; CO₂e = carbon dioxide equivalent

6.1.2 Operational Emissions

Table 14, *Total Estimated Operational GHG Emissions*, shows the calculated total annual emissions for the project. The emissions include the amortized annual construction emissions anticipated for the project. Appendix A contains the CalEEMod output files for the project.

Table 14
TOTAL ESTIMATED OPERATIONAL GHG EMISSIONS

Emission Sources	2020 Emissions (MT CO₂e)
Area Sources	1.12
Energy Sources	82.93
Vehicular (Mobile) Sources	545.11
Solid Waste Sources	11.28
Water Sources	16.71
Subtotal¹	657.14
Construction (Annualized over 30 years)	25.98
TOTAL¹	683.13
SCAQMD Adjusted Threshold	2,324
Exceed Threshold?	No

Source: CalEEMod (output data is provided in Appendix A)

¹ Totals may not sum due to rounding.

² Emission per capita is the project total emissions divided by the project population (2,535.5/764).

GHG = greenhouse gas; MT = metric tons; CO₂e = carbon dioxide equivalent

As shown in Table 14, the project emissions would not exceed the SCAQMD threshold adjusted for compliance with SB 32.

6.1.3 Significance of Impacts

Implementation of the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant.

6.1.4 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

6.1.5 Significance After Mitigation

Implementation of the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and the impact would be less than significant.

6.2 ISSUE 2: CONFLICT WITH APPLICABLE PLANS ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS

6.2.1 Impacts

There are numerous State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. The principal overall State plan and policy is AB 32, the California Global Warming Solutions Act of 2006. The quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020. SB 32 would require further reductions of 40 percent below 1990 levels by 2030. Because the project's operational year is post-2020, the project aims to reach the quantitative goals set by SB 32. Statewide plans and regulations such as GHG emissions standards for vehicles (AB 1493), the LCFS, and regulations requiring an increasing fraction of electricity to be generated from renewable sources are being

implemented at the statewide level; as such, compliance at the project level is not addressed. Therefore, the proposed project would not conflict with those plans and regulations.

The project must also be constructed in accordance with the energy-efficiency standards, water reduction goals, and other standards contained in the 2019 Title 24 Part 6 Building Energy Efficiency Standards and Part 11 (CALGreen) Building Standards, including the requirement for onsite solar electricity generation.

6.2.2 Significance of Impacts

The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and the impact would be less than significant.

6.2.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures are required.

6.2.4 Significance After Mitigation

The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and the impact would be less than significant.

7.0 LIST OF PREPARERS

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Appendix A

CalEEMod Output

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**Arrow 32N Residential****San Bernardino-South Coast County, Annual****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	65.00	Dwelling Unit	3.52	65,000.00	186
Other Asphalt Surfaces	60.00	1000sqft	1.38	60,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 65 DU and 60 ksf of asphalt on 4.9 acres

Construction Phase - Schedule provided by Century Communities

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading -

Demolition -

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Vehicle Trips - Kimley-Horn 2021

Woodstoves - SCAQMD Rule 445 prohibits woodburning devices

Construction Off-road Equipment Mitigation -

Energy Mitigation - 2019 Title 24 requirements

Water Mitigation - CALGreen requirements

Waste Mitigation - AB341

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	87.00
tblConstructionPhase	NumDays	230.00	392.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	NumDays	8.00	22.00
tblConstructionPhase	NumDays	18.00	22.00
tblConstructionPhase	PhaseEndDate	2/22/2024	12/31/2024
tblConstructionPhase	PhaseEndDate	1/3/2024	12/31/2024
tblConstructionPhase	PhaseEndDate	1/27/2023	1/20/2023
tblConstructionPhase	PhaseEndDate	2/15/2023	2/28/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	6/30/2023
tblConstructionPhase	PhaseEndDate	2/3/2023	1/27/2023
tblConstructionPhase	PhaseStartDate	1/30/2024	9/1/2024
tblConstructionPhase	PhaseStartDate	2/16/2023	7/1/2023
tblConstructionPhase	PhaseStartDate	2/4/2023	1/30/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	6/1/2023
tblConstructionPhase	PhaseStartDate	1/28/2023	1/23/2023
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	55.25	0.00
tblFireplaces	NumberNoFireplace	6.50	65.00

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblFireplaces	NumberWood	3.25	0.00
tblGrading	MaterialImported	0.00	2,727.00
tblLandUse	LotAcreage	4.06	3.52
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblVehicleTrips	ST_TR	8.14	7.32
tblVehicleTrips	SU_TR	6.28	7.32
tblWoodstoves	NumberCatalytic	3.25	0.00
tblWoodstoves	NumberNoncatalytic	3.25	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**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					
2023	0.1923	1.6866	1.9663	3.7900e-003	0.1999	0.0777	0.2777	0.0822	0.0726	0.1548	0.0000	334.5443	334.5443	0.0715	5.7200e-003	338.0378
2024	0.4473	1.9202	2.5339	4.9500e-003	0.1241	0.0841	0.2083	0.0333	0.0793	0.1126	0.0000	437.2637	437.2637	0.0755	7.8200e-003	441.4800
Maximum	0.4473	1.9202	2.5339	4.9500e-003	0.1999	0.0841	0.2777	0.0822	0.0793	0.1548	0.0000	437.2637	437.2637	0.0755	7.8200e-003	441.4800

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					
2023	0.1923	1.6866	1.9663	3.7900e-003	0.1286	0.0777	0.2063	0.0474	0.0726	0.1199	0.0000	334.5440	334.5440	0.0715	5.7200e-003	338.0375
2024	0.4473	1.9202	2.5339	4.9500e-003	0.1241	0.0841	0.2083	0.0333	0.0793	0.1126	0.0000	437.2633	437.2633	0.0755	7.8200e-003	441.4796
Maximum	0.4473	1.9202	2.5339	4.9500e-003	0.1286	0.0841	0.2083	0.0474	0.0793	0.1199	0.0000	437.2633	437.2633	0.0755	7.8200e-003	441.4796

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Percent Reduction	0.00	0.00	0.00	0.00	22.01	0.00	14.68	30.16	0.00	13.03	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	1-1-2023	3-31-2023	0.5132	0.5132
2	4-1-2023	6-30-2023	0.2180	0.2180
3	7-1-2023	9-30-2023	0.5594	0.5594
4	10-1-2023	12-31-2023	0.5604	0.5604
5	1-1-2024	3-31-2024	0.5193	0.5193
6	4-1-2024	6-30-2024	0.5183	0.5183
7	7-1-2024	9-30-2024	0.5920	0.5920
		Highest	0.5920	0.5920

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**2.2 Overall Operational****Unmitigated Operational**

	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					
Area	0.2801	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228
Energy	7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	130.5232	130.5232	6.2400e-003	1.9300e-003	131.2539
Mobile	0.2365	0.3746	2.4811	5.6600e-003	0.6130	4.5200e-003	0.6175	0.1637	4.2300e-003	0.1680	0.0000	536.5358	536.5358	0.0295	0.0263	545.1088
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.3436	15.0401	16.3837	0.1393	3.4100e-003	20.8822
Total	0.5240	0.4455	3.1784	6.1000e-003	0.6130	0.0134	0.6264	0.1637	0.0131	0.1768	7.4130	683.1955	690.6085	0.5347	0.0316	713.4044

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2.2 Overall Operational

Mitigated Operational

	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					
Area	0.2801	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228
Energy	7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	82.4445	82.4445	2.1800e-003	1.4400e-003	82.9271
Mobile	0.2365	0.3746	2.4811	5.6600e-003	0.6130	4.5200e-003	0.6175	0.1637	4.2300e-003	0.1680	0.0000	536.5358	536.5358	0.0295	0.0263	545.1088
Waste						0.0000	0.0000		0.0000	0.0000	4.5521	0.0000	4.5521	0.2690	0.0000	11.2776
Water						0.0000	0.0000		0.0000	0.0000	1.0749	12.0321	13.1069	0.1114	2.7300e-003	16.7058
Total	0.5240	0.4455	3.1784	6.1000e-003	0.6130	0.0134	0.6264	0.1637	0.0131	0.1768	5.6269	632.1087	637.7357	0.4132	0.0305	657.1420

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.09	7.48	7.66	22.74	3.70	7.89

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/20/2023	5	15	
2	Site Preparation	Site Preparation	1/23/2023	1/27/2023	5	5	
3	Grading	Grading	1/30/2023	2/28/2023	5	22	

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4	Building Construction	Building Construction	7/1/2023	12/31/2024	5	392
5	Paving	Paving	6/1/2023	6/30/2023	5	22
6	Architectural Coating	Architectural Coating	9/1/2024	12/31/2024	5	87
7	Underground Utilites	Trenching	3/1/2023	5/31/2023	5	66

Acres of Grading (Site Preparation Phase): 7.5**Acres of Grading (Grading Phase): 22****Acres of Paving: 1.38****Residential Indoor: 131,625; Residential Outdoor: 43,875; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,600 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

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Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Underground Utilites	Tractors/Loaders/Backhoes	3	8.00	97	0.37

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
Demolition	6	15.00	0.00	23.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	341.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	72.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	14.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Underground Utilites	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition - 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					
Fugitive Dust					2.4600e-003	0.0000	2.4600e-003	3.7000e-004	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0170	0.1611	0.1473	2.9000e-004		7.4800e-003	7.4800e-003		6.9600e-003	6.9600e-003	0.0000	25.4941	25.4941	7.1400e-003	0.0000	25.6726
Total	0.0170	0.1611	0.1473	2.9000e-004	2.4600e-003	7.4800e-003	9.9400e-003	3.7000e-004	6.9600e-003	7.3300e-003	0.0000	25.4941	25.4941	7.1400e-003	0.0000	25.6726

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	3.0000e-005	1.3400e-003	3.9000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6391	0.6391	3.0000e-005	1.0000e-004	0.6699
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	3.9000e-004	2.9000e-004	3.6600e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.3000e-004	0.0000	0.9634	0.9634	3.0000e-005	3.0000e-005	0.9718
Total	4.2000e-004	1.6300e-003	4.0500e-003	2.0000e-005	1.4300e-003	2.0000e-005	1.4500e-003	3.8000e-004	2.0000e-005	4.0000e-004	0.0000	1.6025	1.6025	6.0000e-005	1.3000e-004	1.6418

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition - 2023****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					1.1100e-003	0.0000	1.1100e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0170	0.1611	0.1473	2.9000e-004		7.4800e-003	7.4800e-003		6.9600e-003	6.9600e-003	0.0000	25.4940	25.4940	7.1400e-003	0.0000	25.6725
Total	0.0170	0.1611	0.1473	2.9000e-004	1.1100e-003	7.4800e-003	8.5900e-003	1.7000e-004	6.9600e-003	7.1300e-003	0.0000	25.4940	25.4940	7.1400e-003	0.0000	25.6725

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	3.0000e-005	1.3400e-003	3.9000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6391	0.6391	3.0000e-005	1.0000e-004	0.6699
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	3.9000e-004	2.9000e-004	3.6600e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.3000e-004	0.0000	0.9634	0.9634	3.0000e-005	3.0000e-005	0.9718
Total	4.2000e-004	1.6300e-003	4.0500e-003	2.0000e-005	1.4300e-003	2.0000e-005	1.4500e-003	3.8000e-004	2.0000e-005	4.0000e-004	0.0000	1.6025	1.6025	6.0000e-005	1.3000e-004	1.6418

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation - 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					
Fugitive Dust					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	6.6500e-003	0.0688	0.0456	1.0000e-004	0.0491	3.1700e-003	0.0523	0.0253	2.9100e-003	0.0282	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303

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	1.6000e-004	1.2000e-004	1.4600e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3854	0.3854	1.0000e-005	1.0000e-005	0.3887
Total	1.6000e-004	1.2000e-004	1.4600e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3854	0.3854	1.0000e-005	1.0000e-005	0.3887

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation - 2023****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					0.0221	0.0000	0.0221	0.0114	0.0000	0.0114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	6.6500e-003	0.0688	0.0456	1.0000e-004	0.0221	3.1700e-003	0.0253	0.0114	2.9100e-003	0.0143	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303

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	1.6000e-004	1.2000e-004	1.4600e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3854	0.3854	1.0000e-005	1.0000e-005	0.3887
Total	1.6000e-004	1.2000e-004	1.4600e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3854	0.3854	1.0000e-005	1.0000e-005	0.3887

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading - 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					
Fugitive Dust					0.0781	0.0000	0.0781	0.0377	0.0000	0.0377	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0188	0.1973	0.1623	3.3000e-004		8.5200e-003	8.5200e-003		7.8400e-003	7.8400e-003	0.0000	28.6667	28.6667	9.2700e-003	0.0000	28.8985
Total	0.0188	0.1973	0.1623	3.3000e-004	0.0781	8.5200e-003	0.0866	0.0377	7.8400e-003	0.0455	0.0000	28.6667	28.6667	9.2700e-003	0.0000	28.8985

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	4.0000e-004	0.0198	5.7500e-003	1.0000e-004	2.9400e-003	2.0000e-004	3.1300e-003	8.1000e-004	1.9000e-004	1.0000e-003	0.0000	9.4748	9.4748	4.0000e-004	1.5000e-003	9.9324
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	5.7000e-004	4.3000e-004	5.3700e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4130	1.4130	4.0000e-005	4.0000e-005	1.4253
Total	9.7000e-004	0.0203	0.0111	1.2000e-004	4.7500e-003	2.1000e-004	4.9500e-003	1.2900e-003	2.0000e-004	1.4900e-003	0.0000	10.8878	10.8878	4.4000e-004	1.5400e-003	11.3577

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading - 2023****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					0.0351	0.0000	0.0351	0.0170	0.0000	0.0170	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0188	0.1973	0.1623	3.3000e-004		8.5200e-003	8.5200e-003		7.8400e-003	7.8400e-003	0.0000	28.6666	28.6666	9.2700e-003	0.0000	28.8984
Total	0.0188	0.1973	0.1623	3.3000e-004	0.0351	8.5200e-003	0.0437	0.0170	7.8400e-003	0.0248	0.0000	28.6666	28.6666	9.2700e-003	0.0000	28.8984

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	4.0000e-004	0.0198	5.7500e-003	1.0000e-004	2.9400e-003	2.0000e-004	3.1300e-003	8.1000e-004	1.9000e-004	1.0000e-003	0.0000	9.4748	9.4748	4.0000e-004	1.5000e-003	9.9324
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	5.7000e-004	4.3000e-004	5.3700e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4130	1.4130	4.0000e-005	4.0000e-005	1.4253
Total	9.7000e-004	0.0203	0.0111	1.2000e-004	4.7500e-003	2.1000e-004	4.9500e-003	1.2900e-003	2.0000e-004	1.4900e-003	0.0000	10.8878	10.8878	4.4000e-004	1.5400e-003	11.3577

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 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	0.1022	0.9350	1.0559	1.7500e-003		0.0455	0.0455		0.0428	0.0428	0.0000	150.6731	150.6731	0.0358	0.0000	151.5692
Total	0.1022	0.9350	1.0559	1.7500e-003		0.0455	0.0455		0.0428	0.0428	0.0000	150.6731	150.6731	0.0358	0.0000	151.5692

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	1.2500e-003	0.0408	0.0165	2.0000e-004	6.9700e-003	2.9000e-004	7.2600e-003	2.0100e-003	2.8000e-004	2.2900e-003	0.0000	19.2583	19.2583	5.0000e-004	2.8500e-003	20.1189
Worker	0.0163	0.0122	0.1523	4.3000e-004	0.0513	2.6000e-004	0.0516	0.0136	2.4000e-004	0.0139	0.0000	40.0776	40.0776	1.0500e-003	1.0900e-003	40.4279
Total	0.0176	0.0529	0.1688	6.3000e-004	0.0583	5.5000e-004	0.0588	0.0156	5.2000e-004	0.0162	0.0000	59.3359	59.3359	1.5500e-003	3.9400e-003	60.5469

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2023****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	0.1022	0.9350	1.0559	1.7500e-003		0.0455	0.0455		0.0428	0.0428	0.0000	150.6729	150.6729	0.0358	0.0000	151.5690
Total	0.1022	0.9350	1.0559	1.7500e-003		0.0455	0.0455		0.0428	0.0428	0.0000	150.6729	150.6729	0.0358	0.0000	151.5690

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	1.2500e-003	0.0408	0.0165	2.0000e-004	6.9700e-003	2.9000e-004	7.2600e-003	2.0100e-003	2.8000e-004	2.2900e-003	0.0000	19.2583	19.2583	5.0000e-004	2.8500e-003	20.1189
Worker	0.0163	0.0122	0.1523	4.3000e-004	0.0513	2.6000e-004	0.0516	0.0136	2.4000e-004	0.0139	0.0000	40.0776	40.0776	1.0500e-003	1.0900e-003	40.4279
Total	0.0176	0.0529	0.1688	6.3000e-004	0.0583	5.5000e-004	0.0588	0.0156	5.2000e-004	0.0162	0.0000	59.3359	59.3359	1.5500e-003	3.9400e-003	60.5469

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2024****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	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179

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	2.4500e-003	0.0829	0.0327	3.9000e-004	0.0141	5.8000e-004	0.0146	4.0500e-003	5.5000e-004	4.6100e-003	0.0000	38.2785	38.2785	9.8000e-004	5.6600e-003	39.9884
Worker	0.0306	0.0218	0.2861	8.4000e-004	0.1034	5.0000e-004	0.1039	0.0275	4.6000e-004	0.0279	0.0000	79.0520	79.0520	1.9200e-003	2.0300e-003	79.7051
Total	0.0330	0.1047	0.3188	1.2300e-003	0.1175	1.0800e-003	0.1185	0.0315	1.0100e-003	0.0325	0.0000	117.3305	117.3305	2.9000e-003	7.6900e-003	119.6935

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2024****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	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175

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	2.4500e-003	0.0829	0.0327	3.9000e-004	0.0141	5.8000e-004	0.0146	4.0500e-003	5.5000e-004	4.6100e-003	0.0000	38.2785	38.2785	9.8000e-004	5.6600e-003	39.9884
Worker	0.0306	0.0218	0.2861	8.4000e-004	0.1034	5.0000e-004	0.1039	0.0275	4.6000e-004	0.0279	0.0000	79.0520	79.0520	1.9200e-003	2.0300e-003	79.7051
Total	0.0330	0.1047	0.3188	1.2300e-003	0.1175	1.0800e-003	0.1185	0.0315	1.0100e-003	0.0325	0.0000	117.3305	117.3305	2.9000e-003	7.6900e-003	119.6935

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 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	0.0101	0.0967	0.1341	2.1000e-004		4.7900e-003	4.7900e-003		4.4300e-003	4.4300e-003	0.0000	18.0165	18.0165	5.6600e-003	0.0000	18.1580
Paving	1.8100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0119	0.0967	0.1341	2.1000e-004		4.7900e-003	4.7900e-003		4.4300e-003	4.4300e-003	0.0000	18.0165	18.0165	5.6600e-003	0.0000	18.1580

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	7.7000e-004	5.7000e-004	7.1600e-003	2.0000e-005	2.4100e-003	1.0000e-005	2.4200e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.8840	1.8840	5.0000e-005	5.0000e-005	1.9005
Total	7.7000e-004	5.7000e-004	7.1600e-003	2.0000e-005	2.4100e-003	1.0000e-005	2.4200e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.8840	1.8840	5.0000e-005	5.0000e-005	1.9005

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving - 2023****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	0.0101	0.0967	0.1341	2.1000e-004		4.7900e-003	4.7900e-003		4.4300e-003	4.4300e-003	0.0000	18.0164	18.0164	5.6600e-003	0.0000	18.1580
Paving	1.8100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0119	0.0967	0.1341	2.1000e-004		4.7900e-003	4.7900e-003		4.4300e-003	4.4300e-003	0.0000	18.0164	18.0164	5.6600e-003	0.0000	18.1580

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	7.7000e-004	5.7000e-004	7.1600e-003	2.0000e-005	2.4100e-003	1.0000e-005	2.4200e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.8840	1.8840	5.0000e-005	5.0000e-005	1.9005
Total	7.7000e-004	5.7000e-004	7.1600e-003	2.0000e-005	2.4100e-003	1.0000e-005	2.4200e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.8840	1.8840	5.0000e-005	5.0000e-005	1.9005

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating - 2024****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	0.2117					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8600e-003	0.0530	0.0787	1.3000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	11.1067	11.1067	6.3000e-004	0.0000	11.1223
Total	0.2196	0.0530	0.0787	1.3000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	11.1067	11.1067	6.3000e-004	0.0000	11.1223

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	1.9700e-003	1.4100e-003	0.0185	5.0000e-005	6.6800e-003	3.0000e-005	6.7100e-003	1.7700e-003	3.0000e-005	1.8000e-003	0.0000	5.1042	5.1042	1.2000e-004	1.3000e-004	5.1464
Total	1.9700e-003	1.4100e-003	0.0185	5.0000e-005	6.6800e-003	3.0000e-005	6.7100e-003	1.7700e-003	3.0000e-005	1.8000e-003	0.0000	5.1042	5.1042	1.2000e-004	1.3000e-004	5.1464

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating - 2024****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	0.2117					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8600e-003	0.0530	0.0787	1.3000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	11.1066	11.1066	6.3000e-004	0.0000	11.1223
Total	0.2196	0.0530	0.0787	1.3000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	11.1066	11.1066	6.3000e-004	0.0000	11.1223

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	1.9700e-003	1.4100e-003	0.0185	5.0000e-005	6.6800e-003	3.0000e-005	6.7100e-003	1.7700e-003	3.0000e-005	1.8000e-003	0.0000	5.1042	5.1042	1.2000e-004	1.3000e-004	5.1464
Total	1.9700e-003	1.4100e-003	0.0185	5.0000e-005	6.6800e-003	3.0000e-005	6.7100e-003	1.7700e-003	3.0000e-005	1.8000e-003	0.0000	5.1042	5.1042	1.2000e-004	1.3000e-004	5.1464

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.8 Underground Utilites - 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	0.0149	0.1514	0.2200	3.1000e-004		7.4800e-003	7.4800e-003		6.8800e-003	6.8800e-003	0.0000	26.9752	26.9752	8.7200e-003	0.0000	27.1933
Total	0.0149	0.1514	0.2200	3.1000e-004		7.4800e-003	7.4800e-003		6.8800e-003	6.8800e-003	0.0000	26.9752	26.9752	8.7200e-003	0.0000	27.1933

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	9.2000e-004	6.9000e-004	8.5900e-003	2.0000e-005	2.8900e-003	1.0000e-005	2.9100e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	2.2608	2.2608	6.0000e-005	6.0000e-005	2.2806
Total	9.2000e-004	6.9000e-004	8.5900e-003	2.0000e-005	2.8900e-003	1.0000e-005	2.9100e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	2.2608	2.2608	6.0000e-005	6.0000e-005	2.2806

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.8 Underground Utilites - 2023****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	0.0149	0.1514	0.2200	3.1000e-004		7.4800e-003	7.4800e-003		6.8800e-003	6.8800e-003	0.0000	26.9751	26.9751	8.7200e-003	0.0000	27.1933
Total	0.0149	0.1514	0.2200	3.1000e-004		7.4800e-003	7.4800e-003		6.8800e-003	6.8800e-003	0.0000	26.9751	26.9751	8.7200e-003	0.0000	27.1933

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	9.2000e-004	6.9000e-004	8.5900e-003	2.0000e-005	2.8900e-003	1.0000e-005	2.9100e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	2.2608	2.2608	6.0000e-005	6.0000e-005	2.2806
Total	9.2000e-004	6.9000e-004	8.5900e-003	2.0000e-005	2.8900e-003	1.0000e-005	2.9100e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	2.2608	2.2608	6.0000e-005	6.0000e-005	2.2806

4.0 Operational Detail - Mobile

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**4.1 Mitigation Measures Mobile**

	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					
Mitigated	0.2365	0.3746	2.4811	5.6600e-003	0.6130	4.5200e-003	0.6175	0.1637	4.2300e-003	0.1680	0.0000	536.5358	536.5358	0.0295	0.0263	545.1088
Unmitigated	0.2365	0.3746	2.4811	5.6600e-003	0.6130	4.5200e-003	0.6175	0.1637	4.2300e-003	0.1680	0.0000	536.5358	536.5358	0.0295	0.0263	545.1088

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	475.80	475.80	475.80	1,625,881	1,625,881
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	475.80	475.80	475.80	1,625,881	1,625,881

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Other Asphalt Surfaces	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606
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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.2561	9.2561	7.8000e-004	9.0000e-005	9.3038
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	57.3348	57.3348	4.8400e-003	5.9000e-004	57.6306
NaturalGas Mitigated	7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	73.1884	73.1884	1.4000e-003	1.3400e-003	73.6233
NaturalGas Unmitigated	7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	73.1884	73.1884	1.4000e-003	1.3400e-003	73.6233

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Condo/Townhouse	1.3715e+006	7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	73.1884	73.1884	1.4000e-003	1.3400e-003	73.6233
Other Asphalt Surfaces	0	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
Total		7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	73.1884	73.1884	1.4000e-003	1.3400e-003	73.6233

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Condo/Townhouse	1.3715e+006	7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	73.1884	73.1884	1.4000e-003	1.3400e-003	73.6233
Other Asphalt Surfaces	0	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
Total		7.4000e-003	0.0632	0.0269	4.0000e-004		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.0000	73.1884	73.1884	1.4000e-003	1.3400e-003	73.6233

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	323294	57.3348	4.8400e-003	5.9000e-004	57.6306
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		57.3348	4.8400e-003	5.9000e-004	57.6306

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	187743	33.2955	2.8100e-003	3.4000e-004	33.4672
Other Asphalt Surfaces	-135551	-24.0394	-0.0020	-0.0003	-24.1634
Total		9.2561	7.8000e-004	9.0000e-005	9.3038

6.0 Area Detail

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.1 Mitigation Measures Area**

	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					
Mitigated	0.2801	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228
Unmitigated	0.2801	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Unmitigated**

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0212					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2388					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	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
Landscaping	0.0202	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228
Total	0.2801	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Mitigated**

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0212					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2388					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	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
Landscaping	0.0202	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228
Total	0.2801	7.7200e-003	0.6705	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0965	1.0965	1.0500e-003	0.0000	1.1228

7.0 Water Detail**7.1 Mitigation Measures Water**

Apply Water Conservation Strategy

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.1069	0.1114	2.7300e-003	16.7058
Unmitigated	16.3837	0.1393	3.4100e-003	20.8822

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	4.23501 / 2.6699	16.3837	0.1393	3.4100e-003	20.8822
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		16.3837	0.1393	3.4100e-003	20.8822

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	3.38801 / 2.13592	13.1069	0.1114	2.7300e-003	16.7058
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		13.1069	0.1114	2.7300e-003	16.7058

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.5521	0.2690	0.0000	11.2776
Unmitigated	6.0694	0.3587	0.0000	15.0368

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	29.9	6.0694	0.3587	0.0000	15.0368
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		6.0694	0.3587	0.0000	15.0368

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**8.2 Waste by Land Use****Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	22.425	4.5521	0.2690	0.0000	11.2776
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		4.5521	0.2690	0.0000	11.2776

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Arrow 32N Residential - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Arrow 32N Residential
San Bernardino-South Coast County, Summer

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	65.00	Dwelling Unit	3.52	65,000.00	186
Other Asphalt Surfaces	60.00	1000sqft	1.38	60,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 65 DU and 60 ksf of asphalt on 4.9 acres

Construction Phase - Schedule provided by Century Communities

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading -

Demolition -

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Vehicle Trips - Kimley-Horn 2021

Woodstoves - SCAQMD Rule 445 prohibits woodburning devices

Construction Off-road Equipment Mitigation -

Energy Mitigation - 2019 Title 24 requirements

Water Mitigation - CALGreen requirements

Waste Mitigation - AB341

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	87.00
tblConstructionPhase	NumDays	230.00	392.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	NumDays	8.00	22.00
tblConstructionPhase	NumDays	18.00	22.00
tblConstructionPhase	PhaseEndDate	2/22/2024	12/31/2024
tblConstructionPhase	PhaseEndDate	1/3/2024	12/31/2024
tblConstructionPhase	PhaseEndDate	1/27/2023	1/20/2023
tblConstructionPhase	PhaseEndDate	2/15/2023	2/28/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	6/30/2023
tblConstructionPhase	PhaseEndDate	2/3/2023	1/27/2023
tblConstructionPhase	PhaseStartDate	1/30/2024	9/1/2024
tblConstructionPhase	PhaseStartDate	2/16/2023	7/1/2023
tblConstructionPhase	PhaseStartDate	2/4/2023	1/30/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	6/1/2023
tblConstructionPhase	PhaseStartDate	1/28/2023	1/23/2023
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	55.25	0.00
tblFireplaces	NumberNoFireplace	6.50	65.00

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblFireplaces	NumberWood	3.25	0.00
tblGrading	MaterialImported	0.00	2,727.00
tblLandUse	LotAcreage	4.06	3.52
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblVehicleTrips	ST_TR	8.14	7.32
tblVehicleTrips	SU_TR	6.28	7.32
tblWoodstoves	NumberCatalytic	3.25	0.00
tblWoodstoves	NumberNoncatalytic	3.25	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**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					
2023	2.7298	27.5666	20.2604	0.0412	19.8582	1.2670	21.1252	10.1558	1.1657	11.3215	0.0000	3,994.100 6	3,994.100 6	1.1969	0.1540	4,045.031 7
2024	6.8509	15.4443	21.2431	0.0413	1.0702	0.6832	1.7534	0.2863	0.6462	0.9325	0.0000	4,018.698 1	4,018.698 1	0.6475	0.0667	4,054.749 9
Maximum	6.8509	27.5666	21.2431	0.0413	19.8582	1.2670	21.1252	10.1558	1.1657	11.3215	0.0000	4,018.698 1	4,018.698 1	1.1969	0.1540	4,054.749 9

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					
2023	2.7298	27.5666	20.2604	0.0412	9.0469	1.2670	10.3139	4.5995	1.1657	5.7651	0.0000	3,994.100 6	3,994.100 6	1.1969	0.1540	4,045.031 7
2024	6.8509	15.4443	21.2431	0.0413	1.0702	0.6832	1.7534	0.2863	0.6462	0.9325	0.0000	4,018.698 1	4,018.698 1	0.6475	0.0667	4,054.749 9
Maximum	6.8509	27.5666	21.2431	0.0413	9.0469	1.2670	10.3139	4.5995	1.1657	5.7651	0.0000	4,018.698 1	4,018.698 1	1.1969	0.1540	4,054.749 9

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Percent Reduction	0.00	0.00	0.00	0.00	51.66	0.00	47.26	53.21	0.00	45.34	0.00	0.00	0.00	0.00	0.00	0.00

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**2.2 Overall Operational****Unmitigated Operational**

	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					
Area	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011
Energy	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Mobile	1.5028	1.9002	14.6322	0.0331	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,454.6930	3,454.6930	0.1728	0.1534	3,504.7343
Total	3.1290	2.3083	20.1431	0.0356	3.4329	0.0826	3.5156	0.9156	0.0810	0.9966	0.0000	3,906.4243	3,906.4243	0.1906	0.1615	3,959.3245

Mitigated Operational

	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					
Area	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011
Energy	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Mobile	1.5028	1.9002	14.6322	0.0331	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,454.6930	3,454.6930	0.1728	0.1534	3,504.7343
Total	3.1290	2.3083	20.1431	0.0356	3.4329	0.0826	3.5156	0.9156	0.0810	0.9966	0.0000	3,906.4243	3,906.4243	0.1906	0.1615	3,959.3245

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	Demolition	Demolition	1/1/2023	1/20/2023	5	15	
2	Site Preparation	Site Preparation	1/23/2023	1/27/2023	5	5	
3	Grading	Grading	1/30/2023	2/28/2023	5	22	
4	Building Construction	Building Construction	7/1/2023	12/31/2024	5	392	
5	Paving	Paving	6/1/2023	6/30/2023	5	22	
6	Architectural Coating	Architectural Coating	9/1/2024	12/31/2024	5	87	
7	Underground Utilites	Trenching	3/1/2023	5/31/2023	5	66	

Acres of Grading (Site Preparation Phase): 7.5**Acres of Grading (Grading Phase): 22****Acres of Paving: 1.38****Residential Indoor: 131,625; Residential Outdoor: 43,875; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,600 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Underground Utilities	Tractors/Loaders/Backhoes	3	8.00	97	0.37

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
Demolition	6	15.00	0.00	23.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	341.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	72.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	14.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Underground Utilities	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.1 Mitigation Measures Construction**

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					
Fugitive Dust					0.3281	0.0000	0.3281	0.0497	0.0000	0.0497			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280		3,746.984 0	3,746.984 0	1.0494		3,773.218 3
Total	2.2691	21.4844	19.6434	0.0388	0.3281	0.9975	1.3257	0.0497	0.9280	0.9777		3,746.984 0	3,746.984 0	1.0494		3,773.218 3

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition - 2023****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	3.6900e-003	0.1686	0.0514	8.6000e-004	0.0269	1.7700e-003	0.0286	7.3600e-003	1.7000e-003	9.0600e-003		93.8664	93.8664	4.0000e-003	0.0149	98.4002
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
Worker	0.0587	0.0354	0.5657	1.5000e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		153.2503	153.2503	3.6600e-003	3.6000e-003	154.4157
Total	0.0623	0.2040	0.6170	2.3600e-003	0.1945	2.6000e-003	0.1971	0.0518	2.4600e-003	0.0543		247.1166	247.1166	7.6600e-003	0.0185	252.8159

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					0.1477	0.0000	0.1477	0.0224	0.0000	0.0224			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183
Total	2.2691	21.4844	19.6434	0.0388	0.1477	0.9975	1.1452	0.0224	0.9280	0.9504	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition - 2023****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	3.6900e-003	0.1686	0.0514	8.6000e-004	0.0269	1.7700e-003	0.0286	7.3600e-003	1.7000e-003	9.0600e-003		93.8664	93.8664	4.0000e-003	0.0149	98.4002
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
Worker	0.0587	0.0354	0.5657	1.5000e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		153.2503	153.2503	3.6600e-003	3.6000e-003	154.4157
Total	0.0623	0.2040	0.6170	2.3600e-003	0.1945	2.6000e-003	0.1971	0.0518	2.4600e-003	0.0543		247.1166	247.1166	7.6600e-003	0.0185	252.8159

3.3 Site Preparation - 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					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	2.6595	27.5242	18.2443	0.0381	19.6570	1.2660	20.9230	10.1025	1.1647	11.2672		3,687.3081	3,687.3081	1.1926		3,717.1219

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation - 2023****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	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
Worker	0.0704	0.0425	0.6788	1.8000e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		183.9003	183.9003	4.3900e-003	4.3200e-003	185.2988
Total	0.0704	0.0425	0.6788	1.8000e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		183.9003	183.9003	4.3900e-003	4.3200e-003	185.2988

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					8.8457	0.0000	8.8457	4.5461	0.0000	4.5461			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	2.6595	27.5242	18.2443	0.0381	8.8457	1.2660	10.1117	4.5461	1.1647	5.7108	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation - 2023****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	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
Worker	0.0704	0.0425	0.6788	1.8000e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		183.9003	183.9003	4.3900e-003	4.3200e-003	185.2988
Total	0.0704	0.0425	0.6788	1.8000e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		183.9003	183.9003	4.3900e-003	4.3200e-003	185.2988

3.4 Grading - 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					
Fugitive Dust					7.0966	0.0000	7.0966	3.4269	0.0000	3.4269			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	7.0966	0.7749	7.8715	3.4269	0.7129	4.1398		2,872.6910	2,872.6910	0.9291		2,895.9182

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading - 2023****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	0.0374	1.7047	0.5193	8.7100e-003	0.2714	0.0179	0.2894	0.0744	0.0172	0.0916		948.8664	948.8664	0.0405	0.1504	994.6978
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
Worker	0.0587	0.0354	0.5657	1.5000e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		153.2503	153.2503	3.6600e-003	3.6000e-003	154.4157
Total	0.0960	1.7401	1.0849	0.0102	0.4391	0.0188	0.4579	0.1189	0.0179	0.1368		1,102.1167	1,102.1167	0.0441	0.1540	1,149.1135

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					3.1935	0.0000	3.1935	1.5421	0.0000	1.5421			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	3.1935	0.7749	3.9684	1.5421	0.7129	2.2550	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading - 2023****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	0.0374	1.7047	0.5193	8.7100e-003	0.2714	0.0179	0.2894	0.0744	0.0172	0.0916		948.8664	948.8664	0.0405	0.1504	994.6978
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
Worker	0.0587	0.0354	0.5657	1.5000e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		153.2503	153.2503	3.6600e-003	3.6000e-003	154.4157
Total	0.0960	1.7401	1.0849	0.0102	0.4391	0.0188	0.4579	0.1189	0.0179	0.1368		1,102.1167	1,102.1167	0.0441	0.1540	1,149.1135

3.5 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

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2023****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	0.0000
Vendor	0.0199	0.5963	0.2502	3.0400e-003	0.1089	4.4800e-003	0.1134	0.0314	4.2900e-003	0.0357		326.2609	326.2609	8.5300e-003	0.0482	340.8317
Worker	0.2815	0.1699	2.7152	7.1900e-003	0.8048	3.9800e-003	0.8088	0.2134	3.6600e-003	0.2171		735.6014	735.6014	0.0176	0.0173	741.1953
Total	0.3014	0.7662	2.9654	0.0102	0.9137	8.4600e-003	0.9222	0.2448	7.9500e-003	0.2527		1,061.8623	1,061.8623	0.0261	0.0655	1,082.0270

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

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2023****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	0.0000
Vendor	0.0199	0.5963	0.2502	3.0400e-003	0.1089	4.4800e-003	0.1134	0.0314	4.2900e-003	0.0357		326.2609	326.2609	8.5300e-003	0.0482	340.8317
Worker	0.2815	0.1699	2.7152	7.1900e-003	0.8048	3.9800e-003	0.8088	0.2134	3.6600e-003	0.2171		735.6014	735.6014	0.0176	0.0173	741.1953
Total	0.3014	0.7662	2.9654	0.0102	0.9137	8.4600e-003	0.9222	0.2448	7.9500e-003	0.2527		1,061.8623	1,061.8623	0.0261	0.0655	1,082.0270

3.5 Building Construction - 2024**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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2024****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	0.0000
Vendor	0.0194	0.6016	0.2461	3.0000e-003	0.1089	4.4100e-003	0.1133	0.0314	4.2200e-003	0.0356		321.7664	321.7664	8.2700e-003	0.0475	336.1311
Worker	0.2615	0.1508	2.5285	6.9800e-003	0.8048	3.8200e-003	0.8086	0.2134	3.5200e-003	0.2170		719.8198	719.8198	0.0159	0.0160	724.9956
Total	0.2810	0.7524	2.7745	9.9800e-003	0.9137	8.2300e-003	0.9219	0.2448	7.7400e-003	0.2525		1,041.5862	1,041.5862	0.0242	0.0635	1,061.1267

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2024****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	0.0000
Vendor	0.0194	0.6016	0.2461	3.0000e-003	0.1089	4.4100e-003	0.1133	0.0314	4.2200e-003	0.0356		321.7664	321.7664	8.2700e-003	0.0475	336.1311
Worker	0.2615	0.1508	2.5285	6.9800e-003	0.8048	3.8200e-003	0.8086	0.2134	3.5200e-003	0.2170		719.8198	719.8198	0.0159	0.0160	724.9956
Total	0.2810	0.7524	2.7745	9.9800e-003	0.9137	8.2300e-003	0.9219	0.2448	7.7400e-003	0.2525		1,041.5862	1,041.5862	0.0242	0.0635	1,061.1267

3.6 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	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0824	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving - 2023****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	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
Worker	0.0782	0.0472	0.7542	2.0000e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		204.3337	204.3337	4.8800e-003	4.8000e-003	205.8876
Total	0.0782	0.0472	0.7542	2.0000e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		204.3337	204.3337	4.8800e-003	4.8000e-003	205.8876

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	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0824	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving - 2023****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	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
Worker	0.0782	0.0472	0.7542	2.0000e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		204.3337	204.3337	4.8800e-003	4.8000e-003	205.8876
Total	0.0782	0.0472	0.7542	2.0000e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		204.3337	204.3337	4.8800e-003	4.8000e-003	205.8876

3.7 Architectural Coating - 2024**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	4.8668					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	5.0475	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating - 2024****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	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
Worker	0.0509	0.0293	0.4917	1.3600e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		139.9650	139.9650	3.0900e-003	3.1200e-003	140.9714
Total	0.0509	0.0293	0.4917	1.3600e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		139.9650	139.9650	3.0900e-003	3.1200e-003	140.9714

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	4.8668					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	5.0475	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating - 2024****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	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
Worker	0.0509	0.0293	0.4917	1.3600e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		139.9650	139.9650	3.0900e-003	3.1200e-003	140.9714
Total	0.0509	0.0293	0.4917	1.3600e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		139.9650	139.9650	3.0900e-003	3.1200e-003	140.9714

3.8 Underground Utilites - 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	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084		901.0617	901.0617	0.2914		908.3472
Total	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084		901.0617	901.0617	0.2914		908.3472

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.8 Underground Utilites - 2023****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	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
Worker	0.0313	0.0189	0.3017	8.0000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		81.7335	81.7335	1.9500e-003	1.9200e-003	82.3550
Total	0.0313	0.0189	0.3017	8.0000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		81.7335	81.7335	1.9500e-003	1.9200e-003	82.3550

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	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084	0.0000	901.0617	901.0617	0.2914		908.3472
Total	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084	0.0000	901.0617	901.0617	0.2914		908.3472

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.8 Underground Utilites - 2023****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	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
Worker	0.0313	0.0189	0.3017	8.0000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		81.7335	81.7335	1.9500e-003	1.9200e-003	82.3550
Total	0.0313	0.0189	0.3017	8.0000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		81.7335	81.7335	1.9500e-003	1.9200e-003	82.3550

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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					
Mitigated	1.5028	1.9002	14.6322	0.0331	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,454.693 0	3,454.693 0	0.1728	0.1534	3,504.734 3
Unmitigated	1.5028	1.9002	14.6322	0.0331	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,454.693 0	3,454.693 0	0.1728	0.1534	3,504.734 3

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	475.80	475.80	475.80	1,625,881	1,625,881
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	475.80	475.80	475.80	1,625,881	1,625,881

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606
Other Asphalt Surfaces	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606

5.0 Energy Detail

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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					
NaturalGas Mitigated	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
NaturalGas Unmitigated	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	3757.53	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Other Asphalt Surfaces	0	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
Total		0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	3.75753	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Other Asphalt Surfaces	0	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
Total		0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892

6.0 Area Detail

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.1 Mitigation Measures Area**

	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					
Mitigated	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011
Unmitigated	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Unmitigated**

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.1160					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	0.1614	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6690	9.6690	9.2800e-003		9.9011
Total	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Mitigated**

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.1160					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	0.1614	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6690	9.6690	9.2800e-003		9.9011
Total	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011

7.0 Water Detail**7.1 Mitigation Measures Water**

Apply Water Conservation Strategy

Arrow 32N Residential - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**8.0 Waste Detail**

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Arrow 32N Residential
San Bernardino-South Coast County, Winter

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	65.00	Dwelling Unit	3.52	65,000.00	186
Other Asphalt Surfaces	60.00	1000sqft	1.38	60,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 65 DU and 60 ksf of asphalt on 4.9 acres

Construction Phase - Schedule provided by Century Communities

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading -

Demolition -

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Vehicle Trips - Kimley-Horn 2021

Woodstoves - SCAQMD Rule 445 prohibits woodburning devices

Construction Off-road Equipment Mitigation -

Energy Mitigation - 2019 Title 24 requirements

Water Mitigation - CALGreen requirements

Waste Mitigation - AB341

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	87.00
tblConstructionPhase	NumDays	230.00	392.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	NumDays	8.00	22.00
tblConstructionPhase	NumDays	18.00	22.00
tblConstructionPhase	PhaseEndDate	2/22/2024	12/31/2024
tblConstructionPhase	PhaseEndDate	1/3/2024	12/31/2024
tblConstructionPhase	PhaseEndDate	1/27/2023	1/20/2023
tblConstructionPhase	PhaseEndDate	2/15/2023	2/28/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	6/30/2023
tblConstructionPhase	PhaseEndDate	2/3/2023	1/27/2023
tblConstructionPhase	PhaseStartDate	1/30/2024	9/1/2024
tblConstructionPhase	PhaseStartDate	2/16/2023	7/1/2023
tblConstructionPhase	PhaseStartDate	2/4/2023	1/30/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	6/1/2023
tblConstructionPhase	PhaseStartDate	1/28/2023	1/23/2023
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	55.25	0.00
tblFireplaces	NumberNoFireplace	6.50	65.00

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblFireplaces	NumberWood	3.25	0.00
tblGrading	MaterialImported	0.00	2,727.00
tblLandUse	LotAcreage	4.06	3.52
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblVehicleTrips	ST_TR	8.14	7.32
tblVehicleTrips	SU_TR	6.28	7.32
tblWoodstoves	NumberCatalytic	3.25	0.00
tblWoodstoves	NumberNoncatalytic	3.25	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**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					
2023	2.7273	27.5688	20.1612	0.0411	19.8582	1.2670	21.1252	10.1558	1.1657	11.3215	0.0000	3,979.832 9	3,979.832 9	1.1970	0.1544	4,032.152 6
2024	6.8388	15.4873	20.7192	0.0405	1.0702	0.6832	1.7534	0.2863	0.6463	0.9326	0.0000	3,938.812 7	3,938.812 7	0.6475	0.0674	3,975.089 5
Maximum	6.8388	27.5688	20.7192	0.0411	19.8582	1.2670	21.1252	10.1558	1.1657	11.3215	0.0000	3,979.832 9	3,979.832 9	1.1970	0.1544	4,032.152 6

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					
2023	2.7273	27.5688	20.1612	0.0411	9.0469	1.2670	10.3139	4.5995	1.1657	5.7651	0.0000	3,979.832 9	3,979.832 9	1.1970	0.1544	4,032.152 6
2024	6.8388	15.4873	20.7192	0.0405	1.0702	0.6832	1.7534	0.2863	0.6463	0.9326	0.0000	3,938.812 7	3,938.812 7	0.6475	0.0674	3,975.089 5
Maximum	6.8388	27.5688	20.7192	0.0411	9.0469	1.2670	10.3139	4.5995	1.1657	5.7651	0.0000	3,979.832 9	3,979.832 9	1.1970	0.1544	4,032.152 6

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Percent Reduction	0.00	0.00	0.00	0.00	51.66	0.00	47.26	53.21	0.00	45.34	0.00	0.00	0.00	0.00	0.00	0.00

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**2.2 Overall Operational****Unmitigated Operational**

	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					
Area	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011
Energy	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Mobile	1.3090	2.0192	13.0906	0.0307	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,205.8650	3,205.8650	0.1768	0.1572	3,257.1246
Total	2.9352	2.4272	18.6016	0.0332	3.4329	0.0826	3.5156	0.9156	0.0810	0.9966	0.0000	3,657.5962	3,657.5962	0.1946	0.1653	3,711.7149

Mitigated Operational

	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					
Area	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011
Energy	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Mobile	1.3090	2.0192	13.0906	0.0307	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,205.8650	3,205.8650	0.1768	0.1572	3,257.1246
Total	2.9352	2.4272	18.6016	0.0332	3.4329	0.0826	3.5156	0.9156	0.0810	0.9966	0.0000	3,657.5962	3,657.5962	0.1946	0.1653	3,711.7149

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	Demolition	Demolition	1/1/2023	1/20/2023	5	15	
2	Site Preparation	Site Preparation	1/23/2023	1/27/2023	5	5	
3	Grading	Grading	1/30/2023	2/28/2023	5	22	
4	Building Construction	Building Construction	7/1/2023	12/31/2024	5	392	
5	Paving	Paving	6/1/2023	6/30/2023	5	22	
6	Architectural Coating	Architectural Coating	9/1/2024	12/31/2024	5	87	
7	Underground Utilites	Trenching	3/1/2023	5/31/2023	5	66	

Acres of Grading (Site Preparation Phase): 7.5**Acres of Grading (Grading Phase): 22****Acres of Paving: 1.38****Residential Indoor: 131,625; Residential Outdoor: 43,875; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,600 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Underground Utilities	Tractors/Loaders/Backhoes	3	8.00	97	0.37

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
Demolition	6	15.00	0.00	23.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	341.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	72.00	17.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	14.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Underground Utilities	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.1 Mitigation Measures Construction**

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					
Fugitive Dust					0.3281	0.0000	0.3281	0.0497	0.0000	0.0497			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280		3,746.984 0	3,746.984 0	1.0494		3,773.218 3
Total	2.2691	21.4844	19.6434	0.0388	0.3281	0.9975	1.3257	0.0497	0.9280	0.9777		3,746.984 0	3,746.984 0	1.0494		3,773.218 3

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition - 2023****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	3.4200e-003	0.1778	0.0523	8.6000e-004	0.0269	1.7800e-003	0.0286	7.3600e-003	1.7000e-003	9.0600e-003		94.0080	94.0080	3.9900e-003	0.0149	98.5482
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
Worker	0.0565	0.0372	0.4656	1.3600e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		138.8409	138.8409	3.6600e-003	3.7200e-003	140.0409
Total	0.0599	0.2150	0.5179	2.2200e-003	0.1945	2.6100e-003	0.1971	0.0518	2.4600e-003	0.0543		232.8489	232.8489	7.6500e-003	0.0186	238.5891

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					0.1477	0.0000	0.1477	0.0224	0.0000	0.0224			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183
Total	2.2691	21.4844	19.6434	0.0388	0.1477	0.9975	1.1452	0.0224	0.9280	0.9504	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition - 2023****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	3.4200e-003	0.1778	0.0523	8.6000e-004	0.0269	1.7800e-003	0.0286	7.3600e-003	1.7000e-003	9.0600e-003		94.0080	94.0080	3.9900e-003	0.0149	98.5482
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
Worker	0.0565	0.0372	0.4656	1.3600e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		138.8409	138.8409	3.6600e-003	3.7200e-003	140.0409
Total	0.0599	0.2150	0.5179	2.2200e-003	0.1945	2.6100e-003	0.1971	0.0518	2.4600e-003	0.0543		232.8489	232.8489	7.6500e-003	0.0186	238.5891

3.3 Site Preparation - 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					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	2.6595	27.5242	18.2443	0.0381	19.6570	1.2660	20.9230	10.1025	1.1647	11.2672		3,687.3081	3,687.3081	1.1926		3,717.1219

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation - 2023****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	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
Worker	0.0678	0.0447	0.5587	1.6300e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		166.6090	166.6090	4.4000e-003	4.4600e-003	168.0491
Total	0.0678	0.0447	0.5587	1.6300e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		166.6090	166.6090	4.4000e-003	4.4600e-003	168.0491

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					8.8457	0.0000	8.8457	4.5461	0.0000	4.5461			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	2.6595	27.5242	18.2443	0.0381	8.8457	1.2660	10.1117	4.5461	1.1647	5.7108	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation - 2023****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	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
Worker	0.0678	0.0447	0.5587	1.6300e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		166.6090	166.6090	4.4000e-003	4.4600e-003	168.0491
Total	0.0678	0.0447	0.5587	1.6300e-003	0.2012	9.9000e-004	0.2022	0.0534	9.1000e-004	0.0543		166.6090	166.6090	4.4000e-003	4.4600e-003	168.0491

3.4 Grading - 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					
Fugitive Dust					7.0966	0.0000	7.0966	3.4269	0.0000	3.4269			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	7.0966	0.7749	7.8715	3.4269	0.7129	4.1398		2,872.6910	2,872.6910	0.9291		2,895.9182

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading - 2023****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	0.0345	1.7971	0.5286	8.7200e-003	0.2714	0.0180	0.2894	0.0744	0.0172	0.0916		950.2982	950.2982	0.0403	0.1506	996.1936
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
Worker	0.0565	0.0372	0.4656	1.3600e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		138.8409	138.8409	3.6600e-003	3.7200e-003	140.0409
Total	0.0910	1.8343	0.9942	0.0101	0.4391	0.0188	0.4579	0.1189	0.0179	0.1368		1,089.1390	1,089.1390	0.0440	0.1544	1,136.2345

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					3.1935	0.0000	3.1935	1.5421	0.0000	1.5421			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	3.1935	0.7749	3.9684	1.5421	0.7129	2.2550	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading - 2023****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	0.0345	1.7971	0.5286	8.7200e-003	0.2714	0.0180	0.2894	0.0744	0.0172	0.0916		950.2982	950.2982	0.0403	0.1506	996.1936
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
Worker	0.0565	0.0372	0.4656	1.3600e-003	0.1677	8.3000e-004	0.1685	0.0445	7.6000e-004	0.0452		138.8409	138.8409	3.6600e-003	3.7200e-003	140.0409
Total	0.0910	1.8343	0.9942	0.0101	0.4391	0.0188	0.4579	0.1189	0.0179	0.1368		1,089.1390	1,089.1390	0.0440	0.1544	1,136.2345

3.5 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

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2023****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	0.0000
Vendor	0.0185	0.6298	0.2579	3.0500e-003	0.1089	4.5000e-003	0.1134	0.0314	4.3000e-003	0.0357		327.0521	327.0521	8.4600e-003	0.0483	341.6658
Worker	0.2712	0.1786	2.2347	6.5100e-003	0.8048	3.9800e-003	0.8088	0.2134	3.6600e-003	0.2171		666.4361	666.4361	0.0176	0.0179	672.1963
Total	0.2897	0.8085	2.4927	9.5600e-003	0.9137	8.4800e-003	0.9222	0.2448	7.9600e-003	0.2528		993.4883	993.4883	0.0261	0.0662	1,013.8621

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

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2023****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	0.0000
Vendor	0.0185	0.6298	0.2579	3.0500e-003	0.1089	4.5000e-003	0.1134	0.0314	4.3000e-003	0.0357		327.0521	327.0521	8.4600e-003	0.0483	341.6658
Worker	0.2712	0.1786	2.2347	6.5100e-003	0.8048	3.9800e-003	0.8088	0.2134	3.6600e-003	0.2171		666.4361	666.4361	0.0176	0.0179	672.1963
Total	0.2897	0.8085	2.4927	9.5600e-003	0.9137	8.4800e-003	0.9222	0.2448	7.9600e-003	0.2528		993.4883	993.4883	0.0261	0.0662	1,013.8621

3.5 Building Construction - 2024**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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2024****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	0.0000
Vendor	0.0181	0.6354	0.2537	3.0100e-003	0.1089	4.4300e-003	0.1133	0.0314	4.2400e-003	0.0356		322.5529	322.5529	8.2000e-003	0.0477	336.9594
Worker	0.2526	0.1585	2.0834	6.3200e-003	0.8048	3.8200e-003	0.8086	0.2134	3.5200e-003	0.2170		652.2806	652.2806	0.0160	0.0165	657.6096
Total	0.2706	0.7939	2.3371	9.3300e-003	0.9137	8.2500e-003	0.9220	0.2448	7.7600e-003	0.2526		974.8334	974.8334	0.0242	0.0642	994.5690

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction - 2024****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	0.0000
Vendor	0.0181	0.6354	0.2537	3.0100e-003	0.1089	4.4300e-003	0.1133	0.0314	4.2400e-003	0.0356		322.5529	322.5529	8.2000e-003	0.0477	336.9594
Worker	0.2526	0.1585	2.0834	6.3200e-003	0.8048	3.8200e-003	0.8086	0.2134	3.5200e-003	0.2170		652.2806	652.2806	0.0160	0.0165	657.6096
Total	0.2706	0.7939	2.3371	9.3300e-003	0.9137	8.2500e-003	0.9220	0.2448	7.7600e-003	0.2526		974.8334	974.8334	0.0242	0.0642	994.5690

3.6 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	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0824	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving - 2023****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	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
Worker	0.0753	0.0496	0.6208	1.8100e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		185.1212	185.1212	4.8900e-003	4.9600e-003	186.7212
Total	0.0753	0.0496	0.6208	1.8100e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		185.1212	185.1212	4.8900e-003	4.9600e-003	186.7212

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	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0824	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving - 2023****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	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
Worker	0.0753	0.0496	0.6208	1.8100e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		185.1212	185.1212	4.8900e-003	4.9600e-003	186.7212
Total	0.0753	0.0496	0.6208	1.8100e-003	0.2236	1.1000e-003	0.2247	0.0593	1.0200e-003	0.0603		185.1212	185.1212	4.8900e-003	4.9600e-003	186.7212

3.7 Architectural Coating - 2024**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	4.8668					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	5.0475	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating - 2024****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	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
Worker	0.0491	0.0308	0.4051	1.2300e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		126.8323	126.8323	3.1000e-003	3.2200e-003	127.8685
Total	0.0491	0.0308	0.4051	1.2300e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		126.8323	126.8323	3.1000e-003	3.2200e-003	127.8685

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	4.8668					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	5.0475	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating - 2024****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	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
Worker	0.0491	0.0308	0.4051	1.2300e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		126.8323	126.8323	3.1000e-003	3.2200e-003	127.8685
Total	0.0491	0.0308	0.4051	1.2300e-003	0.1565	7.4000e-004	0.1572	0.0415	6.8000e-004	0.0422		126.8323	126.8323	3.1000e-003	3.2200e-003	127.8685

3.8 Underground Utilites - 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	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084		901.0617	901.0617	0.2914		908.3472
Total	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084		901.0617	901.0617	0.2914		908.3472

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.8 Underground Utilites - 2023****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	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
Worker	0.0301	0.0199	0.2483	7.2000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		74.0485	74.0485	1.9500e-003	1.9800e-003	74.6885
Total	0.0301	0.0199	0.2483	7.2000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		74.0485	74.0485	1.9500e-003	1.9800e-003	74.6885

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	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084	0.0000	901.0617	901.0617	0.2914		908.3472
Total	0.4522	4.5884	6.6668	9.3100e-003		0.2265	0.2265		0.2084	0.2084	0.0000	901.0617	901.0617	0.2914		908.3472

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.8 Underground Utilites - 2023****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	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
Worker	0.0301	0.0199	0.2483	7.2000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		74.0485	74.0485	1.9500e-003	1.9800e-003	74.6885
Total	0.0301	0.0199	0.2483	7.2000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		74.0485	74.0485	1.9500e-003	1.9800e-003	74.6885

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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					
Mitigated	1.3090	2.0192	13.0906	0.0307	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,205.8650	3,205.8650	0.1768	0.1572	3,257.1246
Unmitigated	1.3090	2.0192	13.0906	0.0307	3.4329	0.0249	3.4578	0.9156	0.0233	0.9388		3,205.8650	3,205.8650	0.1768	0.1572	3,257.1246

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	475.80	475.80	475.80	1,625,881	1,625,881
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	475.80	475.80	475.80	1,625,881	1,625,881

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606
Other Asphalt Surfaces	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606

5.0 Energy Detail

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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					
NaturalGas Mitigated	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
NaturalGas Unmitigated	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	3757.53	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Other Asphalt Surfaces	0	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
Total		0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	3.75753	0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892
Other Asphalt Surfaces	0	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
Total		0.0405	0.3463	0.1474	2.2100e-003		0.0280	0.0280		0.0280	0.0280		442.0622	442.0622	8.4700e-003	8.1000e-003	444.6892

6.0 Area Detail

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.1 Mitigation Measures Area**

	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					
Mitigated	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011
Unmitigated	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Unmitigated**

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.1160					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	0.1614	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6690	9.6690	9.2800e-003		9.9011
Total	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Mitigated**

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.1160					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	0.1614	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6690	9.6690	9.2800e-003		9.9011
Total	1.5857	0.0618	5.3636	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	9.6690	9.6690	9.2800e-003	0.0000	9.9011

7.0 Water Detail**7.1 Mitigation Measures Water**

Apply Water Conservation Strategy

Arrow 32N Residential - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**8.0 Waste Detail**

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation
