Appendix B

Air Quality, Greenhouse Gas Emissions, and Health Risk Assessment Analysis Report

Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready Modernization Project Air Quality, Greenhouse Gas, and HRA Analysis Report

Los Angeles Department of Water and Power

12700 Vista Del Mar
Los Angeles, CA 90293

October 2024

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List of Acronyms and Abbreviations

AB	Assembly Bill
ACC	Air-Cooled Condenser
ACE	Affordable Clean Energy
ADMRT	Air Dispersion Modeling and Risk Tool
AERMOD	AMS/EPA Regulatory Model
AMS	American Meteorological Society
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
Btu	British Thermal Unit
°C	Degrees Celsius
CAAQS	California Ambient Air Quality Standard
CalEEMod	California Emissions Estimator Model®
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCGS	Combined Cycle Generation System
CCGT	Combined Cycle Gas Turbine
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DPM	Diesel Particulate Matter
°F	Degrees Fahrenheit
FCAA	Federal Clean Air Act
FR	Federal Register
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GWP	Global Warming Potential
H_2	Hydrogen
HARP2	Hotspots Analysis and Reporting Program, Version 2
HFC	Hydrofluorocarbon
HIA	Acute Hazard Index

HIC	Chronic Hazard Index
H_2O	Water
hr	Hour
HR	(U.S.) House of Representatives
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
H_2S	Hydrogen Sulfide
HWRP	Hyperion Water Reclamation Plant
IPCC	Intergovernmental Panel on Climate Change
kV	Kilovolt
LADWP	Los Angeles Department of Water and Power
LAX	Los Angeles International Airport
lb	Pound
LCFS	Low Carbon Fuel Standard
LST	Localized Significance Threshold
LTS	Less Than Significant
LTSM	Less Than Significant with Mitigation Incorporated
m^3	Cubic Meter
MATES	Multiple Air Toxics Exposure Study
MEIR	Maximally Exposed Individual Resident
MEIW	Maximally Exposed Individual Worker
MICR	Maximum Individual Cancer Risk
mmscf	Million Standard Cubic Feet
MT	Metric Ton
MW	Megawatt
MWh	Megawatt-Hour
N_2	Nitrogen
NAAQS	National Ambient Air Quality Standard
NED	National Elevation Dataset
NF_3	Nitrogen Trifluoride
NH_4OH	Ammonium Hydroxide
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violation
NREL	National Renewable Energy Laboratory
NSPS	New Source Performance Standards
O_2	Oxygen
O_3	Ozone

OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
OTC	Once-Through Cooling
PAL	Plant-Wide Applicability Limitation
PERP	Portable Equipment Registration Program
PFC	Perfluorocarbon
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter of Less Than 2.5 Microns
PM_{10}	Particulate Matter with an Aerodynamic Diameter of Less Than 10 Microns
ppb	Parts per Billion
ppm	Parts per Million
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTO	Permit to Operate
R	Refrigerants
RECLAIM	Regional Clean Air Incentives Market
RIA	Regulatory Impact Analysis
REL	Reference Exposure Level
RMP	Risk Management Policy
ROG	Reactive Organic Gas
RPS	Renewable Portfolio Standard
SB	Senate Bill
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCR	Selective Catalytic Reduction
SF_6	Sulfur Hexafluoride
SGS	Scattergood Generating Station
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLTRP	Strategic Long-Term Resource Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SRA	Source-Receptor Area
TAC	Toxic Air Contaminant
µg	Microgram
ULSD	Ultra-Low Sulfur Diesel
UNFCCC	United Nations Framework Convention on Climate Change
U.S. EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
V_2O_5	Vanadium Pentoxide

VOC	Volatile Organic Compound
WSAC	Wet Surface Air Cooler

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1.0 INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) is proposing to replace 296.8 gross megawatts (MW) of existing natural gas-fired steam generation from Scattergood Generating Station (SGS) Units 1 and 2 with 346 gross MW generation capacity from a one-on-one quick start, fast ramp, fuel-flexible, combined-cycle gas turbine (CCGT) power plant capable of utilizing up to 30% by volume renewable-derived (green) hydrogen. The project would increase the generation capacity compared to the existing units with contemporaneous emissions reductions due to higher fuel efficiency and improved emissions controls.

This technical report focuses on the potential air quality, public health, and climate change impacts of the proposed CCGT (herein referred to as the "proposed project" or "project"). Criteria pollutants, toxic air contaminants (TACs), and greenhouse gases (GHGs) would be emitted from the proposed project during construction, commissioning, and operation. This technical report presents potential air quality and climate change impacts associated with the short-term commissioning and long-term operation of the proposed project. The appendices to this report include California Emission Estimator Model® (CalEEMod) output files, detailed emission calculations, and supporting modeling files for the Air Quality Impact Analysis (AQIA) and the air toxics Health Risk Assessment (HRA).

1.1 Project Description

The proposed project would replace the generation capacity of existing SGS Units 1 and 2, which are conventional natural-gas-fired steam boiler generators that would be removed from service, with a rapid-response combined cycle generation system (CCGS) capable of operating on a fuel mixture of natural gas and a minimum of 30% hydrogen gas by volume. The proposed CCGS would consist of a combustion turbine generator and a steam turbine generator operating in tandem. Steam is supplied to the steam turbine by the heat recovery steam generator (HRSG), a type of boiler utilizing hot exhaust gas from the combustion turbine. Compared to the existing steam boiler Units 1 and 2, the CCGS would substantially increase fuel efficiency, thereby also reducing the emissions of air pollutants and GHGs relative to the amount of energy produced. Additional facilities or ancillary functions required to support the proposed CCGS include a wet surface air cooler (WSAC),[1] fuel gas compressors, a potential dedicated pipeline for industrial wastewater discharge, and new circuit breakers, disconnect switches, and H-frame structures for stringing conductors.

[1] In a wet surface air cooler, the steam turbine condensate flows inside finned tube bundles that are sprayed on the outside with water. The heat in the condensate causes the sprayed water to evaporate, and the latent heat of vaporization, along with sensible heat, is transferred to outside air flowing over the tube bundles by draft fans.

With the implementation of expanded renewable generation resources, improvements to transmission assets, increased energy storage, and other elements of the LADWP carbon-free energy system outlined in the 2022 Power Strategic Long-Term Resource Plan (SLTRP), it is anticipated that the proposed project CCGS would be operated at a substantially lower capacity factor (i.e., the ratio of actual generation output to the potential output of the generation unit) compared to similar units in service today. Further, the use of "once-through cooling" (OTC) with sea water for the steam turbine condensers Units 1 and 2 would cease.

1.2 Project Location and Surrounding Uses

The proposed project is in the South Coast Air Basin (SCAB) at 12700 Vista Del Mar in the City of Los Angeles. The proposed project is in the Playa Del Rey community of the City of Los Angeles, at the intersection of Vista Del Mar and Grand Avenue, within the LADWP SGS. The new CCGS would occupy approximately 3 acres in the southwest corner of SGS, adjacent to the intersection of Vista Del Mar and Grand Avenue. This vacant site consists of a paved lot that lies approximately 30 feet below the surrounding grade as a result of the demolition of the former Unit 3 during a previous project. The WSAC and additional fuel gas compressors would be installed in the central portion of SGS. Portions of the SGS property located south of Grand Avenue would be used for materials laydown, temporary office trailers, and parking to support project construction.

Dockweiler State Beach is located to the west of SGS and Vista Del Mar. SGS is bounded on the north by the Hyperion Water Reclamation Plant (HWRP), which is the primary wastewater treatment facility for the City of Los Angeles and is also located entirely within Los Angeles. Bordering the station on the northeast and east are residential neighborhoods located within the City of El Segundo, and to the south is a large Chevron Corporation oil refinery, located within the City of El Segundo.

In addition to the areas that are immediately adjacent to the SGS property, uses within a 1-mile radius of the property include additional residential neighborhoods; commercial establishments; an elementary, middle, and high school; two public parks; and the El Segundo Civic Center. All these uses are located within the City of El Segundo. The NRG El Segundo Generating Station is located approximately 0.4 miles south of SGS along the west side Vista Del Mar. Los Angeles International Airport (LAX) is located approximately 0.75 miles north of SGS. Figure 1-1 illustrates the location of SGS in relation to the region, and Figure 1-2 shows the surrounding vicinity.

1.3 Existing Site Conditions and Operations at SGS

The southern parcel of SGS (south of Grand Avenue) does not contain any operational facilities (i.e., generation units or ancillary functions). Oil drilling facilities operated by a third party under lease from LADWP are located on an approximately 1.5-acre area in the central portion of the parcel. Excess soil from the previous construction activities at SGS is stockpiled at the western end of the southern parcel. An approximately 7-acre area at the eastern end of the parcel is relatively flat and paved with gravel. Since 2013, this portion of the property has been used as a construction support area at SGS for various underground transmission cable installation projects that commence at the SGS switchyard. Several temporary administrative and warehouse buildings are currently located in this area. This area also includes a single 170-foot diameter aboveground tank that previously stored fuel oil for the operation of the boilers prior to conversion to the exclusive use of natural gas in the boilers. The tank has been emptied and cleaned (decommissioned), and it is wrapped in a mural that depicts various aspects of the history of El Segundo and the Southern California surf culture.

As described above, all existing permanent operational facilities at SGS are located in the northern parcel (north of Grand Avenue). The northern parcel rises in elevation from west to east and contains three terraces that are separated by landscaped embankments or retaining walls. It is a fully developed industrial site, with the landscape embankments being essentially the only areas not paved or occupied by facilities. The existing generation units are located on the lower and middle terraces. The middle terrace is otherwise occupied primarily by the switchyard that connects the generating units to the LADWP high-voltage transmission network. The upper terrace contains three large aboveground tanks that store water used in various processes at the station.

An approximately 3-acre vacant area in the southwest corner of the northern parcel was the site of the former Unit 3, which was demolished in 2017-2018. The floor of this area, which has been paved, lies approximately 30 feet below the surrounding grade, creating a basin.

SGS currently includes six operating generating units. The units have a combined gross generation capacity of 830 MW. The units supply power to the LADWP in-basin electrical transmission grid. Units 1 and 2 were placed into operation in 1958 and 1959, respectively. These units each employ a natural-gas-fired boiler that produces steam that drives a steam turbine, which in turn drives a generator to produce electricity. Units 1 and 2 together provide 296.8 MW of gross generation capacity (111.8 MW for Unit 1 and 185 MW for Unit 2). They are located on the lower terrace of the site (see Figure 1-3) and share a common approximately 300-foot tall exhaust stack.

Units 4 and 5 were placed into operation in 2015. Unit 4 is a natural-gas-fired combustion turbine generator, and Unit 5 is a steam turbine generator. However, the units operate in tandem as a CCGS. The hot exhaust from the Unit 4 combustion turbine passes through the HRSG, where it is used to produce steam, and then through a 213-foot tall exhaust stack. The steam produced in the HRSG is used to drive the Unit 5 steam turbine generator. The exhaust steam from Unit 5 is condensed in an air-cooled condenser (ACC) and returned to the HRSG in a continuous loop. The CCGS has a total gross generation capacity of 321.6 MW (214.4 MW for the Unit 4 combustion turbine generator and 107.2 MW for the Unit 5 steam turbine generator). The CCGS is located on the lower terrace, to the north of Units 1 and 2.

Units 6 and 7 were also placed into service in 2015. They are simple-cycle generation systems consisting of combustion turbine generators with individual approximately 100-foot-tall exhaust stacks. Each unit operates independently and has a gross generation capacity of 105.8 MW. Units 6 and 7 provide rapid response capability in terms of starting, ramping up and down, and shutting down to follow changes in demand for electrical energy, which increases overall system efficiency. Units 6 and 7 are located on the middle terrace, to the east of the other generation units and to the west of the switchyard.

Together, Units 4, 5, 6, and 7 have a combined gross generation capacity of 533.2 MW. They replaced the generation capacity of the since demolished Unit 3, which had a gross generation capacity of 460 MW. To enable the increase of 73.2 MW (i.e., from 460 MW to 533.2 MW), the generation capacity of Unit 1 was physically and permanently reduced by an equivalent amount, resulting in the existing gross generation capacity of 111.8 MW.

Unit 4 uses a dry low nitrogen oxides (NO_X) system and Units 6 and 7 utilize water injection systems to reduce the production of NO_X during the combustion process. All combustion units at SGS use oxidation catalysts and selective catalytic reduction (SCR) systems, a post-combustion control technology for reducing nitrogen oxides (NO_x) air pollutant emissions. The SCR systems reduce NO_x emissions by injecting dilute aqueous ammonia (a solution of ammonia and water; ammonium hydroxide, NH_4OH) and oxygen (O_2 in air) into the flue gas in the presence of a catalyst, creating a chemical reaction that produces nitrogen (N_2) and water vapor (H_2O). Aqueous ammonia used in this process is stored in aboveground tanks at SGS.

The natural gas used at SGS is supplied by continuous feed from a dedicated pipeline that enters the SGS property from Grand Avenue. Natural gas compression equipment ensuring optimum pressure of the gas prior to use in the combustion turbines is located on the middle terrace. Water used during the power generation processes (other than the ocean water associated with the OTC system) is stored in the three aboveground tanks on the upper terrace at the eastern end of the property. Potable water is stored in two of the tanks, and water that has undergone treatment (reverse osmosis) prior to use as makeup boiler feedwater is stored in the other tank.

The electrical energy generated at SGS is sent to a switchyard located on the middle terrace in the central portion of the property. Electrical energy is transmitted from the switchyard through the 138-kilovolt (kV) Scattergood-Airport Transmission Line or the 230-kV Scattergood-Olympic Transmission Line, which are connected to several electrical receiving stations.

Numerous maintenance buildings, storage buildings, and outdoor storage areas are located in the northern parcel of SGS. Most administrative functions are housed in a building adjacent to Units 1 and 2, near the western end of the property. The control room for Units 1 and 2 is located in the turbine hall adjacent to this building. The control room for Units 4, 5, 6, and 7 is located in a building on the middle terrace. Station employee vehicle parking is accommodated primarily in a paved lot along the western edge of the parcel. The perimeters of both the southern and northern parcels are completely fenced. Figure 1-3 shows the existing facilities at SGS.

The LADWP holds a facility Title V Major Source permit for the SGS (ID# 800075) and is covered by the South Coast Air Quality Management District (SCAQMD) NO_x Regional Clean Air Incentives Market (RECLAIM) programs, as well as the federal United States Environmental Protection Agency (U.S. EPA) Acid Rain program.

1.4 Project Overview

LADWP proposes to construct and operate a rapid-response CCGS at SGS. The CCGS would be capable of operating on a fuel mixture of natural gas and a minimum of 30% by volume hydrogen gas. This hydrogen-ready capability would allow LADWP to begin the conversion from natural gas to green hydrogen in its in-basin combustion turbine generation system as the City of Los Angeles transitions to a carbon-free electrical energy system. The SGS Units 1 and 2 Green Hydrogen-Ready Modernization Project (referred to herein as the proposed project) would replace the generation capacity of existing SGS Units 1 and 2, which are conventional natural-gas-fired boiler and steam turbine generators that will be removed from service. The proposed CCGS would consist of a combustion turbine generator and a steam turbine generator operating in tandem. When compared to the existing Units 1 and 2, the CCGS would substantially increase fuel efficiency, thereby also reducing the emissions of air pollutants and GHGs relative to the amount of energy produced. The CCGS would be fully operational by the end of 2029.

The proposed project has been identified by LADWP based on the findings and recommendations contained in the Los Angeles 100% Renewable Energy (LA100) Study, which establishes a pathway for the City to transform its electrical power supply into carbon-free resources. The LA100 study, the final report for which was published in 2021, was a multi-year effort undertaken jointly by the National Renewable Energy Laboratory (NREL) and LADWP with active participation by the LA100 Advisory Group consisting of representatives from neighborhood councils, environmental organizations, business and labor groups, academia, city government, and the renewable energy industry. Various scenarios reflecting a range of energy demand-related and supply-related factors were analyzed in the study. However, across all scenarios, the requirement for firm local generation assets (i.e., located within the Los Angeles Basin) that can be readily dispatched in a controlled manner in response to demand was recognized as essential under a range of foreseeable but unpredictable circumstances that could temporarily severely limit the supply of renewable energy resources coming into the City. Under such circumstances, firm local generation would be critical to maintaining system reliability and resilience and avoiding power grid collapse.

Based on the findings of the LA100 study, the proposed project has been identified as an integral component of LADWP's 2022 SLTRP, which establishes a roadmap for reliable and sustainable electrical power for the City, while also providing the strategy to achieve a carbon-free energy system by 2035, relying primarily on renewable solar, wind, and geothermal generation resources as well as large-capacity energy storage facilities. However, as discussed above, the continued availability of firm local generation that can be dependably and rapidly dispatched to respond to demand for energy in the LADWP service area has been identified in the SLTRP as necessary to maintain the reliability and resilience of the City's electrical power grid during and after the transition to a carbon-free system. This transition will occur as the demand for electricity in the City is also anticipated to increase substantially with the electrification of various functions currently powered by the combustion of fossil fuels (e.g., cooking, space heating, water heating, and the transportation sector).

The LADWP in-basin generation system, including SGS and other generating stations, would be retained through a conversion to renewable hydrogen fuel. However, unlike current operations, under which the in-basin generation units provide a substantial proportion of the City's energy on a daily and annual basis, the proposed CCGS is anticipated to be operated less frequently, primarily to meet peaks in the requirement for electric power during high demand days that exceed renewable energy production and energy storage capacity. In addition, the CCGS would be used during relatively short-term periods when renewable generation sources or transmission assets may become unavailable due to emergency circumstances (e.g., the temporary loss of critical renewable energy transmission lines caused by wildfire or earthquake). Therefore, the CCGS would provide local generation capability that is crucial to maintaining the reliability and resilience of the LADWP power system and prevent the potential collapse of the grid.

The LADWP is currently evaluating three vendors to meet the proposed project objectives. Since the power generating system (i.e., manufacturer and CCGS equipment) has not been selected for the SGS Units 1 and 2 Green Hydrogen-Ready Modernization Project, LADWP will prepare three separate applications to the SCAQMD for Permits to Construct (PTCs). In order to ensure timely project implementation, LADWP is requesting that the SCAQMD contemporaneously review and consider all three applications for PTCs and Permits to Operate (PTOs) so that when LADWP ultimately selects a power generating system, SCAQMD will already have reviewed, considered, and provided input on the permit applications. Upon selection of the power generating system, LADWP will inform SCAQMD of its selection and request the SCAQMD to approve the applicable permit application. Air quality, GHG, and energy impacts have been evaluated for all three vendors under the California Environmental Quality Act (CEQA).

Figure 1-1: Regional Location Map

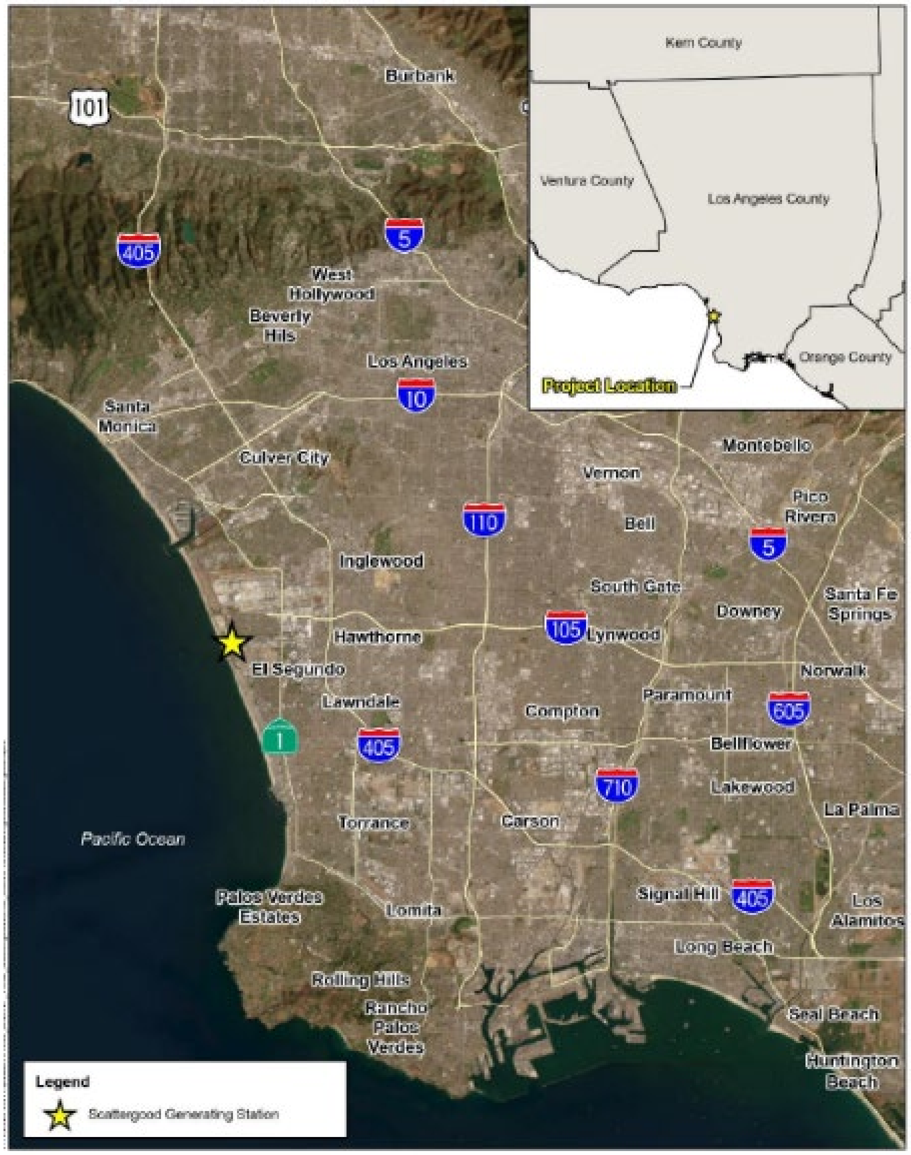
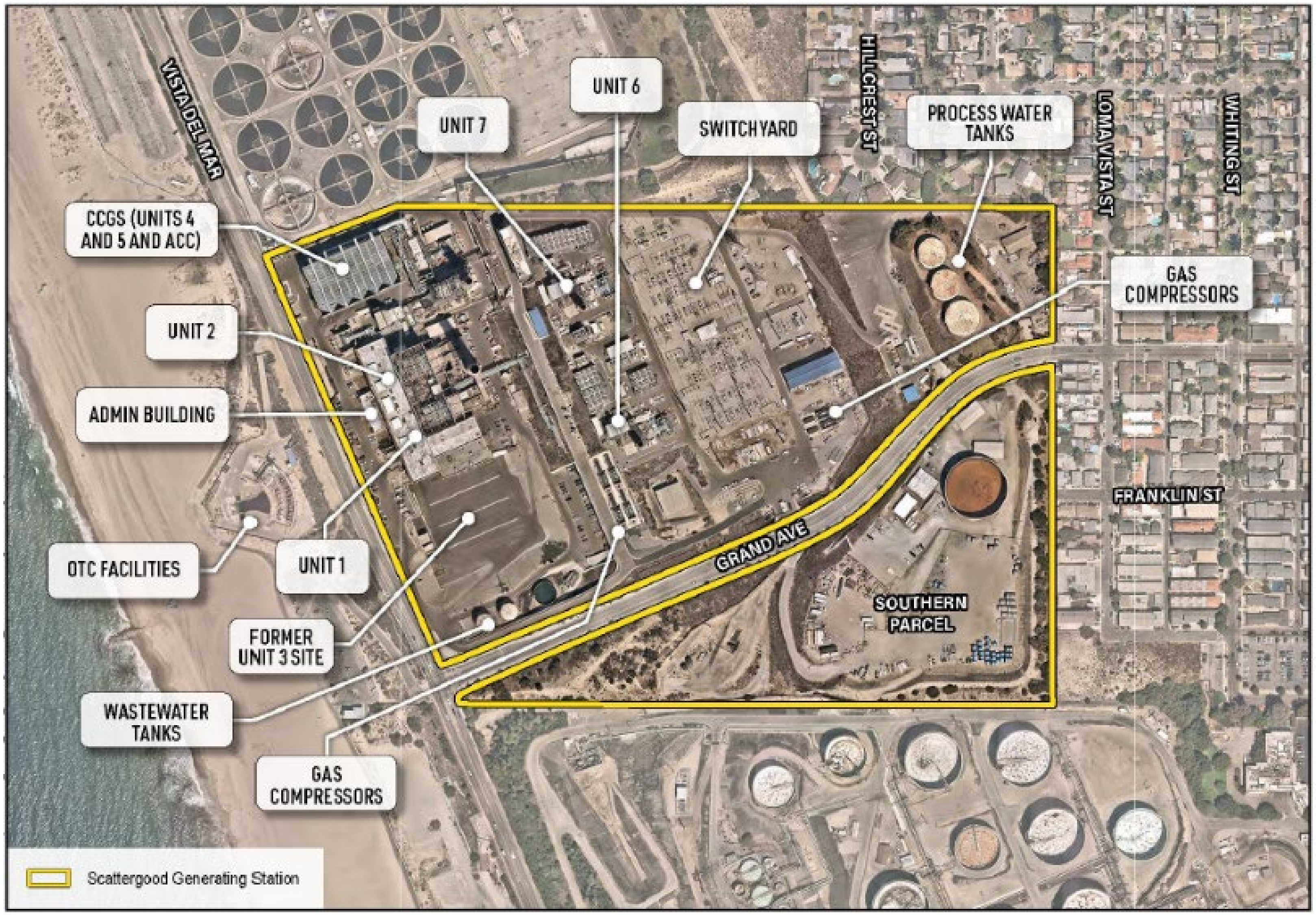


Figure 1-2: Project Site

Figure 1-3: Existing SGS Site Map



2.0 ENVIRONMENTAL SETTING

2.1 Regional Climate

The proposed project is within the jurisdiction of the SCAQMD, which encompasses an area of 10,473 square miles, consisting of the four-county SCAB and the Riverside County portions of the Salton Sea Air Basin and the Mojave Desert Air Basin. The SCAB, which is a subarea of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745-square-mile SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. A map depicting the SCAB and the jurisdiction of the SCAQMD is provided as Figure 2-1.

Figure 2-1: SCAQMD Jurisdiction and SCAB Boundaries

2.1.1 Meteorological Conditions

The climate in the SCAB is characterized by winter rainfall and hot summers tempered by cool ocean breezes. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap or "inversion" over the cool marine layer and inhibits the pollutants released into the marine layer from dispersing upward. In addition, light winds during the summer further limit dispersion. Finally, sunlight triggers the photochemical reactions that produce ozone, and this region experiences more days of sunlight than many other major urban areas in the nation.

2.1.2 Temperature and Rainfall

Temperature affects air quality in the region in several ways. Local winds are the result of temperature differences between the relatively stable ocean air and the uneven heating and cooling that takes place in the SCAB due to a wide variation in topography. Temperature also has a major effect on vertical mixing height and affects chemical and photochemical reaction times. The annual average temperatures vary throughout the SCAB from the low 40s to the high 90s. The coastal areas show little variation in temperature on a year-round basis due to the moderating effect of the marine influence. On average, September is the warmest month, while December and January are typically the coolest months of the year. Annual rainfall varies from a low of under 4 inches to a high of over 20 inches. No snow, ice, or hail was reported between 2012 and 2016.

Table 2-1 summarizes historical meteorological data readings from 2012 through 2016 taken at the National Oceanic and Atmospheric Administration (NOAA) weather station at LAX.

Table 2-1: Historical Climate Data

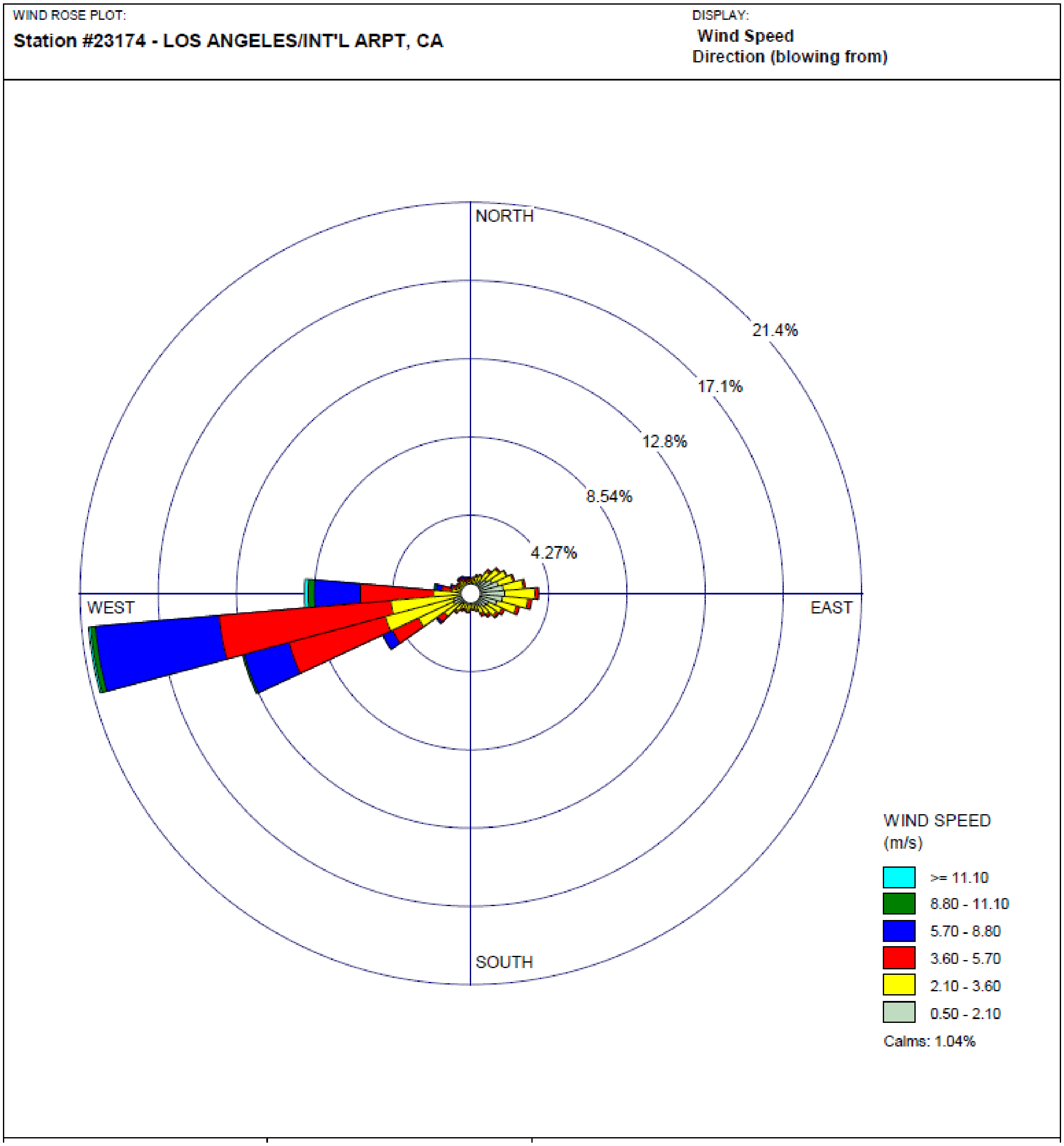
Climatologic Element	2012	2013	2014	2015	2016
Highest monthly mean temperature, °F (month)	78.70 (Sept)	76.73 (Sept)	78.87 (Sept)	81.23 (Oct)	77.73 (Sept)
Highest temperature, °F (month)	98 (Sept)	92 (Aug)	97 (May)	99 (Oct)	101 (Sept)
Lowest monthly mean temperature, °F (month)	49.23 (Jan)	47.26 (Jan)	51.0 (Jan)	48.58 (Dec)	49.90 (Jan)
Lowest temperature, °F (month)	41 (Feb/Dec)	38 (Jan)	40 (Dec)	36 (Jan)	41 (Dec)
Annual average temperature, °F	63.41	63.74	65.98	65.55	64.84
Total precipitation, inches	8.89	3.65	8.30	5.96	10.27

Source: NOAA 2016.

2.1.3 Wind Flow Patterns

Wind flow patterns play an important role in the transport of air pollutants in the SCAB. The winds flow from offshore and blow eastward during the daytime hours until sundown. There is a calm period until about midnight. At that time, the land breeze begins from the northwest, typically becoming calm again about sunrise. In winter, the same general wind flow patterns exist except that summer wind speeds average slightly higher than winter wind speeds. This pattern of low wind speeds is a major factor that allows pollutants to accumulate in the SCAB. The normal wind patterns in the SCAB are interrupted by the unstable air accompanying the passing storms during the winter and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the SCAB. A windrose depicting the wind flow patterns at the LAX monitoring station is provided as Figure 2-2.

Figure 2-2: Los Angeles International Airport Station Windrose – 2012-2016



2.2 Existing Air Quality

2.2.1 Criteria Pollutants

2.2.1.1 Ambient Air Quality Standards and Health Effects

The SCAQMD is responsible for ensuring that California and National Ambient Air Quality Standards (CAAQS and NAAQS, respectively) are achieved and maintained in its jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}), fine particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$), sulfates (SO_4^{2-}), and lead. These standards were established to protect sensitive receptors within a margin of safety from adverse health impacts due to exposure to air pollution. In most cases, the California standards are more stringent than the federal standards. California has also established standards for sulfate, visibility, hydrogen sulfide (H_2S), and vinyl chloride. The CAAQS and NAAQS for each of these pollutants and their effects on health are summarized in Table 2-2.

Table 2-2: Federal and State Ambient Air Quality Standards

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Ozone	0.09 ppm, 1-hr; 0.070 ppm, 8-hr	0.070 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years [a]	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage.
Carbon Monoxide	20 ppm, 1-hr; 9.0 ppm, 8-hr	9 ppm, 8-hr; 35 ppm, 1-hr	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses.

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Nitrogen Dioxide	0.18 ppm, 1-hr; 0.030 ppm, annual	0.100 ppm, 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years; 0.053 ppm, annual[a]	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration.
Sulfur Dioxide	0.25 ppm, 1-hr; 0.04 ppm, 24-hr	0.075 ppm, 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years[a]	Bronchoconstriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma.
Respirable Particulate Matter (PM_{10})	50 µg/m^3, 24-hr; 20 µg/m^3, annual arithmetic mean	150 µg/m^3, 24-hr	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Decline in pulmonary function or growth in children; (c) Increased risk of premature death.
Fine Particulate Matter ($PM_{2.5}$)	12 µg/m^3, annual arithmetic mean	35 µg/m^3, 24-hr; 9.0 µg/m^3, annual	
Sulfates (SO_4^{2-})	25 µg/m^3, 24-hr	No Federal Standard	(a) Decrease in lung function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage.
Lead	1.5 µg/m^3, 30-day	0.15 µg/m^3, 3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Hydrogen Sulfide	0.03 ppm, 1-hr	No Federal Standard	Odor annoyance at low concentrations. Prolonged exposure to concentrations of 2 to 5 ppm may cause nausea, tearing of the eyes, headaches or loss of sleep – as well as airway problems (bronchial constriction) in some asthma patients. Possible fatigue, loss of appetite, headache, irritability, poor memory, and dizziness may occur at 20 ppm. Exposure to concentrations exceeding 100 ppm may cause coughing, eye irritation, loss of smell after 2-15 minutes (olfactory fatigue); altered breathing, drowsiness after 15-30 minutes; throat irritation after 1 hour; gradual increase in severity of symptoms over several hours; death may occur after 48 hours.[b]
Vinyl Chloride	0.01 ppm, 24-hr[c]	No Federal Standard	Known carcinogen.

Notes: State standards are "not to exceed" values; federal standards follow the design value form of the NAAQS.

Source: SCAQMD 2022, unless otherwise noted.

a. U.S. EPA 2017a.
b. OSHA 2015.
c. CARB 2015a.

2.2.1.2 Regional Air Quality

In 2020, one or more stations in the SCAB exceeded the most current federal standards on a total of 181 days (49% of the year), including: 8-hour ozone (157 days over the 2015 ozone NAAQS), NO_2 (1 day), PM_{10} (3 days), and 24-hour $PM_{2.5}$ (39 days). Despite substantial improvement in air quality over the past few decades, some air monitoring stations in the SCAB still exceed the NAAQS for ozone more frequently than any other areas in the United States (SCAQMD 2022).

The following are descriptions of the attainment classifications:

- Unclassified: A pollutant is designated as unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.
- Attainment: A pollutant is designated attainment if the AAQS for that pollutant was not violated at any site in the area during a 3-year period.

- Non-attainment: A pollutant is designated non-attainment if there was at least one violation of a AAQS for that pollutant in the area during the previous 3 years.
- Non-attainment/transitional: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the federal and California ambient air quality standards in the SCAB are summarized in Tables 2-3 and Table 2-4, respectively.

Table 2-3: NAAQS Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time (standard)	Designation	Attainment Date
Ozone	(1979) **1-Hour** (0.12 ppm)	Nonattainment ("extreme")	2/26/2023 (revised deadline)
	(2015) **8-Hour** (0.070 ppm)	Nonattainment ("extreme")	8/03/2038
	(2008) **8-Hour** (0.075 ppm)	Nonattainment ("extreme")	7/20/2032
	(1997) **8-Hour** (0.08 ppm)	Nonattainment ("extreme")	6/15/2024
CO	(1971) **1-Hour** (35 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	(1971) **8-Hour** (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
NO_2	(2010) **1-Hour** (100 ppb)	Unclassifiable/Attainment	N/A (attained)
	(1971) **Annual** (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
SO_2	(2010) **1-Hour** (75 ppb)	Unclassifiable/Attainment	1/9/2018 (attained)
	(1971) **24-Hour** (0.14 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM_{10}	(1987) **24-hour** (150 μg/m^3)	Attainment (Maintenance)	7/26/2013 (attained)
$PM_{2.5}$	(2006) **24-Hour** (35 μg/m^3)	Nonattainment ("serious")	12/31/2023
	(2024) **Annual** (9.0 μg/m^3)	TBD	TBD
	(2012) **Annual** (12.0 μg/m^3)	Nonattainment ("serious")	12/31/2025
	(1997) **Annual** (15.0 μg/m^3)	Attainment (final determination pending)	4/5/2015 (attained 2013)
Lead	(2008) **3-Month Rolling** (0.15 μg/m^3)	Nonattainment (Partial) (Attainment determination to be requested)	12/31/2015

Source: SCAQMD 2022 AQMP, Table 2-3.

Table 2-4: CAAQS Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time (standard)	Designation
Ozone	**1-Hour** (0.09 ppm)	Nonattainment
	8-Hour (0.070 ppm)	Nonattainment
CO	**1-Hour** (20 ppm)	Attainment
	8-Hour (9 ppm)	Attainment
NO_2	**1-Hour** (0.18 ppm)	Attainment
	Annual (0.030 ppm)	Attainment
SO_2	**1-Hour** (0.25 ppm)	Attainment
	24-Hour (0.04 ppm)	Attainment
Sulfates	**24-Hour** (25 $\mu g/m^3$)	Attainment
PM_{10}	**24-hour** (50 $\mu g/m^3$)	Nonattainment
	Annual (20 $\mu g/m^3$)	Nonattainment
$PM_{2.5}$	**Annual** (12.0 $\mu g/m^3$)	Nonattainment
Lead	**30-Day Average** (1.5 $\mu g/m^3$)	Attainment
H_2S	**1-Hour** (0.03 ppm)	Unclassified

Source: SCAQMD 2022 AQMP, Table 2-5.

2.2.1.3 Local Air Quality

The SCAQMD monitors levels of the aforementioned criteria pollutants at multiple monitoring stations throughout the SCAB. A compilation of air quality data from the Signal Hill site, representing the project area for 2021-2023, is presented in Table 2-5. The Signal Hill site was chosen to represent the project site as it is the only South Coastal Los Angeles site in the SCAQMD network that has available data for a majority of the pollutants. The Signal Hill station and project site also have similar background emission sources (i.e., the Port of Long Beach and Los Angeles International Airport) and coastal meteorology. Some pollutants (i.e., CO and SO_2), were not measured at the Signal Hill site. EPA AirData sites were used to supplement missing data for CO and SO_2.

Table 2-5: Maximum Monitored Pollutant Concentrations in Project Area

Constituent/Standard	2021	2022	2023
Ozone[1]			
Max 8-Hour (ppm)	0.064	0.077	0.065
# Days > National Standard	0	1	0
# Days > State Standard	0	1	0
1-Hour (ppm)	0.086	0.108	0.089
# Days > National Standard	0	0	0
# Days > State Standard	0	1	0
Carbon Monoxide[2]			
8-Hour (ppm)	1.6	1.5	1.2
1-Hour (ppm)	2.0	1.7	1.4
Nitrogen Dioxide[1]			
1-Hour (ppb)	59.0	58.1	56.2
Annual Arithmetic Mean (ppb)	12.8	12.8	11.0
Sulfur Dioxide[3]			
1-Hour (ppb)	7.7	6.1	23.2
PM_{10}[4]			
24-Hour (µg/m^3)	48	57	80
# Days > National Standard	0	0	0
# Days > State Standard	0	2	3
$PM_{2.5}$[4]			
Federal 24-Hour (µg/m^3)	32.8	28.8	26.5
# Days > National Standard	4	0	0
State 24-Hour (µg/m^3)	42.9	28.8	26.5
# Days > State Standard	4	0	0

1. Values reported are from the South Coastal Los Angeles County 4 monitoring station (Station No. 039, AQS ID 060374009) monitoring station.
2. Values reported are from the 1630 N Main St. EPA AirData monitoring station (AQS ID 060371103).
3. 2023 and 2022 SO_2 values reported are from the South Coastal Los Angeles County 4 monitoring station (Station No. 039, AQS ID 060374009). 2021 SO_2 values reported are from the 7201 W. Westchester Parkway EPA AirData monitoring station (AQS ID 060375005).
4. 2023 and 2022 PM values reported are from the South Coastal Los Angeles County 4 monitoring station (Station No. 039, AQS ID 060374009). 2021 PM values reported are from the South Coastal Los Angeles County 2 monitoring station (AQS ID 060374004).

Sources: SCAQMD 2024, Historical Data by Year, Tables for 2021, 2022, and 2023; U.S. EPA 2024, Monitor Values Report.

2.2.2 Toxic Air Contaminants

The SCAQMD has conducted urban air toxics studies within the SCAB, the most recent of which is the Multiple Air Toxics Exposure Study (MATES V). Monitoring data collected during the MATES V program, conducted from 2018-2019, was used to update a basin-wide emissions inventory of TACs and modeled to characterize carcinogenic risk from exposure to air toxics across the SCAB. The MATES V study concludes the following regarding cancer risk in the SCAB (SCAQMD 2021):

> *"In MATES V, diesel PM is the largest contributor to the cancer risk for all stations, contributing approximately 50% of the cancer risk. Based on other South Coast AQMD analyses of projected diesel PM emissions in future years,[12,13] significant decreases in diesel PM health impacts are expected within the next 5-10 years. These reductions reflect recent and continued efforts by the District, CARB and US EPA that reduce diesel PM emissions, especially from mobile sources. Benzene, 1,3- Butadiene, and Carbonyls make up approximately 25% of the cancer risk."*

Regarding chronic non-cancer risk, the SCAQMD concluded the following:

> *"Chronic non-cancer health impacts are primarily driven by arsenic, which accounts for approximately 49% of the overall chronic HI* [hazard index]. *The chronic HI from arsenic is driven equally by the following target organ systems: cardiovascular system, nervous system, reproductive/developmental, respiratory, and skin. Based on the monitoring data, acrolein (2- Propenol) accounts for approximately 23% of the chronic HI, driven by the impacts on the respiratory system, although there is substantial uncertainty associated with the measurement method, and no alternative method has been published.[14] Formaldehyde and benzene account for approximately 7% and 5% of the chronic HI, respectively. The HQ* [hazard quotient] *for formaldehyde is driven by the impacts on the respiratory system, while the HQ for benzene is driven by the hematologic system impacts. Other species are responsible for the remainder of the chronic HI."*

2.3 Greenhouse Gases

Climate change, also referred to as global warming, has been the subject of increasing media coverage over the past decade and is believed to be caused by gases that trap heat in the atmosphere called GHGs. Pursuant to California Health and Safety Code Section 38505(g), the seven principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). GHGs occur naturally because of volcanoes, forest fires, and biological processes, such as enteric fermentation and aerobic decomposition. They are also produced by the combustion of fuels, industrial processes, agricultural operations, waste management, and land use changes, such as conversion of farmland to urban uses. Emissions caused by human activities are called anthropogenic emissions.

The American Meteorological Society (AMS) refers to climate change as any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. The AMS also indicates that climate change may be due to natural external forces, such as changes in solar emissions or slow changes in the Earth's orbital elements, natural internal processes of the climate system, or anthropogenic forcing. The climate system can be influenced by changes in the concentration of various GHGs in the atmosphere that affect the Earth's absorption of radiation (AMS 2012). The United Nations Framework Convention on Climate Change defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (UNFCCC 2014).

In its Second Assessment Report (1995) of the science of climate change, the Intergovernmental Panel on Climate Change (IPCC) concluded that "human activities are changing the atmospheric concentrations and distributions of GHGs and aerosols. These changes can produce a radiative forcing by changing either the reflection or absorption of solar radiation, or the emission and absorption of terrestrial radiation." Building on this conclusion, the IPCC Third Assessment Report (2001) asserted that "concentrations of atmospheric GHGs and their radiative forcing have continued to increase as a result of human activities." While the Second Assessment Report concluded that "the balance of evidence suggests that there is a discernible human influence on global climate," the Third Assessment Report more directly connects the influence of human activities on climate. The IPCC concluded that "in light of new evidence and taking into account the remaining uncertainties, most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations."

In its Fourth Assessment Report (2007), the IPCC stated that warming of the Earth's climate is unequivocal and that warming is very likely attributable to increases in atmospheric GHGs caused by human activities. The IPCC further stated that changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts, are linked to changes in the climate system and that some changes might be irreversible.

In its Fifth Assessment Report (2013), the IPCC reinforced evidence for the warming of the climate system since the 1950s based on observed changes over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, the sea level has risen, and the concentrations of GHGs have increased. Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983-2012 was likely the warmest 30-year period of the last 1,400 years. The IPCC also reports (IPCC 2013):

- The atmospheric concentrations of CO_2, CH_4, and N_2O have all increased since 1750 due to human activity. In 2011, average concentrations of CO_2, CH_4, and N_2O were 390 parts per million (ppm), 1.8 ppm, and 0.3 ppm, respectively, which are higher than pre-industrial levels by about 40%, 150%, and 20%, respectively.
- The globally averaged combined land and ocean surface temperature data, as calculated by a linear trend, showed an average warming of 0.85°C (1.5°F) over the period 1880 to 2012. The average total increase between the 1850-1900 period and the 2003-2012 period was 0.78°C (1.4°F).
- Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010. The rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia. Over the period 1901-2010, global mean sea level rose by 0.19 meter (0.62 foot).
- Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent.

In its Sixth Assessment Report (2023), the IPCC stated that human activities have unequivocally caused global warming. Temperatures from 2011 to 2020 were 1.1°C higher than temperatures from 1850 to 1900. Damage and losses caused by weather extremes and climate changes to nature and people can be attributed to global warming with high confidence. Plans for communities to adapt to a warmer world are constrained by financial limitations, especially in developing countries. The report stated that climate related risks and future damages are likely to continue to increase as global temperatures increase. To mitigate these risks and damages, sharp reductions in GHGs are needed, including plans to achieve net zero and net negative carbon emissions.

According to the NOAA, there is strong evidence that the global sea level is now rising at an increased rate and will continue to rise during this century. While studies show that sea levels changed little over the 19 centuries until 1900, sea levels began to climb in the 20th century. The two major causes of global sea level rise are thermal expansion caused by the warming of the oceans (since water expands as it warms) and the loss of land-based ice (such as glaciers and polar ice caps) due to increased melting. Records and research show that the sea level has been steadily rising at a rate of 0.04 to 0.1 inch per year since 1900. This rate may be increasing. Since 1992, new methods of satellite altimetry (the measurement of elevation or altitude) indicate a rate of rise of 0.12 inch per year, or 1 foot per century. This is a significantly higher rate than the sea level rise averaged over the last several thousand years (NOAA 2014).

2.3.1 Common GHGs

The most common GHG from human activity (fuel combustion) is CO_2, followed by CH_4 and N_2O (U.S. EPA 2023). Common refrigerant GHGs (abbreviated as “R”) used in air conditioning and refrigeration equipment, some of which are hydrofluorocarbons (HFCs) are also included in this analysis.

The potential heat trapping ability of different GHGs in the atmosphere varies significantly. To account for these differences in warming effect, GHGs are defined by their global warming potential (GWP). The GWP value for a GHG depends on the time span over which it is calculated and how the gas concentration decays in the atmosphere over time. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to warming the Earth (U.S. EPA 2023). Under this U.S. EPA methodology, the GWP of CO_2 is set to 1, the GWP of CH_4 is 25, and the GWP of N_2O is 298. Carbon dioxide equivalents (CO_2e) are calculated by totaling the products of mass GHG emissions by species multiplied by their respective GWP coefficients (U.S. EPA 2023).

<u>Carbon Dioxide</u>: In nature, carbon is cycled between various atmospheric, oceanic, biologic, and mineral reservoirs. Atmospheric CO_2 is part of this global carbon cycle. From 1990 to 2021, total emissions of CO_2 in the U.S. decreased by 1.7% (U.S. EPA 2023).

<u>Methane</u>: CH_4 is primarily produced through anaerobic decomposition of organic matter in biological systems. Agricultural processes, such as wetland rice cultivation, enteric fermentation in animals, and the decomposition of animal wastes, emit CH_4, as does the decomposition of municipal solid wastes. CH_4 is also emitted during the production and distribution of natural gas and petroleum and is released as a byproduct of coal mining and incomplete fossil fuel combustion. From 1990 to 2021, total emissions of CH_4 in the U.S. decreased by 16.3% (U.S. EPA 2023).

Nitrous Oxide: Anthropogenic sources of N_2O emissions include agricultural soils, especially the use of synthetic and manure fertilizers; fossil fuel combustion, especially from combustion in mobile sources; adipic (nylon) and nitric acid production; wastewater treatment and waste combustion; and industrial biomass burning (e.g., electric power generation). From 1990 to 2021, total emissions of N_2O in the U.S. decreased by 3.2% (U.S. EPA 2023).

Refrigerants: Refrigerants include the fugitive GHG emissions associated with building air conditioning (A/C) and refrigeration equipment. Refrigerant emissions from leaks during regular operation and routine servicing over the equipment lifetime is estimated using CalEEMod.

2.3.2 Regional and Local Setting

The environmental setting for GHG emissions and climate change is larger than the immediate project area. The sections below describe the context for climate change as being the Earth and the properties of GHGs to affect global climate change.

2.3.2.1 Sources of GHG Emissions

The U.S. EPA tracks GHG emissions in the United States and publishes the Inventory of U.S. Greenhouse Gas Emissions and Sinks, which is updated annually. This detailed report contains estimates of the total national GHG emissions and removals associated with human activities in all 50 states. From the current report, the main sources of GHG emissions in the United States in 2021 are identified below (U.S. EPA 2023):

- Electric power generation accounts for about 25.0% of GHG emissions nationwide. Over 60% of electric power is generated by burning fossil fuels, mainly natural gas and coal. GHG emissions from electric power generation in the United States have decreased by about 15.7% since 1990 due to changes in the U.S. economy, fuel switching, and energy efficiency improvements.
- Transportation accounts for about 28.5% of GHG emissions nationwide. GHG emissions from transportation result from burning fossil fuels in automobiles, trucks, trains, ships, and aircraft. Almost all the fuel used for transportation is petroleum-based, which includes gasoline, diesel, and jet fuel.
- Industry accounts for about 23.5% of GHG emissions nationwide. GHG emissions from industry are associated mainly with burning fossil fuels (coal and natural gas) for heat energy, as well as emissions from certain chemical reactions necessary to produce goods from raw materials.
- Commercial and residential uses account for about 12.7% of GHG emissions nationwide. GHG emissions from businesses and homes result primarily from fossil fuels burned for heat, the use of certain products that contain GHGs, and the handling and disposal of domestic wastes.
- Agriculture accounts for about 10% of GHG emissions nationwide. GHG emissions from agriculture are caused by livestock, such as cows (enteric fermentation), soil management practices, and rice farming.

- Land use and forestry offsets (absorbs or sequesters) about 11.9% of GHG emissions nationwide. Land areas can act as GHG sinks (absorbing CO_2 from the atmosphere) or GHG sources. Since 1990, well-managed forests and other lands have absorbed more CO_2 from the atmosphere than they emit.

2.3.2.2 GHG Emission Trends

The California Global Warming Solutions Act of 2006 [Assembly Bill (AB) 32] required the California Air Resources Board (CARB) to prepare a Scoping Plan to achieve substantial GHG emissions reductions, both from within the State and from "exported" emissions, such as importing electric power generated at coal-fired power plants located in neighboring western states. In June 2008, CARB developed a Draft Scoping Plan for Climate Change pursuant to AB 32. The Scoping Plan was approved on December 12, 2008. The Scoping Plan proposed a comprehensive set of actions designed to reduce overall carbon emissions in California, improve our environment, reduce dependence on oil, diversify energy sources, save energy, and enhance public health while creating new jobs and enhancing the growth of California's economy. The Climate Change Scoping Plan was updated in May 2014 and confirmed that California was on target for meeting the 2020 GHG emissions reduction goal. On December 14, 2017, CARB approved the 2017 Final Scoping Plan Update. The 2017 Plan Update outlined CARB's programs to achieve a 40% reduction in GHG emissions from 1990 levels by 2030, as required by the passage of Senate Bill (SB) 32 in 2017. In December 2022, CARB approved the 2022 Scoping Plan for Achieving Carbon Neutrality. The 2022 Scoping Plan outlines the State's plan to reduce anthropogenic emissions to 85% below 1990 levels by 2045 and achieve carbon neutrality by 2045 or earlier. The 2022 Scoping Plan also emphasizes that there is no realistic path to carbon neutrality without carbon removal and sequestration, and to achieve the State's carbon neutrality goal, carbon reduction programs must be supplemented by strategies to remove and sequester carbon (CARB 2022).

Annual GHG emissions inventories provide the basis for establishing historical emissions trends. Trends are useful in tracking progress toward a specific goal or target. There are many factors affecting GHG emissions, including the state of the economy, changes in demography, improved efficiency, and changes in environmental conditions, such as drought.

2.3.2.3 Statewide GHG Emissions Inventory

Based on CARB's 2000-2022 GHG Emission Inventory, emissions from statewide emitting activities were 371.1 million metric tons (MT) of CO_2e This is 9.3 MT CO_2e (2.4%) lower than in 2021 (380.4 MT CO_2e). The 2022 emissions data shows that the State of California is continuing its established long-term trend of GHG emissions declines, despite the anomalous emissions trends from 2019 through 2021, due in large part to the impacts of the COVID-19 pandemic (CARB 2024).

3.0 REGULATORY SETTING

3.1 Air Quality

3.1.1 Federal Authority

The U.S. EPA enforces the Federal Clean Air Act (FCAA) and the associated NAAQS for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. These air quality standards are concentrations above which the pollutant is known to cause adverse health effects. Generally, stationary source regulation of air quality is delegated to the state or local agencies. However, there are various federal programs that are applicable to major sources of emissions, such as the proposed project CCGS. For regulations controlling primarily criteria pollutant emissions, the U.S. EPA has promulgated New Source Performance Standards (NSPS). Applicable federal requirements are presented in Table 3-1 below.

Table 3-1: Applicable Federal Requirements

Code of Federal Regulations (CFR) Title 40 Part 52	Non-attainment New Source Review requires Best Available Control Technology (BACT) and offsets. Permitting and enforcement have been delegated to the SCAQMD.
40 CFR 60 Subpart KKKK	NSPS for Stationary Combustion Turbines: 15 parts per million (ppm) nitrogen oxide at 15% oxygen and fuel sulfur limit of 0.060 pounds of sulfur oxide per million British thermal units heat input. BACT would require additional controls.
40 CFR 60 Subpart TTTT	NSPS for Greenhouse Gas Emissions from Electric Generating Units: 1,000 lb CO_2/MWh-Gross.

3.1.2 State Authority

CARB is the state agency that: 1) establishes and enforces emission standards for motor vehicles, fuels, and consumer products; 2) establishes health-based air quality standards; 3) conducts research; 4) monitors air quality; 5) identifies and promulgates control measures for TACs; 6) provides compliance assistance for businesses; 7) produces education and outreach programs and materials; and 8) oversees and assists local air quality districts that regulate most non-vehicular sources of air pollution. CARB approves the regional Air Quality Management Plans (AQMPs) for incorporation into the State Implementation Plan (SIP) and is responsible for preparing those portions of the plan related to mobile source emissions.

CARB implements the California Clean Air Act (CCAA) requirements, regulating emissions from motor vehicles and setting fuel standards. The CCAA established ambient air quality standards for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, lead, visibility-reducing particles, sulfates, H_2S, and vinyl chloride. California standards are generally more stringent than the national standards.

While most regulations are developed and implemented at the local level by the SCAQMD, some regulations and emissions limits are prescribed by CARB. One example is the Portable Equipment Registration Program (PERP). Once registered in the program, portable engines and equipment units can operate throughout the State of California without the need to get individual permits from local air districts, with some restrictions. The program has limits on engine certifications and emissions, and limits operation at a specific location (as defined in the regulation) to no more than 12 months. Operation exceeding 12 months would subject the equipment to stationary source permitting through the air district.

The Global Warming Solutions Act (AB 32) requires CARB to adopt regulations to evaluate statewide GHG emissions, and then create a program and emission caps to limit statewide emissions to 1990 levels. The program is to be implemented in a manner that achieves emissions compliance by 2020. AB 32 did not directly amend CEQA or other environmental laws, but it did acknowledge that GHG emissions cause significant adverse impacts to human health and the environment. SB 32 was signed in 2016 and established a GHG emissions reductions target of at least 40% below 1990 levels by 2030.

SB 97, signed in August 2007, acknowledged that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

AB 1279, the California Climate Crisis Act, declares the policy of the State to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter, and to ensure that by 2045, statewide anthropogenic GHG emissions are reduced to at least 85% below the 1990 levels.

3.1.3 Regional Authority

The California legislature created the SCAQMD in 1977 as the agency responsible for developing and enforcing air pollution control rules and regulations in the SCAB and portions of the Salton Sea Air Basin and Mojave Desert Air Basin. By statute, the SCAQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal and State ambient air quality standards for the areas under the jurisdiction of the SCAQMD. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP. The AQMP is a regional blueprint for how the SCAQMD will achieve air quality standards and healthful air. The current 2022 AQMP contains multiple goals promoting reductions of criteria air pollutants, GHGs, and TACs. In particular, the 2022 AQMP states that both NO_x and volatile organic compound (VOC) emissions need to be addressed, with the emphasis that NO_x emissions reductions are more effective to reduce the formation of O_3 and $PM_{2.5}$. The AQMP is implemented through new rules and regulations.

The SGS would need to demonstrate compliance with all applicable SCAQMD rules.

3.1.4 Odor

In the SCAB, odors are regulated under SCAQMD Rule 402, Nuisance, which requires that: "[A] person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

The SCAQMD accepts air quality complaint calls 24 hours a day. During business hours (i.e., 7:00 a.m. to 5:30 p.m., Tuesday through Friday), an attendant answers the call and directs the information accordingly. During non-business hours, an automated answering service forwards the call to a standby supervisor, who takes appropriate action. If a public nuisance is expected based on the number of complaints received, the SCAQMD will respond to the complaint with an immediate investigation.

3.2 Greenhouse Gases

3.2.1 Federal Authority

3.2.1.1 40 CFR Parts 51, 52, 70, and 71 – PSD and Title V Permitting Programs

On June 23, 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. USEPA* (No. 12-1146). The Court ruled that the U.S. EPA may not treat GHGs as air pollutants for purposes of determining whether a source is a major source required to obtain a Prevention of Significant Deterioration (PSD) or Title V permit. The Court also stated that PSD permits that are otherwise required [based on emissions of criteria pollutants, such as NO_x and sulfur oxides (SO_x)] may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT). The U.S. EPA is currently evaluating the implications of the Court's decision and awaiting further action by the U.S. Courts.

Notwithstanding the Supreme Court's decision, beginning January 2, 2011, GHG emissions from the largest stationary sources are covered by the PSD and Title V Operating Permit Programs. These permitting programs, required under the FCAA, are established mechanisms for protecting air quality and are now being used to regulate GHG emissions. However, the major source thresholds established by the FCAA (i.e., 100 or 250 MT per year depending on pollutant and attainment status) were designed for criteria pollutants, such as NO_x and SO_x, and were not designed to be applied to GHGs, which are emitted in much larger quantities. In response, on May 13, 2010, the U.S. EPA issued the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule [Federal Register (FR) Volume 75 Page 31514, 40 CFR Parts 51, 52, 70, and 71, effective August 2, 2010], which established a new quantitative approach to permitting GHG emissions under PSD and Title V. The Tailoring Rule set initial emissions thresholds, designated as Steps 1 and 2, for permitting based on CO_2e emissions. Step 3 of the rule will introduce plant-wide applicability limitations (PALs) for GHG emissions from certain types of facilities (U.S. EPA 2014c).

On June 19, 2019, EPA issued the final Affordable Clean Energy rule (ACE) – replacing the Clean Power Plan. These rules will significantly reduce GHG emissions from existing coal-fired power plants and from new natural gas turbines, ensuring that all long-term coal-fired plants and base load new gas-fired plants control 90% of their carbon pollution. EPA has evaluated the emissions reductions, benefits, and costs of the final carbon pollution standards in a Regulatory Impact Analysis (RIA). The RIA projects reductions of 1.38 billion metric tons of CO_2 systemwide through 2047 along with tens of thousands of tons of $PM_{2.5}$, SO_2, and NOx – harmful air pollutants that are known to endanger public health.

3.2.1.2 40 CFR Part 98 – Greenhouse Gas Reporting

On October 30, 2009, the U.S. EPA issued the Mandatory Reporting of Greenhouse Gases Rule [74 FR 56260, Code of Federal Regulations (CFR) Title 40 Part 98, effective December 29, 2009], which requires reporting of GHG data and other relevant information from large sources and suppliers in the United States pursuant to the Fiscal Year 2008 Consolidated Appropriations Act [U.S. House of Representatives (HR) 2764; Public Law 110-161].

The rule facilitates collection of accurate and comprehensive emissions data to provide a basis for future U.S. EPA policy decisions and regulatory initiatives. The rule requires specified industrial source categories and facilities with an aggregated heat input of 30 million British thermal units (Btu) or more per hour or that emit 25,000 MT or more per year of GHGs to submit annual reports to the U.S. EPA. The gases covered by the rule are CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and other fluorinated gases, including NF_3 and hydrofluorinated ethers.

3.2.2 State Authority

3.2.2.1 Global Warming Solutions Act

The Global Warming Solutions Act of 2006 (AB 32, Núñez, Chapter 488, Statutes of 2006) codifies California's goal of reducing statewide emissions of GHGs to 1990 levels by 2020, down to about 427 million MT CO_2e on a statewide basis (CARB 2008). This reduction will be accomplished through an enforceable statewide cap on GHG emissions commencing in 2012 (see Cap and Trade section below) to achieve maximum technologically feasible and cost-effective GHG emissions reductions. In order to effectively implement the cap, AB 32 directs CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

In June 2007, CARB directed staff to pursue 37 early actions for reducing GHG emissions under AB 32. The broad spectrum of strategies to be developed includes a Low Carbon Fuel Standard (LCFS), regulations for refrigerants with high GWPs, guidance and protocols for local governments to facilitate GHG reductions, and "green ports" (CARB 2007).

In December 2008, CARB approved the AB 32 Scoping Plan outlining the State's strategy to achieve the 2020 GHG emissions limit. This Scoping Plan, developed by CARB in coordination with the Climate Action Team, proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health (CARB 2008).

3.2.2.2 Cap and Trade

Under AB 32, CARB's "Cap and Trade" regulation (Subchapter 10, Article 5, Sections 95800 to 96023, Title 17, California Code of Regulations) is a set of rules (effective September 1, 2012) that establishes a limit on GHG emissions from the largest sources of GHGs in the State. The purpose of the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms is to reduce emissions of GHGs from affected stationary sources through the establishment, administration, and enforcement of an aggregate GHG allowance budget and to provide a trading mechanism for compliance instruments (i.e., "GHG allowances" or "carbon credits"). The Cap-and-Trade program was officially extended to 2030 under AB 398, passed in 2017.

3.2.2.3 Executive Order S-3-05

On June 1, 2005, Executive Order S-3-05 was issued, establishing GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80% below 1990 levels. SB 32 and AB 197 provided additional GHG reduction targets of 40% from 1990 levels by 2030 and to rank GHG emissions reduction measures.

3.2.2.4 Executive Order S-1-07

On January 18, 2007, the LCFS was issued, mandating a reduction of at least 10% in the carbon intensity of California's transportation fuels by 2020. It instructed the California EPA to coordinate activities among the University of California, the California Energy Commission (CEC), and other State agencies to develop and propose a draft compliance schedule to meet the 2020 target. Furthermore, it directed CARB to consider initiating regulatory proceedings to establish and implement the LCFS. In response, CARB identified the LCFS as an early action item with a regulation to be adopted and implemented by 2010.

The LCFS, administered by CARB, uses a market-based cap-and-trade approach to lowering the GHG emissions from petroleum-based transportation fuels, like reformulated gasoline and diesel. The LCFS requires producers of petroleum-based fuels to reduce the carbon intensity of their products, beginning with 0.25% in 2011 and culminating in a 10% total reduction in 2020. Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, or hydrogen (LCFS). Updates to the LCFS regulation passed in 2018 now require a 20% total reduction by 2030.

3.2.2.5 Senate Bill 1368

California SB 1368 adds Sections 8340 and 8341 to the Public Utilities Code (effective January 1, 2007) with the intent "to prevent long-term investments in power plants with GHG emissions in excess of those produced by a combined-cycle natural gas power plant" with the aim of "reducing emissions of GHGs from the state's electricity consumption, not just the state's electricity production." SB 1368 provides a mechanism for reducing the GHG emissions of electricity providers, both in-State and out of State, thereby assisting CARB in meeting its mandate under AB 32, the Global Warming Solutions Act of 2006.

3.2.2.6 Executive Order B-55-18 and Assembly Bill 1279

In 2018, Executive Order B-55-18 was issued, establishing a new statewide goal to be carbon neutral as soon as possible and no later than 2045, and maintain net negative emissions afterwards. This was codified into law under AB 1279 in 2022.

3.2.2.7 Senate Bill 350 and 100

SB 350, approved in 2015, requires that 50% of electricity come from renewable sources by 2030, an increase of 33% from 2020, and double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation. SB 100, approved in 2018, revised the renewable resource targets to 44% by 2024, 52% by the end of 2027, and 60% of electricity from renewable sources by 2030. SB 100 also requires that the appropriate agencies plan for 100% of total retail sales of electricity to come from eligible renewable energy resources and zero-carbon sources by the end of 2045.

3.2.2.8 Senate Bill 605, Short-Lived Climate Pollutants

SB 605 requires that the State complete an inventory of sources and emissions of short-lived climate pollutants (including methane) in the State based on available data, identify research needs to address any data gaps, identify existing and potential new control measures to reduce emissions, prioritize the development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other air pollutants, and coordinate with other State agencies and districts to develop measures identified as part of the comprehensive strategy.

3.2.2.9 Senate Bill 253, Climate Corporate Data Accountability Act

SB 253 requires both public and private businesses with revenues greater than $1 billion doing business in California to report their emissions comprehensively, including Scope 1, 2, and 3 emissions based on methodology from The Greenhouse Gas Protocol, beginning in 2026. Reporting companies will be required to have reports verified by a third party. This law requires CARB to pass regulation to comply with this bill by January 1, 2025, and reporting companies to pay fees to administer this program. The report shall be submitted to CARB and made public on the company's website.

3.2.2.10 Senate Bill 261, Climate-Related Financial Risk Act

SB 261 requires any business entity with revenues greater than $500 million to prepare a biennial climate-related financial risk report. Reporting is required to start in 2026 and be completed using the framework and disclosures contained in the Final Report of Recommendations of the Task Force on Climate-related Financial Disclosures or equivalent reporting requirements. This report shall be submitted to CARB and made public on the company's website.

3.2.2.11 CEQA Guidelines Revisions

In 2007, the State legislature passed SB 97, which required amendment of the CEQA Guidelines to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009. Following review by the Office of Administrative Law and filing with the Secretary of State for inclusion in the California Code of Regulations, the CEQA Guidelines revisions became effective March 18, 2010.

In late 2018, the California Natural Resources Agency finalized amendments to the CEQA Guidelines, including changes to CEQA Guidelines Section 15064.4, which addresses the analysis of GHG emissions. The amendments became effective on December 28, 2018.

The revisions to CEQA Guidelines Section 15064.4 clarified several points, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects. [CEQA Guidelines, Section 15064.4, subdivision (a).]
- The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. [CEQA Guidelines, Section 15064.4, subdivision (b).]
- The impacts analysis of GHG emissions is global in nature and thus should be considered in a broader context. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. [CEQA Guidelines, Section 15064.4, subdivision (b).]
- Lead agencies should consider a timeframe for the analysis that is appropriate for the project. [CEQA Guidelines, Section 15064.4, subdivision (b).]
- A lead agency's analysis must reasonably reflect evolving scientific knowledge and State regulatory schemes. [CEQA Guidelines, Section 15064.4, subdivision (b).]
- Lead agencies may rely on plans prepared pursuant to Section 15183.5 (Plans for the Reduction of Greenhouse Gases) in evaluating a project's GHG emissions. [CEQA Guidelines, Section 15064.4, subdivision (b)(3).]
- In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies. [CEQA Guidelines, Section 15064.4, subdivision (b)(3).]
- The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. [CEQA Guidelines, Section 15064.4, subdivision (c).]

3.2.3 Local Authority

The SCAQMD Air Quality-Related Energy Policy integrates air quality, energy, and climate change issues in a coordinated and consolidated manner. On September 9, 2011, the SCAQMD adopted ten air quality-related energy policies to guide and coordinate SCAQMD efforts to support the policies. These various policies and initiatives will:

- Promote zero- or near-zero-emission technologies, including ultra-clean energy strategies;
- Encourage "demand-side" energy management through energy efficiency and shifting of some energy use to off-peak hours;
- Encourage "distributed generation," including "renewables," as well as storage of electricity to reduce the need for new, large power plants and transmission lines;
- Acknowledge that some additional fossil-fueled power plants will be needed to accommodate growth and complement intermittent renewable energy sources such as wind and solar, while at the same time ensure that any community impacts from these plants are minimized; and
- Conduct public education and outreach to inform individuals and businesses of the benefits and availability of clean, efficient technologies and energy conservation.

A central part of the SCAQMD's Air Quality-Related Energy Policy is the promotion of renewable energy generation, and California has identified Los Angeles, Riverside, and San Bernardino Counties as locations with substantial renewable generating resource potential in wind and solar power. As indicated by the CEC's Integrated Energy Policy Report, these renewable energy sources will increasingly need to be supported by highly efficient electrical power generating facilities, such as the proposed project.

3.2.4 Local Plans

3.2.4.1 City of Los Angeles

The City of Los Angeles has established and adopted the Green LA initiative along with the City General Plan, which includes goals and policies that would indirectly reduce GHG emissions and climate change impacts through improved energy efficiency (City of Los Angeles 1992). Air Quality Element Goal 5 of the General Plan promotes energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuels, and the implementation of conservation measures, including passive methods such as site orientation and tree planting. Objective 5.1 states that the City will "increase energy efficiency of City facilities and private developments." Furthermore, Policy 5.1.3 states that the City will have LADWP make improvements at its in-basin power plants in order to reduce air emissions, which is the purpose of the proposed project.

3.2.4.2 County of Los Angeles

The County of Los Angeles has adopted a Green Building Ordinance which consists of two components related to new construction projects: Standards of Sustainability and Standards of Sustainable Excellence. The purpose of the ordinance is to incentivize reduced natural resource use during the planning and development of projects within the Los Angeles area. Although this ordinance does not address generation or use of renewable energy, it is consistent with the goals and objectives of the SCAQMD Air Quality-Related Energy Policy and reducing GHG emissions through demand-side management building practices.

3.2.4.3 LADWP

In response to the City of Los Angeles's Green LA initiative, LADWP has implemented various measures and deployed marketing initiatives geared towards reducing GHG emissions and climate change impacts. Measures include the purchase of renewable energy, promotion of energy efficiency, water conservation, improved recycling/reusing, and infrastructure improvements. In 2010, 20% of LADWP power was provided by renewable energy sources. In addition, LADWP offers cash rebates for efficient appliances and exchange programs for inefficient appliances. As one of the largest utility providers in California, LADWP will be required to achieve the Renewable Portfolio Standard (RPS) established under AB 32 as well as emissions performance standards for new base-load generation, established per SB 1368.

To combat climate change while capturing health and economic benefits, the City of Los Angeles has set ambitious goals to transform its electricity supply, aiming for a 100% renewable energy power system by 2045, along with a push to electrify the buildings and transportation sectors. To reach these goals and assess the implications for jobs, electricity rates, the environment, and environmental justice, the Los Angeles City Council passed a series of motions in 2016 and 2017 directing the LADWP to determine the technical feasibility and investment pathways of a 100% renewable energy portfolio standard.

The LADWP partnered with the NREL on the LA100, a study to analyze potential pathways the community can take to achieve a 100% clean energy future. Released in March 2021, the LA100 found that the City of Los Angeles can achieve reliable, 100% renewable power as early as 2035.

3.3 CEQA Thresholds of Significance

3.3.1 Criteria Pollutants, Toxic Air Contaminants, and Odors

The Air Quality section of Appendix G of the CEQA Guidelines (Environmental Checklist Form) contains four air quality significance criteria. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

c) Expose sensitive receptors to substantial pollutant concentrations?

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The SCAQMD air quality significance thresholds for construction and operation to evaluate local and regional impacts are presented in Table 3-2.

3.3.2 Greenhouse Gases

The Greenhouse Gas Emissions section of Appendix G of the CEQA Guidelines contains two GHG significance criteria. Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Electrical generation that serves a distribution grid is part of the California energy system, and a comparison of direct emissions from an individual generation unit does not adequately assess the impact to GHG emissions because of the need to consider electrical generating efficiency on a system-wide basis. The GHG emissions from the proposed project would be offset by reductions in emissions from other generating units whose output would be displaced. Therefore, the established GHG threshold applicable to the proposed project operation is the base-load performance standard from SB 1368 of 1,100 pounds CO_2 per megawatt-hour (MWh)-Net and the federal New Source Performance Standard for Greenhouse Gas for Electric Generating Units (NSPS Subpart TTTT) of 1,000 pounds per MWh-Gross.

For project construction, the SCAQMD CEQA threshold of significance for GHGs for industrial facilities is 10,000 MT per year CO_2e (Table 3-2). This threshold accounts for emissions generated during construction, which are amortized over a 30-year projected project lifetime.

Table 3-2: SCAQMD CEQA Thresholds of Significance

<table>
<tr><th>Pollutant</th><th>Project Construction</th><th>Project Operation</th></tr>
<tr><td colspan="3">Mass Daily Thresholds (lbs/day)</td></tr>
<tr><td>ROG (VOC)</td><td>75</td><td>55</td></tr>
<tr><td>CO</td><td>550</td><td>550</td></tr>
<tr><td>NO_x</td><td>100</td><td>55</td></tr>
<tr><td>SO_x</td><td>150</td><td>150</td></tr>
<tr><td>PM_{10}</td><td>150</td><td>150</td></tr>
<tr><td>$PM_{2.5}$</td><td>55</td><td>55</td></tr>
<tr><td colspan="3">Ambient Air Quality Standards for Criteria Pollutants</td></tr>
<tr><td>1-hour CO</td><td colspan="2">20 ppm (state) and 35 ppm (federal)</td></tr>
<tr><td>8-hour CO</td><td colspan="2">9.0 ppm (state/federal)</td></tr>
<tr><td>1-hour NO_2</td><td colspan="2">0.18 ppm (state); 0.100 ppm (federal – 98^{th} percentile)</td></tr>
<tr><td>Annual NO_2</td><td colspan="2">0.03 ppm (state) & 0.053 ppm (federal)</td></tr>
<tr><td>1-hour SO_2</td><td colspan="2">0.25 ppm (state) & 0.075 ppm (federal – 99^{th} percentile)</td></tr>
<tr><td>24-hour SO_2</td><td colspan="2">0.04 ppm (state); 0.14 ppm (federal)</td></tr>
<tr><td>Annual SO_2</td><td colspan="2">0.030 ppm (federal)</td></tr>
<tr><td>24-hour Sulfate</td><td colspan="2">25 ug/m^3 (state)</td></tr>
<tr><td>24-hour PM_{10}</td><td colspan="2">50 ug/m^3 (state); 150 ug/m^3 (federal)</td></tr>
<tr><td>Annual PM_{10}</td><td colspan="2">20 $\mu g/m^3$ annual average (state)</td></tr>
<tr><td>24-hour $PM_{2.5}$</td><td colspan="2">35 $\mu g/m^3$ annual average (federal)</td></tr>
<tr><td>Annual $PM_{2.5}$</td><td colspan="2">12 ug/m^3 (state); 9 ug/m^3 (federal)</td></tr>
<tr><td>30-day Average Lead</td><td colspan="2">1.5 ug/m^3 (state)</td></tr>
<tr><td>Rolling 3-month Average Lead</td><td colspan="2">0.15 ug/m^3 (federal)</td></tr>
<tr><td>24-hour Vinyl Chloride</td><td colspan="2">0.01 ppm (state)</td></tr>
<tr><td>1-hour H_2S</td><td colspan="2">0.03 ppm (state)</td></tr>
<tr><td>24-hour PM_{10} Significant Change</td><td>10.4 $\mu g/m^3$</td><td>2.5 $\mu g/m^3$</td></tr>
<tr><td>Annual PM_{10} Significant Change</td><td colspan="2">1.0 $\mu g/m^3$ annual average</td></tr>
<tr><td>24-hour $PM_{2.5}$ Significant Change</td><td>10.4 $\mu g/m^3$</td><td>2.5 $\mu g/m^3$</td></tr>
<tr><td colspan="3">Toxic Air Contaminants (TACs), Odor, and GHG Thresholds</td></tr>
<tr><td rowspan="3">TACs (including carcinogens and non-carcinogens)</td><td colspan="2">Maximum Incremental Cancer Risk ≥10 in one million</td></tr>
<tr><td colspan="2">Cancer Burden >0.5 excess cancer cases (in areas ≥1 in one million)</td></tr>
<tr><td colspan="2">Chronic & Acute Hazard Index ≥1.0 (project increment)</td></tr>
<tr><td>Odor</td><td colspan="2">Project creates an odor nuisance pursuant to Rule 402</td></tr>
<tr><td rowspan="2">GHGs</td><td colspan="2">10,000 MT/yr CO_2e for industrial facilities</td></tr>
<tr><td colspan="2">Efficiency standards: 1,110 lb/MWh-Net (SB1368);
1,000 lb/MWh-Gross (NSPS TTTT)</td></tr>
</table>

Sources: SCAQMD 2023, CARB 2024, SB 1368, NSPS TTTT.

4.0 AIR QUALITY AND GREENHOUSE GAS IMPACTS ANALYSES

In order to evaluate the potential air quality and GHG impacts of a proposed project, quantitative significance criteria established by the local air quality agency, such as the SCAQMD, may be relied upon to make significance determinations based on mass emissions of criteria pollutants and GHGs, as presented in this report.

4.1 Criteria Pollutants from Project Construction and Commissioning

4.1.1 Construction

The construction analysis was performed using CalEEMod version 2022.1.1.20, the official statewide land use computer model designed to provide a uniform platform for estimating potential criteria pollutant and GHG emissions associated with both construction and operations of land use projects under CEQA. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The mobile source emission factors used in the model – published by CARB – include the Pavley standards and LCFS. The model also identifies project design features, regulatory measures, and control measures to reduce criteria pollutant and GHG emissions, along with calculating the benefits achieved from the selected measures. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the SCAQMD, the Bay Area Air Quality Management District (BAAQMD), the San Joaquin Valley Air Pollution Control District (SJVAPCD), and other California air districts. Default land use data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) were provided by the various California air districts to account for local requirements and conditions. As the official assessment methodology for land use projects in California, CalEEMod is relied upon herein for construction emissions quantification, which forms the basis for the impact analysis.

The proposed project would take approximately 3.5 years of planned work activities (i.e., from mobilization to substantial completion) comprising seven construction phases, including commissioning:

1. Demolition
2. Site preparation
3. Grading
4. Building construction
5. Paving
6. Architectural coating
7. Commissioning

Based on information received from LADWP, land use data used for CalEEMod input is presented in Table 4-1 and the preliminary construction schedule is shown in Table 4-2. The SCAQMD quantitative significance thresholds shown in Table 3-2 were used to evaluate project emissions impacts (SCAQMD 2023). Offroad equipment types, quantities, usage hours, horsepower (hp) ratings and load factors, and onroad trip rates and trip distances for the construction phases are shown in Tables 4-3 and 4-4. The proposed list of offroad construction equipment shown in Table 4-3 identifies the planned use of Tier 4 Final equipment as emissions reduction/mitigation measures. The CalEEMod default trip distance of 18.5 miles for the region was used for the construction workers' commuting. Table 4-4 summarizes the construction and demolition trip rates and mileages.

This schedule and data are preliminary/subject to change and are dependent on when the required construction permits are issued; this information represents a reasonable construction scenario to be used for emissions estimation.

Table 4-1: Land Use Data for CalEEMod Input

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Square Feet	Acres Disturbed
Industrial	General Heavy Industry	260.00	1,000 sf	5.97	260,000	5.97
Project Size		**260.0**	**1,000 sf**	**5.97**	**260,000**	**5.97**

Sources: Applicant 2023, CalEEMod version 2022.1.1.20.

Notes:

Electric utility: Los Angeles Department of Water & Power

Gas utility: Southern California Gas Company

Table 4-2: Proposed Project Preliminary Construction Schedule by Phase

Phase Name	CalEEMod Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase
Demolition	Demolition	4/3/2026	4/30/2026	5	20
Mobilization	Architectural Coating	5/1/2026	6/30/2026	5	43
Site Preparation	Site Preparation	7/1/2026	9/30/2026	5	66
Grading	Grading	10/1/2026	3/31/2027	5	130
Building Construction	Building Construction	2/1/2027	6/29/2029	5	630
Paving	Paving	10/1/2026	11/30/2026	5	43
Architectural Coating	Architectural Coating	3/1/2028	6/29/2029	5	348
Commissioning	Architectural Coating	7/1/2029	12/28/2029	5	130

Notes:

In order to account for the worker and hauling trips for the mobilization and commissioning phases, two additional architectural coating phases were added in CalEEMod.

No offroad equipment would be used during mobilization and commissioning phases.

The emissions from the stationary sources of the commissioning phase are discussed in Section 4.1.2.

Table 4-3: Proposed Project Offroad Construction Equipment Used for CalEEMod Input

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	hp	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Tier 4 Final	2	8	367	0.4
	Concrete/Industrial Saws	Diesel	Average	1	8	33	0.73
	Excavators	Diesel	Average	3	8	36	0.38
Site Preparation	Aerial Lifts	Diesel	Average	5	6	63	0.31
	Air Compressors	Diesel	Average	1	6	78	0.48
	Bore/Drill Rigs	Diesel	Tier 4 Final	1	6	206	0.5
	Cranes	Diesel	Tier 4 Final	1	6	226	0.29
	Pumps	Diesel	Tier 4 Final	1	2	84	0.74
	Rubber Tired Loaders	Diesel	Tier 4 Final	5	6	200	0.36
Grading	Graders	Diesel	Tier 4 Final	1	6	175	0.41
	Rollers	Diesel	Tier 4 Final	1	6	81	0.38
	Rubber Tired Dozers	Diesel	Tier 4 Final	1	6	255	0.4
	Rubber Tired Dozers	Diesel	Tier 4 Final	1	4	255	0.4
Building Construction (includes Civil Earthwork, Foundations, Structural Steel, Mechanical, Electrical)	Aerial Lifts	Diesel	Average	12	6	63	0.31
	Air Compressors	Diesel	Average	1	6	78	0.48
	Cranes	Diesel	Tier 4 Final	8	6	226	0.29
	Excavators	Diesel	Tier 4 Final	2	6	163	0.38
	Forklifts	Diesel	Tier 4 Final	7	6	89	0.2
	Welders	Electric	Average	6	6	46	0.45
	Generator Sets	Diesel	Tier 4 Final	4	6	84	0.74
	Graders	Diesel	Tier 4 Final	1	6	175	0.41
	Other Construction Equipment	Diesel	Tier 4 Final	2	6	82	0.42
	Other General Industrial Equipment	Diesel	Average	3	6	35	0.34
	Pumps	Diesel	Tier 4 Final	1	4	84	0.74
	Rollers	Diesel	Tier 4 Final	3	6	81	0.38
	Rubber Tired Dozers	Diesel	Tier 4 Final	5	6	255	0.4
	Rubber Tired Loaders	Diesel	Tier 4 Final	1	6	200	0.36

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	hp	Load Factor
	Scrapers	Diesel	Tier 4 Final	4	6	362	0.48
	Skid Steer Loaders	Diesel	Average	2	6	65	0.37
	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	5	6	98	0.37
	Trenchers	Diesel	Tier 4 Final	2	6	81	0.5
Paving	Cranes	Diesel	Tier 4 Final	2	6	226	0.29
Paving	Excavators	Diesel	Tier 4 Final	1	6	163	0.38
Paving	Other Construction Equipment	Diesel	Tier 4 Final	1	4	172	0.42
Paving	Pumps	Diesel	Tier 4 Final	1	2	84	0.74
Paving	Rollers	Diesel	Tier 4 Final	1	6	81	0.38
Paving	Rubber Tired Loaders	Diesel	Tier 4 Final	1	6	200	0.36
Architectural Coating	Air Compressors	Diesel	Average	2	6	78	0.48

Notes:

Load factors are CalEEMod defaults.

Demolition equipment types, quantities, hours of operations, hp, and load factors are CalEEMod defaults.

Offroad construction equipment above 80 hp are assumed to be equipped with Tier 4 Final engines.

Table 4-4: Proposed Project Construction Traffic Summary

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	Hauling	1	20	HHDT
	Worker	15	18.5	LDA,LDT1,LDT2
Mobilization	Hauling	6	20	HHDT
	Worker	35	18.5	LDA,LDT1,LDT2
Site Preparation	Hauling	38	20	HHDT
	Worker	91	18.5	LDA,LDT1,LDT2
Grading	Hauling	134	12	HHDT
	Worker	83	18.5	LDA,LDT1,LDT2
Building Construction	Hauling	44	20	HHDT
	Worker	649	18.5	LDA,LDT1,LDT2
Paving	Hauling	10	20	HHDT
	Worker	91	18.5	LDA,LDT1,LDT2
Architectural Coating	Worker	130	18.5	LDA,LDT1,LDT2
Commissioning	Hauling	4	20	HHDT
	Worker	35	18.5	LDA,LDT1,LDT2

Notes: HHDT = heavy-heavy duty trucks; LDA = light-duty auto; LDT1 = light-duty truck type 1; and LDT2 = light-duty truck type 2

Demolition trip rates and mileages are CalEEMod defaults.

Worker mileages for all phases are CalEEMod defaults.

Worker trip rates for site preparation, grading, building construction, paving, and architectural coating were provided by LADWP.

Hauling trip rates and mileages for site preparation, grading, building construction, paving, and architectural coating were provided by LADWP.

A project's construction phase produces many types of emissions; generally, PM_{10} (including $PM_{2.5}$) in fugitive dust and diesel engine exhaust is the pollutant of greatest concern. Construction-related emissions can cause substantial increases in localized concentrations of PM_{10}, as well as affecting PM_{10} compliance with ambient air quality standards on a regional basis. The use of diesel-powered construction equipment emits ozone precursors NO_x and reactive organic gases (ROG), as well as diesel particulate matter (DPM). Use of architectural coatings and other materials associated with finishing buildings may also emit ROG and TACs. CEQA significance thresholds address the impacts of construction activity emissions on local and regional air quality. Thresholds are also provided for other potential impacts related to project construction, such as TACs.

The SCAQMD's approach to CEQA analyses of fugitive dust impacts is to require implementation of effective and comprehensive dust control measures rather than to require detailed quantification of emissions. PM_{10} emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors, making quantification difficult. Despite this variability in emissions, experience has shown that there are several feasible control measures that can be reasonably implemented to significantly reduce fugitive dust emissions from construction. For larger projects, the SCAQMD has determined that compliance with an approved fugitive dust control plan comprising Best Management Practices (BMPs), primarily through frequent water application, constitutes sufficient control to reduce PM_{10} impacts to a level considered less than significant. The fugitive dust control BMPs will be implemented for the proposed Project. These BMPs are required for compliance with SCAQMD rules and pursuant to CEQA, are not considered mitigations.

Table 4-5 shows criteria pollutant emissions from construction and evaluates emissions against SCAQMD significance thresholds.

As shown in Table 4-5, mass emissions of criteria pollutants from construction are below applicable SCAQMD significance thresholds with the specific use of Tier 4 Final equipment (AQ-MM-1).

PROJECTED IMPACT: Less Than Significant with Mitigation Incorporated (LTSM)

Table 4-5: Construction Emissions Summary and Significance Evaluation

Criteria Pollutants	Unmitigated	Mitigated	Threshold	Significance
	lbs/day	lbs/day	lbs/day	
ROG (VOC)	14.7	5.9	75	LTSM
NO_x	132.0	34.2	100	LTSM
CO	163.1	179.6	550	LTSM
SO_x	0.29	0.29	150	LTSM
Total PM_{10}	25.2	14.9	150	LTSM
Total $PM_{2.5}$	11.5	4.7	55	LTSM

Sources: SCAQMD 2023, CalEEMod version 2022.1.1.20.

Notes:

lbs/day are winter or summer maxima for planned land use

Total PM_{10}/$PM_{2.5}$ comprises fugitive dust plus engine exhaust

4.1.2 Mitigation Measures

AQ-MM-1: Offroad construction equipment greater than 80 hp shall be equipped with Tier 4 Final engines.

4.1.3 Commissioning

Commissioning emissions were estimated based on emissions data provided by the equipment manufacturer for each of the proposed turbine technologies. The maximum daily commissioning emissions profile from each of the proposed technologies is presented in Table 4-6.

Table 4-6: Maximum Commissioning Emissions Summary

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Vendor A Total Peak Emissions (lb/day)	1,600	26,800	4,400	58	280	280
Vendor B Total Peak Emissions (lb/day)	61,783	273,588	8,264	74	204	204
Vendor C Total Peak Emissions (lb/day)	5,345	62,223	3,695	43	252	252
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	374	374
Vendor A Incremental Change in Emissions (lb/day)	1,330	23,507	3,468	23.3	-93.6	-93.6
Vendor B Incremental Change in Emissions (lb/day)	61,513	270,295	7,332	38.6	-169.3	-169.3
Vendor C Incremental Change in Emissions (lb/day)	5,074.5	58,930	2,763	7.6	-122.0	-122.0
SCAQMD Construction Mass Daily Emission Threshold (lb/day)	75	550	100	150	150	55
Vendor A Exceed SCAQMD Threshold (Y/N)	Y	Y	Y	N	N	N
Vendor B Exceed SCAQMD Threshold (Y/N)	Y	Y	Y	N	N	N
Vendor C Exceed SCAQMD Threshold (Y/N)	Y	Y	Y	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 continuous emissions monitoring system (CEMS) data.

Since commissioning activities are not the intended use of the proposed equipment and none of the generated energy will be distributed to the grid during commissioning, the incremental changes in peak daily emissions are compared to the SCAQMD's regional mass daily significance thresholds for construction in Table 4-6. The baseline is the daily emissions determined from the past 2 years of historical data for existing Units 1 & 2 on the day with highest fuel use, and the incremental change is the difference between the peak daily commissioning profile and the baseline. Emissions during the commissioning phase of the proposed project are anticipated to exceed the significance thresholds for VOCs, CO, and NO_x. The commissioning phase consists of testing and tuning the equipment and combustor to obtain peak performance and optimally install the SCR and oxidation catalyst. Until the tuning and equipment installations are completed during the commissioning phase, emissions will temporarily be high compared to normal operation. Therefore, because the commissioning activities inherently consist of uncontrolled emissions that cannot be limited and no practical mitigation can be applied, air quality impacts associated with commissioning are considered significant and unavoidable.

4.2 Criteria Pollutants from Operations

The term "project operations" refers to the full range of activities that can or may generate criteria pollutant, GHG, and TAC emissions when the project is functioning in its intended use. CEQA significance thresholds address the impacts of operational emissions sources on local and regional air quality.

Operational emissions from each of the proposed turbine vendors were estimated for operations firing 100% natural gas and for operations firing a fuel mix of 70% natural gas and 30% hydrogen. Peak daily project emissions are presented in Table 4-7 through Table 4-14 for each equipment option. Peak daily emissions from the proposed units were estimated assuming one cold start per day, one shutdown per day, and maximum operation for the remainder of the day. These were compared to baseline, defined as the daily emissions determined from the past 2 years of historical data for existing Unit 1 and Unit 2 on the day with highest fuel use. The emissions change between the baseline and the proposed units was compared to the SCAQMD CEQA operations significance thresholds. Emissions during operations of the proposed project are anticipated to exceed the significance thresholds for VOCs. Therefore, air quality impacts associated with operations are considered potentially significant.

The proposed WSAC is a potential source of PM_{10} emissions. The proposed WSAC would be equipped with BACT and would be a similar size as the WSAC being replaced. In a recent repowering project at SGS, PM_{10} emissions from the WSAC were 1.7 pounds per day and contributed 1% of the peak daily emissions. Emissions from the WSAC in this project are assumed to be negligible, and only emissions from the turbines were used to determine if impacts are potentially significant.

Table 4-7: Peak Daily Emission Change for Vendor A, 100% Natural Gas

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Cold Startup Emissions (lb/hr)	54.0	495	109	0.883	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	54.0	495	109	0.883	6.2	6.2
Shutdown Emissions (lb/hr)	152	1,142	152	0.37	2.6	2.6
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	76.0	571	76.0	0.187	1.30	1.30
Normal Ops Emissions (lb/hr)	6.10	8.00	17.6	2.00	8.27	8.27
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	137	180	396	45.0	186	186
Total Peak Daily Emissions (lb/day)	267	1,246	581	46.1	194	194
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-3.1	-2,047	-351	11.0	-180.0	-180.0
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-8: Peak Daily Emission Change for Vendor A, 70% Natural Gas, 30% Hydrogen

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Cold Startup Emissions (lb/hr)	54	495	109	0.88	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	54.0	495	109	0.883	6.2	6.2
Shutdown Emissions (lb/hr)	152	1,142	152	0.37	2.6	2.6
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	76.0	571	76.0	0.187	1.30	1.30
Normal Ops Emissions (lb/hr)	5.90	7.80	17.10	1.90	8.17	8.17
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	133	176	385	42.8	184	184
Total Peak Daily Emissions (lb/day)	263	1,242	570	43.8	191	191
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-7.6	-2,051	-362	8.7	-182.2	-182.2
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-9: Peak Daily Emission Change for Vendor B, 100% Natural Gas

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Cold Startup Emissions (lb/hr)	520	1400	60	1.05	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	520	1400	60	1.05	6.2	6.2
Shutdown Emissions (lb/hr)	500	1,460	80	1.24	7.2	7.2
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	250.0	730	40.0	0.621	3.60	3.60
Normal Ops Emissions (lb/hr)	7.30	10.00	21	2.04	10.18	10.18
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	164	225	473	45.9	229	229
Total Peak Daily Emissions (lb/day)	934	2,355	573	47.6	239	239
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	664	-938	-359	12.5	-134.7	-134.7
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-10: Peak Daily Emission Change for Vendor B, 70% Natural Gas, 30% Hydrogen

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Cold Startup Emissions (lb/hr)	520	1,400	60.0	1.0	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	520	1,400	60.0	1.0	6.2	6.2
Shutdown Emissions (lb/hr)	500	1,460	80.0	1.2	7.2	7.2
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	250	730	40.0	0.6	3.6	3.6
Normal Ops Emissions (lb/hr)	7.1	10.0	21.0	1.8	9.6	9.6
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	160	225	473	41	216	216
Total Peak Daily Emissions (lb/day)	929.8	2,355.0	572.5	42.4	226.0	226.0
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	373.6	373.6
Incremental Change in Emissions (lb/day)	659	-938	-359	7.3	-147.5	-147.5
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-11: Peak Daily Emission Change for Vendor C, 100% Natural Gas

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Cold Startup Emissions (lb/hr)	82.1	900	79.5	1.019	7.35	7.35
Cold Startup Duration (hr/day)	0.67	0.67	0.67	0.67	0.67	0.67
Cold Startup Emissions (lb/day)	54.7	600	53	0.679	4.90	4.90
Shutdown Emissions (lb/hr)	161	459	93.4	0.81	8.87	8.87
Shutdown Duration (hr/day)	0.38	0.38	0.38	0.38	0.38	0.38
Shutdown Emissions (lb/day)	61.9	176	35.8	0.310	3.40	3.40
Normal Ops Emissions (lb/hr)	5.90	7.80	17	1.70	9.1	9.1
Normal Ops Duration (hr/day)	22.95	22.95	22.95	22.95	22.95	22.95
Normal Ops Emissions (lb/day)	135	179	390	39.0	209	209
Total Peak Daily Emissions (lb/day)	252	955	479	40.0	217	217
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-18.3	-2,338	-453	4.9	-156.4	-156.4
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-12: Peak Daily Emission Change for Vendor C, 70% Natural Gas, 30% Hydrogen

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Cold Startup Emissions (lb/hr)	82.1	900	79.5	1.019	7.35	7.35
Cold Startup Duration (hr/day)	0.67	0.67	0.67	0.67	0.67	0.67
Cold Startup Emissions (lb/day)	54.7	600	53.0	0.679	4.90	4.90
Shutdown Emissions (lb/hr)	161	459	93	1	9	9
Shutdown Duration (hr/day)	0.38	0.38	0.38	0.38	0.38	0.38
Shutdown Emissions (lb/day)	61.9	176	35.8	0.310	3.40	3.40
Normal Ops Emissions (lb/hr)	5.80	7.60	16.60	1.50	9.90	9.90
Normal Ops Duration (hr/day)	22.95	22.95	22.95	22.95	22.95	22.95
Normal Ops Emissions (lb/day)	133	174	381	34.4	227	227
Total Peak Daily Emissions (lb/day)	250	950	470	35.4	236	236
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-20.6	-2,343	-462	0.3	-138.0	-138.0
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-13: Summary of Peak Daily Emission Change for All Vendors, 100% Natural Gas

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Vendor A Total Peak Emissions (lb/day)	267	1,246	581	46.1	194	194
Vendor B Total Peak Emissions (lb/day)	934	2,355	573	47.6	239	239
Vendor C Total Peak Emissions (lb/day)	252	955	479	40.0	217	217
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	374	374
Vendor A Incremental Change in Emissions (lb/day)	-3.1	-2,047	-351	11.0	-180.0	-180.0
Vendor B Incremental Change in Emissions (lb/day)	664	-938	-359	12.5	-134.7	-134.7
Vendor C Incremental Change in Emissions (lb/day)	-18.3	-2,338	-453	4.9	-156.4	-156.4
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Vendor A Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N
Vendor B Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N
Vendor C Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

Table 4-14: Summary of Peak Daily Emission Change for All Vendors, 70% Natural Gas, 30% Hydrogen

	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Vendor A Total Peak Emissions (lb/day)	263	1,242	570	43.8	191	191
Vendor B Total Peak Emissions (lb/day)	930	2,355	573	42.4	226	226
Vendor C Total Peak Emissions (lb/day)	250	950	470	35.4	236	236
Baseline: Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	374	374
Vendor A Incremental Change in Emissions (lb/day)	-7.6	-2,051	-362	8.7	-182.2	-182.2
Vendor B Incremental Change in Emissions (lb/day)	659	-938	-359	7.3	-147.5	-147.5
Vendor C Incremental Change in Emissions (lb/day)	-20.6	-2,343	-462	0.3	-138.0	-138.0
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Vendor A Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N
Vendor B Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N
Vendor C Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Source: Vendor data; LADWP Unit 1 and 2 CEMS data.

4.3 CAAQS/NAAQS Modeling Analysis

In addition to the emissions analyses, the SCAQMD generally requires that an ambient air quality impact analysis (AQIA) be performed to ensure that there are no localized impacts that would cause or contribute to an exceedance of any State or national ambient air quality standard. Emissions which cause or contribute to an exceedance of an applicable standard would be considered to be a potentially significant impact.

4.3.1 Air Dispersion Model

The air dispersion model used for this AQIA is the American Meteorological Society/Environmental Protection Agency (**A**MS/**E**PA) **R**egulatory **Mod**el (AERMOD). AERMOD is a steady-state plume dispersion model that incorporates air dispersion calculations based on planetary boundary layer turbulence structure and scaling concepts. AERMOD includes the treatment of both surface and elevated sources and simple and complex terrain. AERMOD, like most dispersion models, uses mathematical algorithms to characterize the atmospheric processes that disperse pollutants emitted by a source. Using emission rates, release parameters, terrain characteristics, and meteorological inputs, AERMOD calculates downwind pollutant concentrations at specified receptor locations.

The Lakes Environmental Software implementation/user interface, AERMOD View™, version 12.0.0, was used for this project. This version of AERMOD View™ implements version 23132 of AERMOD.

4.3.1.1 Modeling Options

AERMOD View™ allows the user to select from a variety of dispersion options. For this project, "Regulatory Default" options were used. The shoreline fumigation and inversion break-up were evaluated and had negligible effect on results.

4.3.1.1.1 Meteorological Data

Five years of AERMOD-ready preprocessed meteorological data files for 2012-2016 were obtained from SCAQMD for the LAX meteorological station (SCAQMD 2016).

4.3.1.1.2 Terrain Data

Digital elevation data were imported into AERMOD and elevations were assigned to receptors, buildings, and emissions sources, as necessary. National Elevation Dataset (NED) elevation data were obtained through the AERMOD View™ WebGIS import feature. The dataset has a resolution of approximately 10 meters.

4.3.1.1.3 Urban/Rural Dispersion Coefficient

Consistent with SCAQMD guidance, the model uses urban dispersion coefficients and the population of the County where the project is located. The project is located in Los Angeles County: the model used a population of 9,818,605.

4.3.1.1.4 Receptor Locations

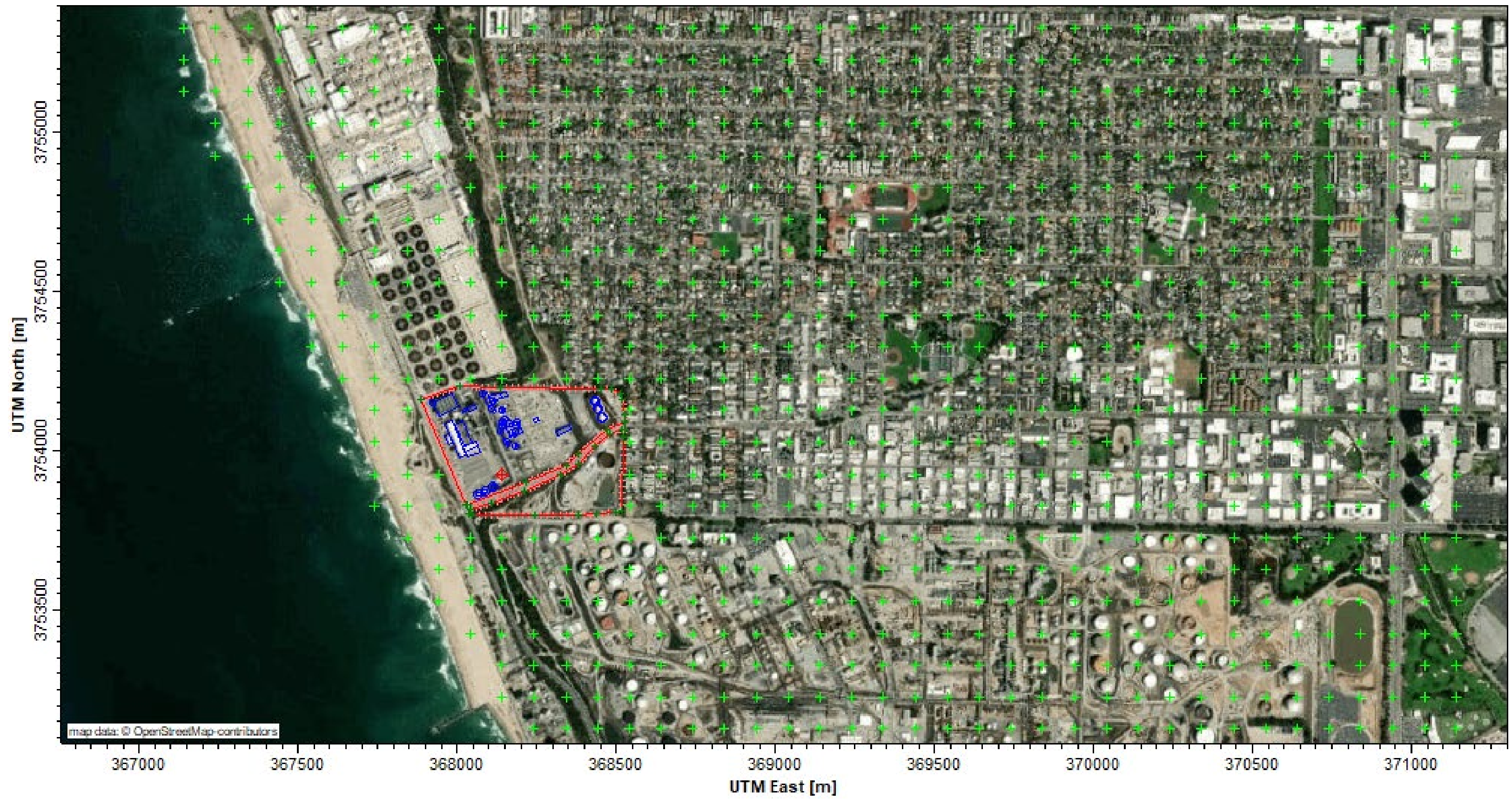
Grid receptors representing ambient air were located:

- Every 20 meters along the facility boundary;
- At 100-meter spacing from the centroid of sources polygon out to 3,000 meters from the centroid of sources polygon; and
- At 500-meter spacing between 3,000 meters from the centroid of sources polygon to between 7,500 meters and 10,000 meters from the centroid of sources polygon.

The receptor grid was then converted to discrete receptors, and discrete receptors over the ocean were deleted as they would cause elevation related errors in the model.

Figure 4-1 shows the facility layout, sources, and receptors near the facility boundary.

Figure 4-1: Operational AQIA Receptor Model Setup



Notes:

- Proposed CCGT source shown in red;
- LADWP facility shown in red;
- Ambient air receptors locations shown in light green.

4.3.1.1.5 Source Information and Release Parameters

AERMOD was run with a unit emission rate [1 gram per second (g/s)] to calculate the concentration of criteria pollutants from each source per unit emission rate, known as X/Q (Chi/Q), for 1-hour, 8-hour, 24-hour, and annual averaging time options per receptor. The modeled X/Q concentration was calculated for each source, at each receptor, for each averaging time, which was then multiplied by each pollutant's emission rate during the averaging period to calculate modeled maximum ground level concentrations.

Source release parameters for each source are shown below in Table 4-15 and correspond to the worst-case dispersion stack parameters (i.e., lowest exhaust flow rate, lowest exhaust temperature) for each vendor and fuel source. Emission rates for each pollutant, per vendor, per fuel type, and averaging period are shown in Appendix B Tables B.5, B.6, B.9, B.10, B.13, B.14, and B.17-B.22.

Table 4-15: Source Parameters – AQIA

Source	Fuel Source	Release Height (ft)	Exhaust Temperature (°F)	Stack Diameter (ft)	Exhaust Flow Rate (acfm)[1]	Exhaust Velocity (m/s)
Vendor A	Natural Gas	213	162.5	19.0	761,333	13.641
Vendor A	H_2 Blend	213	164.7	19.0	784,600	14.058
Vendor B	Natural Gas	180	288.0	23.0	1,042,579	12.748
Vendor B	H_2 Blend	180	289.0	23.0	1,021,058	12.484
Vendor C	Natural Gas	140	163.0	22.0	661,972	8.846
Vendor C	H_2 Blend	140	168.0	22.0	700,515	9.362

1 acfm: actual cubic feet per minute

4.3.1 Commissioning

As commissioning occurs once in the project for a short duration, modeling analyses only examined short-term impacts. The modeling for each of the proposed turbine technologies was conducted for each vendor and is presented in Tables 4-16 to 4-21.

4.3.1.1 Vendor A Commissioning Activities from Natural Gas and H_2 Fuel Blend

The turbine from Vendor A would be commissioned in 25 different phases, comprised of activities using both fuel types (100% natural gas and H_2 blend). The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of natural-gas-based commissioning was modeled using the worst-case dispersion characteristics for any of the natural-gas-based commissioning/operational phases of the Vendor A turbine. This method was repeated for Vendor A hydrogen-fuel-blend-powered commissioning events (i.e., maximum emission rate for each pollutant over all hydrogen-powered phases, coupled with worst-case hydrogen-powered dispersion characteristics). The modeled stack parameters for the combustion turbine are shown in Tables C.2-C.3 of Appendix C.

Ground level concentrations from Vendor A commissioning activity emissions (from either fuel source) are below the CAAQS/NAAQS/SCAQMD thresholds and do not indicate a significant impact on local air quality.

Table 4-16: Modeling Analysis for Commissioning Phase for Vendor A Turbine Activities Using Natural Gas Fuel[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[4]	229.0	2,290.4	2,519	40,082	NAAQS	No
	1-Hour[4]	229.0	2,290.4	2,519	22,904	CAAQS	No
	8-Hour[5]	180.0	1,832.3	2,012	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,4]	50.6	93.8	144.4	188	NAAQS	No
	1-Hour[2,4]	53.1	111.0	164.1	339	CAAQS	No
SO_2	1-Hour[3,4]	0.5	14.0	14.5	196	NAAQS	No
	1-Hour[4]	0.5	60.7	61.2	654	CAAQS	No
	24-Hour[6]	0.2	13.6	13.8	105	CAAQS	No
PM_{10}	24-Hour[6]	0.77	–	0.77	2.5	SCAQMD	No
$PM_{2.5}$	24-Hour[6]	0.77	–	0.77	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor A.
Scenario 3 - Natural Gas Fuel at 60% Load, Normal Operations; Exhaust Flow Rate - 761,333 acfm, Exhaust Temperature - 162.5◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4 1-Hour Averaging Period is Worst Case 1-Hour Emissions from Natural Gas Fuel.

5 8-Hour Averaging Period is 1 - Hour Averaging Period x 8

6 24-Hour Averaging Period is Worst Case Daily Emissions from Natural Gas Fuel

Table 4-17: Modeling Analysis for Commissioning Phase for Vendor A Turbine Activities Using H_2 Fuel Blend[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[4]	4.4	2,290.4	2,295	40,082	NAAQS	No
	1-Hour[4]	4.4	2,290.4	2,295	22,904	CAAQS	No
	8-Hour[5]	3.4	1,832.3	1,836	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,4]	7.4	93.8	101.1	188	NAAQS	No
	1-Hour[2,4]	7.8	111.0	118.8	339	CAAQS	No
SO_2	1-Hour[3,4]	0.3	14.0	14.3	196	NAAQS	No
	1-Hour[4]	0.3	60.7	61.0	654	CAAQS	No
	24-Hour[6]	0.1	13.6	13.7	105	CAAQS	No
PM_{10}	24-Hour[6]	0.52	–	0.52	2.5	SCAQMD	No
$PM_{2.5}$	24-Hour[6]	0.52	–	0.52	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor A .
Scenario 27 ; Natural Gas + 30% H_2 Fuel at 59% Load, Normal Operations; Exhaust Flow Rate - 784,600 acfm, Exhaust Temperature - 164.7◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO_2/NOx ratio of 0.5 and maximum NO_2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4 1-Hour Averaging Period is Worst Case 1-Hour Emissions from H_2 Fuel Blending Activity

5 8-Hour Averaging Period is 1 - Hour Averaging Period x 8

6 24-Hour Averaging Period is Worst Case Daily Emissions from H_2 Fuel Blending Activity

4.3.1.2 Vendor B Commissioning Activities from Natural Gas and H_2 Fuel Blend

The turbine from Vendor B would be commissioned in 154 different phases, comprised of activities using both fuel types (100% natural gas and H_2 blend). The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of natural gas-based commissioning was modeled using the worst-case dispersion characteristics for any of the natural gas-based commissioning/operational phases of the Vendor B turbine. This method was repeated for Vendor B hydrogen-fuel-blend-powered commissioning events (i.e., maximum emission rate for each pollutant over all hydrogen-powered phases, coupled with worst-case hydrogen-powered dispersion characteristics). The modeled stack parameters for the combustion turbine are shown in Tables C.4-C.5 of Appendix C.

Ground level concentrations from Vendor B commissioning activity emissions (from either fuel source) are below the CAAQS/NAAQS/SCAQMD thresholds and do not indicate a significant impact on local air quality.

Table 4-18: Modeling Analysis for Commissioning Phase for Vendor B Turbine Activities Using Natural Gas Fuel[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[4]	1,727.8	2,290.4	4,018	40,082	NAAQS	No
	1-Hour[4]	1,727.8	2,290.4	4,018	22,904	CAAQS	No
	8-Hour[5]	1,315.9	1,832.3	3,148	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,4]	42.9	93.8	136.6	188	NAAQS	No
	1-Hour[2,4]	48.5	111.0	159.5	339	CAAQS	No
SO_2	1-Hour[3,4]	0.5	14.0	14.5	196	NAAQS	No
	1-Hour[4]	0.5	60.7	61.2	654	CAAQS	No
	24-Hour[6]	0.1	13.6	13.8	105	CAAQS	No
PM_{10}	24-Hour[6]	0.40	–	0.40	2.5	SCAQMD	No
$PM_{2.5}$	24-Hour[6]	0.40	–	0.40	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor B).
Scenario 12 ; Natural Gas Fuel at 56% Load, Normal Operations; Exhaust Flow Rate - 1,042,579 acfm, Exhaust Temperature - 288◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4 1-Hour Averaging Period is Worst Case 1-Hour Emissions from Natural Gas Fuel.

5 8-Hour Averaging Period is 1 - Hour Averaging Period x 8

6 24-Hour Averaging Period is Worst Case Daily Emissions from Natural Gas Fuel

Table 4-19: Modeling Analysis for Commissioning Phase for Vendor B Turbine Activities Using H_2 Fuel Blend[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[4]	1,727.5	2,290.4	4,018	40,082	NAAQS	No
	1-Hour[4]	1,727.5	2,290.4	4,018	22,904	CAAQS	No
	8-Hour[5]	1,318.9	1,832.3	3,151	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,4]	41.3	93.8	135.0	188	NAAQS	No
	1-Hour[2,4]	47.0	111.0	158.0	339	CAAQS	No
SO_2	1-Hour[3,4]	0.3	14.0	14.3	196	NAAQS	No
	1-Hour[4]	0.3	60.7	61.0	654	CAAQS	No
	24-Hour[6]	0.1	13.6	13.7	105	CAAQS	No
PM_{10}	24-Hour[6]	0.42	–	0.42	2.5	SCAQMD	No
$PM_{2.5}$	24-Hour[6]	0.42	–	0.42	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor B).
Scenario 15 ; Natural Gas + 30% H2 Fuel at 52% Load, Normal Operations; Exhaust Flow Rate - 1,021,058 acfm, Exhaust Temperature - 289◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4 1-Hour Averaging Period is Worst Case 1-Hour Emissions from H2 Fuel Blending Activity

5 8-Hour Averaging Period is 1 - Hour Averaging Period x 8

6 24-Hour Averaging Period is Worst Case Daily Emissions from H2 Fuel Blending Activity

4.3.1.3 Vendor C Commissioning Activities from Natural Gas and H_2 Fuel Blend

The turbine from Vendor C would be commissioned in 61 different phases, comprised of activities using both fuel types (100% natural gas and H_2 blend). The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of natural-gas-based commissioning was modeled using the worst-case dispersion characteristics for any of the natural-gas-based commissioning/operational phases of the Vendor C turbine. This method was repeated for Vendor C hydrogen-fuel-blend-powered commissioning events (i.e., maximum emission rate for each pollutant over all hydrogen-powered phases, coupled with worst-case hydrogen-powered dispersion characteristics). The modeled stack parameters for the combustion turbine are shown in Tables C.6-C.7 of Appendix C.

Ground level concentrations from Vendor C commissioning activity emissions (from either fuel source) are below the CAAQS/NAAQS/SCAQMD thresholds and do not indicate a significant impact on local air quality.

Table 4-20: Modeling Analysis for Commissioning Phase for Vendor C Turbine Activities Using Natural Gas Fuel[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[4]	3,042.8	2,290.4	5,333	40,082	NAAQS	No
	1-Hour[4]	3,042.8	2,290.4	5,333	22,904	CAAQS	No
	8-Hour[5]	2,126.7	1,832.3	3,959	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,4]	87.7	93.8	181.5	188	NAAQS	No
	1-Hour[2,4]	124.8	111.0	235.8	339	CAAQS	No
SO_2	1-Hour[3,4]	1.1	14.0	15.2	196	NAAQS	No
	1-Hour[4]	1.1	60.7	61.9	654	CAAQS	No
	24-Hour[6]	0.4	13.6	14.0	105	CAAQS	No
PM_{10}	24-Hour[6]	2.18	–	2.18	2.5	SCAQMD	No
$PM_{2.5}$	24-Hour[6]	2.18	–	2.18	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas Fuel at 33% Load, Normal Operations; Exhaust Flow Rate - 661,972 acfm, Exhaust Temperature - 163◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4 1-Hour Averaging Period is Worst Case 1-Hour Emissions from Natural Gas Fuel.

5 8-Hour Averaging Period is 1 - Hour Averaging Period x 8

6 24-Hour Averaging Period is Worst Case Daily Emissions from Natural Gas Fuel

Table 4-21: Modeling Analysis for Commissioning Phase for Vendor C Turbine Activities Using H_2 Fuel Blend[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[4]	2,910.6	2,290.4	5,201	40,082	NAAQS	No
	1-Hour[4]	2,910.6	2,290.4	5,201	22,904	CAAQS	No
	8-Hour[5]	1,960.4	1,832.3	3,793	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,4]	47.7	93.8	141.5	188	NAAQS	No
	1-Hour[2,4]	69.8	111.0	180.8	339	CAAQS	No
SO_2	1-Hour[3,4]	1.0	14.0	15.1	196	NAAQS	No
	1-Hour[4]	1.0	60.7	61.8	654	CAAQS	No
	24-Hour[6]	0.2	13.6	13.8	105	CAAQS	No
PM_{10}	24-Hour[6]	0.93	–	0.93	2.5	SCAQMD	No
$PM_{2.5}$	24-Hour[6]	0.93	–	0.93	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas + 30% H2 Fuel at 32% Load, Normal Operations; Exhaust Flow Rate - 700,515 acfm, Exhaust Temperature - 168◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4 1-Hour Averaging Period is Worst Case 1-Hour Emissions from H2 Fuel Blending Activity

5 8-Hour Averaging Period is 1 - Hour Averaging Period x 8

6 24-Hour Averaging Period is Worst Case Daily Emissions from H2 Fuel Blending Activity

4.3.2 Operations

In order to ensure that there would not be a significant localized impact due to operational emissions, ambient air modeling for CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ was conducted.

The purpose of the AQIA is to evaluate whether or not criteria pollutant emissions resulting from the proposed project would cause or contribute significantly to an exceedance of the CAAQS or NAAQS. AERMOD was used to simulate the atmospheric transport and dispersion of airborne pollutants and to quantify the maximum expected ground level concentrations from project emissions.

The modeling approach and inputs, including meteorological data and background air quality data, were approved by the SCAQMD as part of the modeling effort, as discussed in Section 4.3.

The AQIA results for CO, NO_2, and SO_2 are summarized in Tables 4-22 to 4-27. The results demonstrate that the project would not cause an exceedance of the CO, NO_2, or SO_2 CAAQS or NAAQS. In addition to the CEQA emissions thresholds, the SCAQMD has also identified concentration thresholds (SCAQMD 2023) for the determination of significant impacts for particulate matter. The modeling results for PM_{10} and $PM_{2.5}$ are also summarized in Tables 4-22 to 4-27. The modeled concentrations were compared to the "Significant Change in Air Quality Concentration" for PM_{10} and $PM_{2.5}$ from SCAQMD CEQA Air Quality Significance Thresholds (SCAQMD 2023). The predicted PM_{10} and $PM_{2.5}$ concentrations from operational emissions would be below these significance levels. Therefore, the proposed project would have a less than significant adverse impact to air quality based on modeling.

The maximum pollutant concentrations for each averaging period and fuel type are presented in Tables 4-22 and 4-23 for Vendor A, Tables 4-24 and 4-25 for Vendor B, and Tables 4-26 and 4-27 for Vendor C. Please note that for hydrogen fuel powered scenarios, the emission averaging periods include a natural gas fueled cold start/shutdown. This is inherent to the design of the turbine, which can only undergo cold-start/shutdown using natural gas fuel, before it switches over to hydrogen fuel for normal operations.

Table 4-22: Operational AQIA Results for Vendor A Using Natural Gas Fuel[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[2]	97.3	2,290.4	2,388	40,082	NAAQS	No
	1-Hour[2]	97.3	2,290.4	2,388	22,904	CAAQS	No
	8-Hour[4]	10.6	1,832.3	1,843	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,6]	18.4	93.8	112.2	188	NAAQS	No
	1-Hour[2,6]	19.3	111.0	130.3	339	CAAQS	No
	Annual[3]	0.7	24.1	24.8	100	NAAQS	No
	Annual[3]	0.7	24.1	24.8	56	CAAQS	No
SO_2	1-Hour[2,7]	0.2	14.0	14.2	196	NAAQS	No
	1-Hour[2]	0.2	60.7	60.9	654	CAAQS	No
	24-Hour[5]	0.1	13.6	13.7	105	CAAQS	No
PM_{10}	24-Hour[5]	0.53	–	0.53	2.5	SCAQMD	No
	Annual[3]	0.23	–	0.23	1.0	SCAQMD	No
$PM_{2.5}$	24-Hour[5]	0.53	–	0.53	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor A).
Scenario 3 - Natural Gas Fuel at 60% Load, Normal Operations; Exhaust Flow Rate - 761,333 acfm, Exhaust Temperature - 162.5◦F

2 1-Hour Cold Start Emissions

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

Table 4-23: Operational AQIA Results for Vendor A Using H_2 Fuel Blend[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[2]	1.5	2,290.4	2,292	40,082	NAAQS	No
	1-Hour[2]	1.5	2,290.4	2,292	22,904	CAAQS	No
	8-Hour[4]	1.2	1,832.3	1,833	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,6]	2.8	93.8	96.6	188	NAAQS	No
	1-Hour[2,6]	2.9	111.0	113.9	339	CAAQS	No
	Annual[3]	0.6	24.1	24.7	100	NAAQS	No
	Annual[3]	0.6	24.1	24.7	56	CAAQS	No
SO_2	1-Hour[2,7]	0.4	14.0	14.4	196	NAAQS	No
	1-Hour[2]	0.4	60.7	61.1	654	CAAQS	No
	24-Hour[5]	0.1	13.6	13.7	105	CAAQS	No
PM_{10}	24-Hour[5]	0.51	–	0.51	2.5	SCAQMD	No
	Annual[3]	0.22	–	0.22	1.0	SCAQMD	No
$PM_{2.5}$	24-Hour[5]	0.51	–	0.51	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor A).
Scenario 27 ; Natural Gas + 30% H2 Fuel at 59% Load, Normal Operations; Exhaust Flow Rate - 784,600 acfm, Exhaust Temperature - 164.7◦F

2 1-Hour Cold Start Emissions on Natural Gas (the turbine can only be started up using natural gas fuel, before switching to hydrogen fuel for normal operations).

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

Table 4-24: Operational AQIA Results for Vendor B Using Natural Gas Fuel[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[2]	208.2	2,290.4	2,499	40,082	NAAQS	No
	1-Hour[2]	208.2	2,290.4	2,499	22,904	CAAQS	No
	8-Hour[4]	20.8	1,832.3	1,853	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,6]	7.1	93.8	100.9	188	NAAQS	No
	1-Hour[2,6]	8.0	111.0	119.0	339	CAAQS	No
	Annual[3]	0.5	24.1	24.5	100	NAAQS	No
	Annual[3]	0.5	24.1	24.5	56	CAAQS	No
SO_2	1-Hour[2,7]	0.2	14.0	14.2	196	NAAQS	No
	1-Hour[2]	0.2	60.7	60.9	654	CAAQS	No
	24-Hour[5]	0.1	13.6	13.7	105	CAAQS	No
PM_{10}	24-Hour[5]	0.48	–	0.48	2.5	SCAQMD	No
	Annual[3]	0.19	–	0.19	1.0	SCAQMD	No
$PM_{2.5}$	24-Hour[5]	0.48	–	0.48	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor B).
Scenario 12 ; Natural Gas Fuel at 56% Load, Normal Operations; Exhaust Flow Rate - 1,042,579 acfm, Exhaust Temperature - 288◦F

2 1-Hour Cold Start Emissions

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

Table 4-25: Operational AQIA Results for Vendor B Using H_2 Fuel Blend[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[2]	1.5	2,290.4	2,292	40,082	NAAQS	No
	1-Hour[2]	1.5	2,290.4	2,292	22,904	CAAQS	No
	8-Hour[4]	21.3	1,832.3	1,854	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,6]	2.5	93.8	96.3	188	NAAQS	No
	1-Hour[2,6]	2.9	111.0	113.9	339	CAAQS	No
	Annual[3]	0.5	24.1	24.6	100	NAAQS	No
	Annual[3]	0.5	24.1	24.6	56	CAAQS	No
SO_2	1-Hour[2,7]	0.3	14.0	14.3	196	NAAQS	No
	1-Hour[2]	0.3	60.7	61.0	654	CAAQS	No
	24-Hour[5]	0.1	13.6	13.7	105	CAAQS	No
PM_{10}	24-Hour[5]	0.47	–	0.47	2.5	SCAQMD	No
	Annual[3]	0.19	–	0.19	1.0	SCAQMD	No
$PM_{2.5}$	24-Hour[5]	0.47	–	0.47	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor B).
Scenario 15 ; Natural Gas + 30% H2 Fuel at 52% Load, Normal Operations; Exhaust Flow Rate - 1,021,058 acfm, Exhaust Temperature - 289◦F

2 1-Hour Cold Start Emissions on Natural Gas (the turbine can only be started up using natural gas fuel, before switching to hydrogen fuel for normal operations).

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

Table 4-26: Operational AQIA Results for Vendor C Using Natural Gas Fuel[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	AAQS / Significant Change Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[2]	320.0	2,290.4	2,610	40,082	NAAQS	No
	1-Hour[2]	320.0	2,290.4	2,610	22,904	CAAQS	No
	8-Hour[4]	30.5	1,832.3	1,863	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,6]	19.7	93.8	113.4	188	NAAQS	No
	1-Hour[2,6]	28.0	111.0	139.0	339	CAAQS	No
	Annual[3]	1.2	24.1	25.3	100	NAAQS	No
	Annual[3]	1.2	24.1	25.3	56	CAAQS	No
SO_2	1-Hour[2,7]	0.7	14.0	14.7	196	NAAQS	No
	1-Hour[2]	0.7	60.7	61.4	654	CAAQS	No
	24-Hour[5]	0.3	13.6	14.0	105	CAAQS	No
PM_{10}	24-Hour[5]	1.88	–	1.88	2.5	SCAQMD	No
	Annual[3]	0.55	–	0.55	1.0	SCAQMD	No
$PM_{2.5}$	24-Hour[5]	1.88	–	1.88	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas Fuel at 33% Load, Normal Operations; Exhaust Flow Rate - 661,972 acfm, Exhaust Temperature - 163◦F

2 1-Hour Cold Start Emissions

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

Table 4-27: Operational AQIA Results for Vendor C Using H_2 Fuel Blend[1]

Pollutant	Averaging Time	Maximum Modeled CCGT Concentration (µg/m³)	Background Concentration (µg/m³)	Total Impact (µg/m³)	Most Stringent Significance Threshold (µg/m³)	Threshold/ Ambient Air Quality Standard	Significant (Yes/No)
CO	1-Hour[2]	3.9	2,290.4	2,294	40,082	NAAQS	No
	1-Hour[2]	3.9	2,290.4	2,294	22,904	CAAQS	No
	8-Hour[4]	28.0	1,832.3	1,860	10,307	CAAQS/NAAQS	No
NO_2	1-Hour[2,6]	5.2	93.8	98.9	188	NAAQS	No
	1-Hour[2,6]	7.6	111.0	118.6	339	CAAQS	No
	Annual[3]	1.1	24.1	25.2	100	NAAQS	No
	Annual[3]	1.1	24.1	25.2	56	CAAQS	No
SO_2	1-Hour[2,7]	0.8	14.0	14.8	196	NAAQS	No
	1-Hour[2]	0.8	60.7	61.5	654	CAAQS	No
	24-Hour[5]	0.3	13.6	13.9	105	CAAQS	No
PM_{10}	24-Hour[5]	1.88	–	1.88	2.5	SCAQMD	No
	Annual[3]	0.55	–	0.55	1.0	SCAQMD	No
$PM_{2.5}$	24-Hour[5]	1.88	–	1.88	2.5	SCAQMD	No

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas + 30% H2 Fuel at 32% Load, Normal Operations; Exhaust Flow Rate - 700,515 acfm, Exhaust Temperature - 168◦F

2 1-Hour Cold Start Emissions on Natural Gas (the turbine can only be started up using natural gas fuel, before switching to hydrogen fuel for normal operations).

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

4.4 Localized Significance Threshold Analysis

The SCAQMD's Localized Significance Threshold (LST) methodology (SCAQMD 2008a) was used to analyze the neighborhood scale impacts of CO, NO_x, PM_{10}, and $PM_{2.5}$ associated with project-specific mass emissions. Introduced in 2003, the LST methodology was revised in 2008 to include the $PM_{2.5}$ significance threshold methodology and update the LST mass rate lookup tables for the new 1-hour NO_2 standard.

For determining localized air quality impacts from small projects in a defined geographic source-receptor area (SRA), the LST methodology provides mass emission rate lookup tables for 1-acre, 2-acre, and 5-acre parcels by SRA. The tabulated LSTs represent the maximum mass emissions from a project that would not cause or contribute to an exceedance of CAAQS or NAAQS for the above pollutants and were developed based on ambient concentrations of these pollutants for each SRA in the SCAB (SCAQMD 2008a).

For projects, the highest daily emission rates occur during the site preparation and grading phases of construction; where applicable, these maximum daily emissions are used in the LST analysis.

The LST of SRA Zone 3 – Southwest Coastal LA County (El Segundo) was used to evaluate the localized air quality impacts since this SRA has the most stringent thresholds of the areas that are being considered for the project site. The 5-acre screening lookup tables were used to evaluate CO, NO_x, PM_{10}, and $PM_{2.5}$ impacts on nearby receptors. The impact evaluation was performed using the distance of 100 meters (328 feet) for construction and operations (SCAQMD 2008a).

4.4.1 Construction

As mentioned in Section 4.1.2, offroad construction equipment greater than 80 hp shall be equipped with Tier 4 Final engines. The LST results provided in Table 4-28 show that mitigated emissions from construction would meet the LST passing criteria at the nearest receptors (100 meters). Thus, impacts would be less than significant.

PROJECTED IMPACT: Less Than Significant (LTS)

Table 4-28: Construction Localized Significance Threshold Evaluation

Criteria Pollutants	Mitigated lbs/day	Threshold lbs/day	Percent of Threshold	Result
CO	179.6	2608	7%	Pass
NO_x	34.2	202	17%	Pass
PM_{10}	14.9	60	25%	Pass
$PM_{2.5}$	4.7	19	25%	Pass

Sources: SCAQMD 2008a, CalEEMod version 2022.1.1.20.

Notes:

SRA – Zone 3 Southwest Coastal LA County

4.5 Toxic Air Contaminants

4.5.1 Construction Emissions

The principal TAC emitted during project construction would be DPM from diesel-powered equipment. DPM emissions were derived from the CalEEMod runs in

Attachment A, where DPM was assumed to be the same amount as the exhaust PM_{10} emissions.

The DPM emission rates for construction are shown in Table 4-29. Annual emission rates were calculated by dividing the exhaust emissions during construction by the number of working days expressed as years (i.e., 406 pounds/3 years). Hourly emission rates were calculated by scaling down the annual emission rate.

Table 4-29: DPM Emissions from Project Construction

DPM (PM_{10}) Exhaust Emissions during Construction (lbs)	Working Days	Approximate Number of Years	Emission Rate (lbs/year)	Emission Rate (lbs/hour)
406	969	3	135.33	0.0155

4.5.2 Variable Emission Scalars

The facility's construction schedule would be from 8:00 a.m. to 2:00 p.m., 5 days a week, and therefore, emissions were modeled using emission scalars.

To account for the operating schedule in AERMOD, emission scalars were employed from hours 9 to 14 for all sources. Per the Lakes AERMOD user's guide, for variable hourly emissions, "the hour displayed is for the end of the hour period. For example, the 9 am hour row would be for hour ending at 9 am (8:00:01 am to 9:00:00 am)."

Since the construction would occur 6 hours per day, Monday-Friday, the ground level concentrations were estimated by setting the emission scalar hour of day (HROFDY) to 5.6 [= (24 x 7) / (6 x 5)] for hours 9 through 14 (Monday-Friday) in AERMOD. The remaining hours had HROFDY values of 0.

4.5.3 Construction HRA

CEQA requires that the environmental impacts of a proposed project be identified and assessed. If these impacts are found to be significant, the impacts must be mitigated to the extent feasible.

The SCAQMD has defined significance criteria for TACs (including carcinogens and non-carcinogens) based on health impact standards (SCAQMD 2023). The analyses discussed in this section apply to the HRA for construction-based emissions. The methodology used to develop the HRAs is described below.

4.5.3.1 Modeling Options

AERMOD View™ allows the user to select from a variety of dispersion options. For this project, "Regulatory Default" options were used.

4.5.3.1.1 Meteorological Data

Five years of AERMOD-ready preprocessed meteorological data files for 2012-2016 were obtained from the SCAQMD for the LAX meteorological station (SCAQMD 2016).

4.5.3.1.2 Terrain Data

Digital elevation data were imported into AERMOD and elevations were assigned to receptors, buildings, and emissions sources, as necessary. NED elevation data was obtained through the AERMOD View™ WebGIS import feature. The dataset has a resolution of approximately 10 meters.

4.5.3.1.3 Urban/Rural Dispersion Coefficient

Consistent with SCAQMD guidance, the model uses urban dispersion coefficients and the population of the County where the project is located. The project is located in Los Angeles County: the model used a population of 9,818,605.

4.5.3.1.4 Receptor Locations

Grid receptors representing nearby residents, sensitive receptors, and off-site workers were located:

- Every 20 meters along the facility boundary;
- At 50-meter spacing from the facility boundary out to 500 meters; and
- At 100-meter spacing between 500 meters and 1,000 meters from the facility boundary; and
- At 250-meter spacing between 1,000 meters and 2,000 meters from the facility boundary.

Additional receptors were placed in residentially dense and industrial facility entrances to ensure worst-case concentrations were captured.

Figure 4-2 shows the facility layout, sources, and receptor locations.

Figure 4-2: Construction HRA Receptor Model Setup

Notes:
— LADWP facility shown in red;
☒ Construction area volume sources are shown in blue;
+Receptor locations shown in light green.

4.5.3.1.5 Source Information and Release Parameters

AERMOD was run with a unit emission rate [1 gram per second (g/s)] to calculate the concentration of TACs from each source per unit emission rate, known as X/Q (Chi/Q), for 1-hour and period (annual) averaging time options per receptor. The modeled X/Q concentration was calculated for each source, at each receptor, for each averaging time for input into the Hotspots Analysis and Reporting Program, version 2 (HARP2). The construction operations (five locations) were modeled with multiple sources (i.e., 0.2 g/s for each source) and then grouped as a single source in AERMOD.

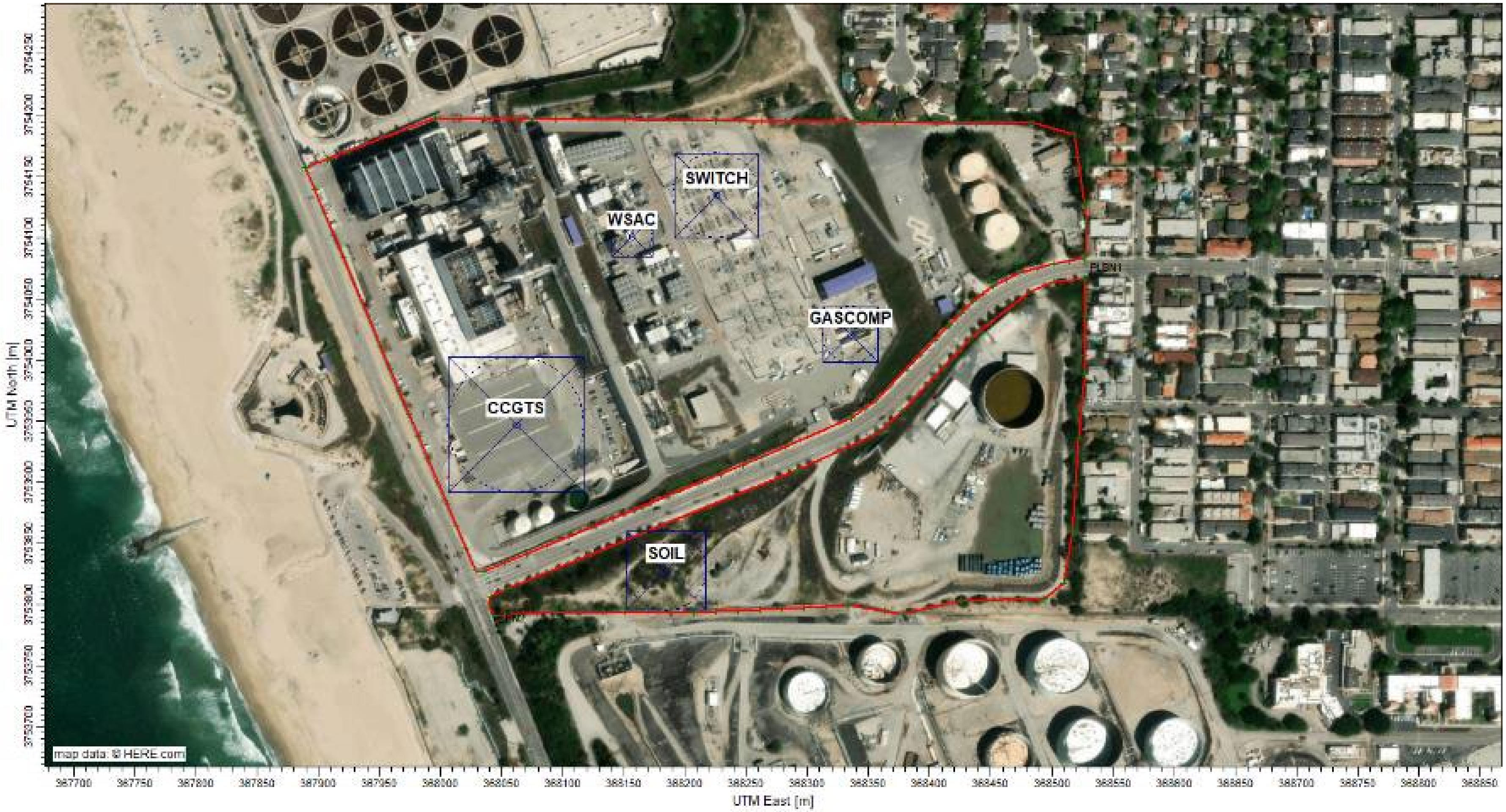
Source release parameters for each source are described in detail below in Table 4-30; the sources are shown in Figure 4-3. DPM emissions from construction were modeled as five surface-based volume sources corresponding to the proposed construction areas.

Table 4-30: Source Parameters – CCGT Construction

Source ID	Construction Area	Source Type	Release Height (m)	Length of Side (m)	Initial Lateral Dimension (m)	Initial Vertical Dimension (m)
SWITCH	Switchyard	Volume	2.5	68.58	15.95	1.16
WSAC	Wet Surface Air Cooler	Volume	2.5	32.92	7.66	1.16
SOIL	Soil Borrow Area	Volume	2.5	64.62	15.03	1.16
GASCOMP	Gas Compressors	Volume	2.5	45.11	10.49	1.16
CCGTS	CCGT Construction	Volume	2.5	110.34	25.66	1.16

Note: Parameters based typical hauling truck guidance from EPA Haul Road Working Group Meeting (U.S. EPA 2012).

Figure 4-3: HRA Source Setup



Notes:

☒ Volume sources for construction areas shown in blue;

Facility boundary shown in red.

4.5.3.2 Construction – Health Risk Assessment

4.5.3.2.1 Health Risk Assessment Calculations

This HRA was conducted in accordance with SCAQMD Risk Assessment Procedures (SCAQMD 2017) and the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual (OEHHA 2015).

The construction HRA health risk calculations were performed using the HARP2 Air Dispersion Modeling and Risk Tool (ADMRT, version 22118). The 1-hour and annual X/Q values determined for each source using AERMOD were imported into HARP2 and used in conjunction with hourly and annual emissions to determine the ground level concentration of DPM to an individual receptor. The ground level concentrations were then used to estimate the long-term cancer health risk to an individual. Since DPM is the only TAC in this HRA, and only carcinogenic and chronic toxicity values are documented for DPM, only cancer and chronic risk assessments were conducted.

A description of the health risk indices and associated calculations conducted in HARP2 is provided below. Table 4-31 provides a listing of the HARP2 options that were selected for the analysis.

4.5.3.2.2 Cancer Risk

Cancer risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to TACs over a period of time. Cancer risk at all receptors was estimated over a 3-year period, corresponding to the 3-year construction period shown in Table 4-29.

Residential receptor cancer risk estimates were calculated using CARB's Risk Management Policy (RMP), "RMP Using the Derived Method," and off-site workplace cancer risk estimates used the "OEHHA Derived" calculation method. The RMP uses high-end breathing rates (95th percentile) for children from the third trimester through age 2 and 80th percentile breathing rates for all other ages for residential exposures (CARB/CAPCOA 2015). The "OEHHA Derived" method uses high-end exposure parameters for the top two exposure pathways and mean exposure parameters for the remaining pathways for cancer risk estimates. The "RMP Using the Derived Method" combines the two approaches.

4.5.3.2.3 Chronic Hazard Index

DPM also has non-cancer health risk due to long-term (chronic) exposure. The Chronic Hazard Index (HIC) is the sum of the individual substance HICs for all TACs affecting the same target organ system. Chronic risk was calculated using the "OEHHA Derived" Method at all receptors for an annual exposure duration. The same exposure pathways, as outlined in Table 4-31, were used in the HIC assessment.

4.5.3.2.4 Acute Hazard Risk

Some TACs may have non-cancer health risk due to short-term (acute) exposures. The Acute Hazard Index (HIA) is the sum of the individual substance HIAs for all TACs affecting the same target organ system. Since DPM does not have an acute reference exposure level (REL), no acute risks were estimated for the construction scenario.

Table 4-31: HARP2 Model Options

<table>
<tr><th>Parameter</th><th colspan="4">Assumptions</th><th>Comments</th></tr>
<tr><td colspan="6">Multi-Pathway</td></tr>
<tr><td>Inhalation</td><td>Res</td><td>☒</td><td>Work</td><td>☒</td><td>–</td></tr>
<tr><td>Soil</td><td>Res</td><td>☒</td><td>Work</td><td>☒</td><td>–</td></tr>
<tr><td>Dermal</td><td>Res</td><td>☒</td><td>Work</td><td>☒</td><td>“Warm” climate</td></tr>
<tr><td>Mother’s Milk</td><td>Res</td><td>☒</td><td>Work</td><td>☐</td><td>–</td></tr>
<tr><td>Drinking Water</td><td>Res</td><td>☐</td><td>Work</td><td>☐</td><td>–</td></tr>
<tr><td>Fish</td><td>Res</td><td>☐</td><td>Work</td><td>☐</td><td>–</td></tr>
<tr><td>Homegrown Produce</td><td>Res</td><td>☒</td><td>Work</td><td>☐</td><td>Default for “Households that Garden”</td></tr>
<tr><td>Beef/Dairy</td><td>Res</td><td>☐</td><td>Work</td><td>☐</td><td>–</td></tr>
<tr><td>Pigs, Chickens, and/or Eggs</td><td>Res</td><td>☐</td><td>Work</td><td>☐</td><td></td></tr>
<tr><td>Deposition Velocity</td><td colspan="4">0.02 m/s</td><td>–</td></tr>
<tr><td colspan="6">Residential Cancer Risk Assumptions</td></tr>
<tr><td>Exposure Duration</td><td colspan="4">3 years</td><td>Corresponding to a 3-year construction period</td></tr>
<tr><td>Fraction of Time at Home</td><td colspan="4">3rd Trimester to 16 years: On
16 years to 30 years: On</td><td>There is no school within the cancer risk ZOI. See Appendix E.</td></tr>
<tr><td>Analysis Option</td><td colspan="4">RMP Using the Derived Method</td><td>–</td></tr>
<tr><td colspan="6">Worker Cancer Risk Assumptions</td></tr>
<tr><td>Exposure Duration</td><td colspan="4">3 years</td><td>Corresponding to a 3-year construction period</td></tr>
<tr><td>Analysis Option</td><td colspan="4">OEHHA Derived Method</td><td>–</td></tr>
<tr><td>Inhalation Rate Basis</td><td colspan="4">8-hour breathing rates, moderate intensity</td><td>–</td></tr>
<tr><td>Worker Adjustment Factor</td><td colspan="4">Yes, 5.6</td><td>Construction would take place 5 days/week, 6 hours/day</td></tr>
<tr><td colspan="6">Residential and Worker Non-Cancer Risk Assumptions</td></tr>
<tr><td>Analysis Option</td><td colspan="4">OEHHA Derived Method</td><td>–</td></tr>
<tr><td>Inhalation Rate Basis</td><td colspan="4">Long-term 24-hour (resident)
Moderate 8-hour (worker)</td><td>–</td></tr>
<tr><td>Worker Adjustment Factor</td><td colspan="4">1</td><td>–</td></tr>
</table>

4.5.3.2.5 HRA Results

The construction HRA results predict that all health risk factors would be less than the CEQA significance thresholds at all actual receptors. The results of the HRA are summarized in Table 4-32.

The maximally exposed individual resident (MEIR) was predicted to be slightly north of the facility, near the fenceline, and the maximally exposed individual worker (MEIW) was predicted to be Chevron Products Company El Segundo Refinery, located south of the facility. Figure 4-4 shows the locations of the MEIR and MEIW. All health risk values were predicted to be less than the CEQA significance thresholds and are shown in Table 4-32.

Figure 4-4: Maximally Exposed Receptors – Construction HRA Cancer Risk

Notes:

LADWP Facility shown in red;

☒ Construction areas shown in blue;

MEIR shown in yellow circle;

MEIW shown in orange circle.

Table 4-32: Summary of Construction HRA Results

Risk	Receptor	Receptor	UTM Easting Coordinate (m)	UTM Northing Coordinate (m)	Estimated Risk Value	CEQA Threshold[1]	Health Risk Significant?
Cancer	MEIR	987	368,355	3,754,194	6.04	10 in one million	No
	MEIW	1098	368,188	3,753,794	2.09		No
Chronic	MEIR	987	368,355	3,754,194	0.0039	1.0	No
	MEIW	1098	368,188	3,753,794	0.0096		No

[1] Source: SCAQMD 2023.

4.5.4 Operational Emissions

TAC emissions were estimated using emission factors from U.S. EPA AP-42 documentation for stationary gas turbines (Table 3.4-1 of "Emission Factor Documentation for AP-42 Section 3.1 Stationary Gas Turbines") or from vendor data. For ammonia, the hourly ammonia rate provided by each vendor was applied to 8,760 hours of operation. Other TAC emissions were calculated from AP-42 emission factors and assumptions about operation. For annual emissions, operation was conservatively assumed to be 365 days assuming one cold start per day, one shutdown per day, and maximum operation for the remainder of each day. During startup, the most conservative emission factors (e.g., without CO catalyst) were used. During operation and shutdown, the catalyst would be at its design temperature, and emission factors with CO catalyst were used. The maximum heat input for each vendor was used for startup, shutdown, and normal operation, even though actual heat input during startup and shutdown would be lower; this is conservative for startup and shutdown. TAC emission calculations are shown for each vendor in Table 4-33 to Table 4-35. Since there are no published TAC emission factors available for hydrogen fuel usage, only TAC emissions from natural gas usage were considered in this report. Hydrogen combustion is less likely to produce TACs as its combustion byproduct, and thus, the natural gas combustion TAC emissions evaluated here are likely a conservative estimate.

The proposed WSAC is a potential source of arsenic emissions and other trace toxics in the cooling water. The proposed WSAC would be equipped with BACT and would be a similar size as the WSAC being replaced. In a recent repowering project at SGS, toxic emissions from the WSAC contributed 6% to the cancer risk. Emissions from the WSAC in this project are assumed to be negligible, and only emissions from the turbines are used for the health risk assessment.

Table 4-33: TAC Emissions During Normal Operation – Annual Emissions

#	CAS#	TAC	Uncontrolled Emission Factor (lb/mmscf)	Controlled Emission Factor (lb/mmscf)	Vendor A (lb/yr)	Vendor B (lb/yr)	Vendor C (lb/yr)
1	106990	1,3 Butadiene	4.38E-04	4.38E-04	9.07	9.45	8.51
2	75070	Acetaldehyde	4.10E-02	1.80E-01	3,729	3,884	3,495
3	107028	Acrolein	6.49E-03	3.69E-03	78.9	82.1	73.2
4	71432	Benzene	1.20E-02	3.33E-03	76.5	79.6	69.4
5	100414	Ethylbenzene	2.63E-02	2.63E-02	545	567	511
6	50000	Formaldehyde	7.23E-01	3.67E-01	7,911	8,239	7,320
7	91203	Naphthalene	1.40E-03	1.40E-03	29.0	30.2	27.2
8	N/A	PAH	2.30E-03	2.30E-03	47.7	49.6	44.7
9	1151	Total PAH w/o Naphthalene	9.00E-04	9.00E-04	18.6	19.4	17.5
10	75569	Propylene Oxide	2.92E-03	2.92E-03	60.5	63.0	56.7
11	108883	Toluene	9.56E-02	9.56E-02	1,981	2,063	1,856

#	CAS#	TAC	Uncontrolled Emission Factor (lb/mmscf)	Controlled Emission Factor (lb/mmscf)	Vendor A (lb/yr)	Vendor B (lb/yr)	Vendor C (lb/yr)
12	1330207	Xylenes	5.59E-02	5.59E-02	1,158	1,206	1,086
13	7664417	Ammonia	See Table 4-34		142,788	169,944	137,532

Table 4-34: Hourly Ammonia Emission Rates by Vendor

Vendor	Emission Rate (lb/hr)
A	16.3
B	19.4
C	15.7

Table 4-35: TAC Emissions During Normal Operation – Maximum Hourly Emissions

#	CAS#	TAC	Uncontrolled Emission Factor (lb/mmscf)	Controlled Emission Factor (lb/mmscf)	Vendor A (lb/hr)	Vendor B (lb/hr)	Vendor C (lb/hr)
1	106990	1,3 Butadiene	4.38E-04	4.38E-04	1.04E-03	1.08E-03	9.71E-04
2	75070	Acetaldehyde	4.10E-02	1.80E-01	4.26E-01	4.43E-01	3.99E-01
3	107028	Acrolein	6.49E-03	3.69E-03	1.53E-02	1.60E-02	1.23E-02
4	71432	Benzene	1.20E-02	3.33E-03	2.84E-02	2.96E-02	2.03E-02
5	100414	Ethylbenzene	2.63E-02	2.63E-02	6.22E-02	6.48E-02	5.83E-02
6	50000	Formaldehyde	7.23E-01	3.67E-01	1.71E+00	1.78E+00	1.34E+00
7	91203	Naphthalene	1.40E-03	1.40E-03	3.31E-03	3.45E-03	3.10E-03
8	N/A	PAH	2.30E-03	2.30E-03	5.44E-03	5.67E-03	5.10E-03
9	1151	Total PAH w/o Naphthalene	9.00E-04	9.00E-04	2.13E-03	2.22E-03	2.00E-03
10	75569	Propylene Oxide	2.92E-03	2.92E-03	6.91E-03	7.19E-03	6.47E-03
11	108883	Toluene	9.56E-02	9.56E-02	2.26E-01	2.35E-01	2.12E-01
12	1330207	Xylenes	5.59E-02	5.59E-02	1.32E-01	1.38E-01	1.24E-01
13	7664417	Ammonia	See Table 4-34		1.63E+01	1.94E+01	1.57E+01

4.5.5 Operational HRA – Modeling

CEQA requires that the environmental impacts of a proposed project be identified and assessed. If these impacts are found to be significant, the impacts must be mitigated to the extent feasible.

The SCAQMD (2023) has defined significance criteria for TACs (including carcinogens and non-carcinogens) based on health impact standards. The analyses discussed in this section apply to the HRA for operational based emissions. The methodology used to develop the HRAs is described below.

4.5.5.1 Modeling Options

AERMOD View™ allows the user to select from a variety of dispersion options. For this project, "Regulatory Default" options were used. AERMOD View™ allows the user to select from a variety of dispersion options. The shoreline fumigation and inversion break-up were evaluated and had negligible effect on results.

4.5.5.1.1 Meteorological Data

Five years of AERMOD-ready preprocessed meteorological data files for 2012-2016 were obtained from the SCAQMD for the LAX meteorological station (SCAQMD 2016).

4.5.5.1.2 Terrain Data

Digital elevation data were imported into AERMOD and elevations were assigned to receptors, buildings, and emissions sources, as necessary. NED elevation data was obtained through the AERMOD View™ WebGIS import feature. The dataset has a resolution of approximately 10 meters.

4.5.5.1.3 Urban/Rural Dispersion Coefficient

Consistent with SCAQMD guidance, the model uses urban dispersion coefficients and the population of the County where the project is located. The project is located in Los Angeles County: the model used a population of 9,818,605.

4.5.5.1.4 Receptor Locations

Grid receptors representing nearby residents, sensitive receptors, and off-site workers were located:

- Every 20 meters along the facility boundary;
- At 50-meter spacing from the facility boundary out to 500 meters;
- At 100-meter spacing between 500 meters and 1,000 meters from the facility boundary; and
- At 250-meter spacing between 1,000 meters and 2,000 meters from the facility boundary.

Additional receptors were placed in residentially dense and commercial entrance areas to ensure worst-case concentrations were captured.

Figure 4-5 shows the facility layout, sources, and receptor locations.

Figure 4-5: Operational HRA Receptor Model Setup

Notes:
- Proposed CCGT source shown in red;
- Receptor locations shown in light green;
- Additional residential receptors shown in dark blue;
- Additional acute receptors shown in light blue;
- Additional off-site worker receptors shown in orange.

4.5.5.1.5 Source Information and Release Parameters

AERMOD was run with a unit emission rate [1 gram per second (g/s)] to calculate the concentration of TACs from each source per unit emission rate, known as X/Q (Chi/Q), for 1-hour and period (annual) averaging time options per receptor. The modeled X/Q concentration was calculated for each source, at each receptor, for each averaging time for input into HARP2.

Source release parameters for each point source are shown below in Table 4-36 and correspond to the worst-case dispersion stack parameters (i.e., lowest exhaust flow rate, lowest exhaust temperature) for each vendor and fuel source. Emission rates for each pollutant, per vendor, per fuel type and averaging period are shown in Tables 4-33 to 4-35 above.

Table 4-36: Source Parameters – Operational HRA

Source	Fuel Source	Release Height (ft)	Exhaust Temperature (°F)	Stack Diameter (ft)	Exhaust Flow Rate (acfm)	Exhaust Velocity (m/s)
Vendor A	Natural Gas	213	162.5	19.0	761,333	13.641
Vendor A	H_2 Blend	213	164.7	19.0	784,600	14.058
Vendor B	Natural Gas	180	288.0	23.0	1,042,579	12.748
Vendor B	H_2 Blend	180	289.0	23.0	1,021,058	12.484
Vendor C	Natural Gas	140	163.0	22.0	661,972	8.846
Vendor C	H_2 Blend	140	168.0	22.0	700,515	9.362

4.5.6 Operational HRA – Health Risk Assessment

4.5.6.1 Health Risk Assessment Calculations

This HRA was conducted in accordance with SCAQMD Risk Assessment Procedures (SCAQMD 2017) and the OEHHA Air Toxics Hot Spots Program Guidance Manual (OEHHA 2015).

The operational HRA health risk calculations were performed using the HARP2 ADMRT, version 22118. The X/Q values determined for each source using AERMOD were imported into the HARP2 ADMRT module and combined with hourly and annual emissions to determine the ground-level concentrations for each pollutant. The ground-level concentrations were then used to estimate the long-term cancer health risk to an individual and non-cancer chronic and acute hazard indices.

The assessment of cancer risk and chronic non-cancer health indices used the long-term period (annual) average emissions, while the assessment of acute non-cancer health effects used the maximum short-term 1-hour emissions. The acute analysis conservatively assumes that all maximum short-term emissions occur in the same hour.

The MEIR and MEIW were calculated for cancer risk and non-cancer chronic and acute health indices.

A description of the health risk indices and associated calculations conducted in HARP2 is provided below. Table 4-37 provides a listing of the HARP2 options that were selected for the analysis.

4.5.6.2 Cancer Risk

Cancer risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to TACs over an extended period of time. Per SCAQMD HRA guidance (SCAQMD 2017), this HRA estimated cancer risk over a 30-year period for residential grid receptor locations and 25 years for off-site worker receptor locations.

Residential grid receptor cancer risk estimates were calculated using CARB's "RMP Using the Derived Method," and off-site workplace cancer risk estimates used the "OEHHA Derived" calculation method. The RMP uses high-end breathing rates (95^{th} percentile) for children from the third trimester through age 2 and 80^{th} percentile breathing rates for all other ages for residential exposures (CARB/CAPCOA 2015). The "OEHHA Derived" method uses high-end exposure parameters for the top two exposure pathways and mean exposure parameters for the remaining pathways for cancer risk estimates. The "RMP Using the Derived Method" combines the two approaches.

4.5.6.3 Chronic Hazard Index

Some TACs may have non-cancer health risk due to long-term (chronic) exposure. The HIC is the sum of the individual substance HICs for all TACs affecting the same target organ system. Chronic risk was calculated using the "OEHHA Derived" Method at all receptors for an annual exposure duration. The same exposure pathways, as outlined in Table 4-37, were used in the HIC assessment.

To ensure potential off-site worker exposure is fully assessed, an 8-hour HIC was estimated in a similar manner to the annual HIC. The 8-hour RELs were developed principally for exposure of individuals during 8-hour work schedules. The OEHHA recommends estimating the 8-hour HIC based on daily average 8-hour exposure for those chemicals with 8-hour RELs at worker receptors. The annual ground-level concentrations are scaled within HARP2 to estimate 8-hour ground-level concentrations, then compared to the RELs and totaled per target organ.

4.5.6.4 Acute Hazard Risk

Some TACs may have non-cancer health risk due to short-term (acute) exposures. HIA is the sum of the individual substance HIAs for all TACs affecting the same target organ system. Acute risk was calculated at all receptors for an exposure duration of 1 hour.

Table 4-37: HARP2 Model Options

Parameter	Assumptions				Comments
Multi-Pathway					
Inhalation	Res	☒	Work	☒	–
Soil	Res	☒	Work	☒	–
Dermal	Res	☒	Work	☒	"Warm" climate
Mother's Milk	Res	☒	Work	☐	–
Drinking Water	Res	☐	Work	☐	–
Fish	Res	☐	Work	☐	–
Homegrown Produce	Res	☒	Work	☐	Default for "Households that Garden"
Beef/Dairy	Res	☐	Work	☐	–
Pigs, Chickens, and/or Eggs	Res	☐	Work	☐	
Deposition Velocity	0.02 m/s				
Residential Cancer Risk Assumptions					
Exposure Duration	30 years				–
Fraction of Time at Home	Third Trimester to 16 years: Off 16 years to 30 years: On				–
Analysis Option	RMP Using the Derived Method				–
Worker Cancer Risk Assumptions					
Exposure Duration	25 years				–
Analysis Option	OEHHA Derived Method				–
Inhalation Rate Basis	8-hour breathing rates, moderate intensity				–
Worker Adjustment Factor	No				–
Residential and Worker Non-Cancer Risk Assumptions					
Analysis Option	OEHHA Derived Method				–
Inhalation Rate Basis	Long-term 24-hour (resident) Moderate 8-hour (worker)				–
Worker Adjustment Factor	1				–

4.5.6.5 HRA Results

Results of the HRA for the combustion turbine vendors are presented in Table 4-38. The results from each combustion turbine show that the maximum estimated Maximum Individual Cancer Risk (MICR) is below the CEQA TAC Thresholds (SCAQMD, 2023) of 10 in a million at 4.69, 3.32 and 9.37 for the Vendor A, B, and C combustion turbines, respectively. In addition, the chronic and acute hazard indices are less than the Rule 1401 limit of 1.0.

Table 4-38: Summary of Health Risk Assessment Results (Combustion Turbines)

Receptor	Residential			Worker		
Vendor	**A**	**B**	**C**	**A**	**B**	**C**
MICR (per million)	4.69	3.32	9.37	0.11	0.08	0.21
Chronic Hazard Index	0.00567	0.00424	0.0114	0.00534	0.00392	0.00999
8-hour Chronic Hazard Index	N/A			0.00290	0.00202	0.00533
Acute Hazard Index	0.0085	0.0068	0.0184	0.0077	0.0061	0.0165

4.6 Greenhouse Gas Emissions

4.6.1 Construction

Table 4-39 shows a breakdown of proposed project construction GHG emissions over the planned construction period. The CalEEMod output file for GHG emissions can be found in Appendix A. Table 4-32 also aggregates the CO_2e emissions for all construction phases and determines the 30-year amortization amount for the operational GHG netting analysis. The maximum annual GHG emissions from construction are 4,233 MT CO_2e in 2028. Construction emissions amortized over 30 years are 366 MT CO_2e per year.

Table 4-39: Construction GHG Emissions by Year (2026-2029)

GHGs	2026	2027	2028	2029	Total	30-Year
	MT	**MT**	**MT**	**MT**	**MT**	**MT/yr**
CO_2	647	3,895	4,192	2,109	–	–
CH_4	<1	<1	<1	<1	–	–
N_2O	<1	<1	<1	<1	–	–
R	<1	2	2	1	–	–
CO_2e	663	3,940	4,233	2,130	10,966	366

Note: Proposed construction takes place over approximately 969 working days, coinciding with calendar years 2026 – 2029.

Amortized annual mass GHG emissions from construction would not exceed the GHG mass emissions threshold established by the SCAQMD of 10,000 MT per year CO_2e. Annual emissions would be less than significant, and the project would not conflict with or obstruct regional and State-wide goals to reduce GHG emissions and climate change impacts.

4.6.2 Operations

Table 4-40 shows that GHG emissions are below the performance standard thresholds in accordance with SB 1368 of 1,100 pounds CO_2 per MWh-Net and the federal NSPS Subpart TTTT of 1,000 pounds per MWh-Gross. This table shows emissions assuming 100% natural gas, which would result in higher GHG emissions than a natural gas/hydrogen fuel blend.

Table 4-40: Vendor Greenhouse Gas Emissions and Performance Standards Assuming 100% Natural Gas

Vendor	Gross Power (MW)	Net Power (MW)	CO_2 (lb/hr)	CO_2 (lb/MWh-Gross)	Standard in NSPS TTTT (lb CO_2/MWh-Gross)	CO_2 (lb/MWh-Net)	Standard in SB 1368 (lb CO_2/MWh-Net)
Vendor A	346	334	299,000	864	1,000	895	1,100
Vendor B	346	334	330,359	955	1,000	989	1,100
Vendor C	346	334	275,502	796	1,000	825	1,100

Net power is from CEC determination, 333.9 MW.

The proposed project was analyzed for GHG emissions during operation of the proposed project. The GHG emissions intensity (pounds CO_2 per MWh) was less than the SB 1368 performance standard and the federal NSPS, which are used as the significance thresholds for this project. Therefore, GHG emissions from the proposed project would not cause a potentially significant adverse impact.

The project includes the installation of new circuit breakers charged with SF_6. The BACT limit for new circuit breakers determined by CEC is a leak rate of 0.5%. These circuit breakers would meet BACT.

4.7 Odors

The proposed project has the potential to result in mildly objectionable odors during construction, with some odors associated with excavation of earth and the operation of diesel engines during construction. However, these odors are typical of urbanized environments and would be subject to construction and air quality regulations, including proper maintenance of machinery and use of ultra-low sulfur diesel (ULSD) fuel to minimize engine emissions. These emissions are also of short duration and are quickly dispersed into the atmosphere. Therefore, the project would not create objectionable odor impacts during construction. The proposed project would not cause any objectionable odors during operation.

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APPENDIX A – CALEEMOD OUTPUTS

Scattergood 11-3-2023- 80hp Tier 4 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Scattergood 11-3-2023- 80hp Tier 4
Construction Start Date	1/5/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	17.6
Location	33.917740585317276, -118.42739944453335
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4540
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Heavy Industry	260	1000sqft	5.97	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-5	Use Advanced Engine Tiers
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-B	Water Active Demolition Sites
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads
Construction	C-13	Use Low-VOC Paints for Construction

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	13.5	110	160	0.24	4.05	11.0	14.8	3.73	2.61	6.15	—	36,093	36,093	1.42	1.01	34.8	36,460
Mit.	5.88	28.4	178	0.24	0.68	11.0	11.7	0.66	2.61	3.27	—	36,093	36,093	1.42	1.01	34.8	36,460
% Reduced	57%	74%	-11%	—	83%	—	21%	82%	—	47%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.7	132	163	0.29	4.69	20.5	25.2	4.32	7.14	11.5	—	42,012	42,012	1.57	1.91	1.24	42,622
Mit.	5.86	34.2	180	0.29	0.73	14.1	14.9	0.71	3.98	4.70	—	42,012	42,012	1.57	1.91	1.24	42,622

% Reduced	60%	74%	-10%	—	84%	31%	41%	83%	44%	59%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.57	78.0	110	0.17	2.76	7.98	10.7	2.54	2.30	4.84	—	25,319	25,319	0.86	0.80	10.5	25,565
Mit.	4.08	20.3	123	0.17	0.48	7.59	8.07	0.46	1.80	2.26	—	25,319	25,319	0.86	0.80	10.5	25,565
% Reduced	57%	74%	-11%	—	83%	5%	25%	82%	22%	53%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.75	14.2	20.1	0.03	0.50	1.46	1.96	0.46	0.42	0.88	—	4,192	4,192	0.14	0.13	1.74	4,233
Mit.	0.74	3.70	22.4	0.03	0.09	1.39	1.47	0.08	0.33	0.41	—	4,192	4,192	0.14	0.13	1.74	4,233
% Reduced	57%	74%	-11%	—	83%	5%	25%	82%	22%	53%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.34	20.7	22.9	0.06	0.84	1.90	2.39	0.78	0.47	0.93	—	8,618	8,618	0.39	0.50	9.97	8,785
2027	13.1	110	151	0.24	4.05	9.30	13.4	3.73	2.21	5.94	—	34,056	34,056	1.42	0.97	33.1	34,413
2028	13.5	109	160	0.24	3.84	11.0	14.8	3.54	2.61	6.15	—	36,093	36,093	1.18	1.01	34.8	36,460
2029	13.3	106	157	0.24	3.70	11.0	14.7	3.41	2.61	6.02	—	35,852	35,852	1.18	0.99	31.3	36,209
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.19	33.3	34.3	0.08	1.10	12.6	13.7	1.02	5.25	6.27	—	12,937	12,937	0.66	1.12	0.56	13,287
2027	14.7	132	163	0.29	4.69	20.5	25.2	4.32	7.14	11.5	—	42,012	42,012	1.57	1.91	1.24	42,622

2028	13.5	110	154	0.24	3.84	11.0	14.8	3.54	2.61	6.15	—	35,567	35,567	1.20	1.01	0.90	35,901
2029	13.2	107	151	0.24	3.70	11.0	14.7	3.41	2.61	6.02	—	35,336	35,336	1.20	0.99	0.81	35,663
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.01	9.90	10.6	0.03	0.31	2.60	2.90	0.29	1.03	1.31	—	3,910	3,910	0.19	0.29	2.46	4,004
2027	8.81	76.3	99.3	0.16	2.76	7.98	10.7	2.54	2.30	4.84	—	23,528	23,528	0.84	0.80	10.5	23,798
2028	9.57	78.0	110	0.17	2.74	7.59	10.3	2.53	1.80	4.33	—	25,319	25,319	0.86	0.72	10.5	25,565
2029	4.70	37.8	54.4	0.09	1.31	4.02	5.32	1.20	0.95	2.16	—	12,741	12,741	0.43	0.37	5.03	12,867
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.18	1.81	1.94	< 0.005	0.06	0.47	0.53	0.05	0.19	0.24	—	647	647	0.03	0.05	0.41	663
2027	1.61	13.9	18.1	0.03	0.50	1.46	1.96	0.46	0.42	0.88	—	3,895	3,895	0.14	0.13	1.73	3,940
2028	1.75	14.2	20.1	0.03	0.50	1.39	1.89	0.46	0.33	0.79	—	4,192	4,192	0.14	0.12	1.74	4,233
2029	0.86	6.89	9.93	0.02	0.24	0.73	0.97	0.22	0.17	0.39	—	2,109	2,109	0.07	0.06	0.83	2,130

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.13	9.16	32.8	0.06	0.19	1.89	2.09	0.19	0.47	0.66	—	8,618	8,618	0.39	0.50	9.97	8,785
2027	5.08	24.8	168	0.24	0.62	9.30	9.92	0.61	2.21	2.82	—	34,056	34,056	1.42	0.97	33.1	34,413
2028	5.88	28.4	178	0.24	0.67	11.0	11.7	0.65	2.61	3.26	—	36,093	36,093	1.18	1.01	34.8	36,460
2029	5.76	28.0	175	0.24	0.68	11.0	11.7	0.66	2.61	3.27	—	35,852	35,852	1.18	0.99	31.3	36,209
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.18	11.4	37.8	0.08	0.16	6.20	6.37	0.16	2.10	2.26	—	12,937	12,937	0.66	1.12	0.56	13,287
2027	5.62	34.2	180	0.29	0.73	14.1	14.9	0.71	3.98	4.70	—	42,012	42,012	1.57	1.91	1.24	42,622

2028	5.86	28.9	171	0.24	0.67	11.0	11.7	0.65	2.61	3.26	—	35,567	35,567	1.20	1.01	0.90	35,901
2029	5.73	28.5	169	0.24	0.68	11.0	11.7	0.66	2.61	3.27	—	35,336	35,336	1.20	0.99	0.81	35,663
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.44	4.00	12.7	0.03	0.07	1.44	1.51	0.07	0.46	0.53	—	3,910	3,910	0.19	0.29	2.46	4,004
2027	3.40	18.2	110	0.16	0.43	6.86	7.28	0.42	1.74	2.16	—	23,528	23,528	0.84	0.80	10.5	23,798
2028	4.08	20.3	123	0.17	0.48	7.59	8.07	0.46	1.80	2.26	—	25,319	25,319	0.86	0.72	10.5	25,565
2029	2.05	10.2	60.7	0.09	0.24	4.02	4.26	0.23	0.95	1.19	—	12,741	12,741	0.43	0.37	5.03	12,867
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.08	0.73	2.32	< 0.005	0.01	0.26	0.28	0.01	0.08	0.10	—	647	647	0.03	0.05	0.41	663
2027	0.62	3.33	20.1	0.03	0.08	1.25	1.33	0.08	0.32	0.39	—	3,895	3,895	0.14	0.13	1.73	3,940
2028	0.74	3.70	22.4	0.03	0.09	1.39	1.47	0.08	0.33	0.41	—	4,192	4,192	0.14	0.12	1.74	4,233
2029	0.37	1.86	11.1	0.02	0.04	0.73	0.78	0.04	0.17	0.22	—	2,109	2,109	0.07	0.06	0.83	2,130

3. Construction Emissions Details

3.1. Demolition (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.29	20.7	19.0	0.03	0.84	—	0.84	0.78	—	0.78	—	3,427	3,427	0.14	0.03	—	3,438
Demolition	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.13	1.04	< 0.005	0.05	—	0.05	0.04	—	0.04	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.21	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	203	203	0.01	0.01	0.69	206
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.2	10.2	< 0.005	< 0.005	0.02	10.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	0.02	10.9
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.56	0.56	< 0.005	< 0.005	< 0.005	0.59

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.77	1.77	< 0.005	< 0.005	< 0.005	1.80
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.10

3.2. Demolition (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.72	5.31	18.4	0.03	0.16	—	0.16	0.15	—	0.15	—	3,427	3,427	0.14	0.03	—	3,438
Demolition	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.29	1.01	< 0.005	0.01	—	0.01	0.01	—	0.01	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.18	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.1	31.1	< 0.005	< 0.005	—	31.2

Demolitio	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	203	203	0.01	0.01	0.69	206
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.2	10.2	< 0.005	< 0.005	0.02	10.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	0.02	10.9
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.56	0.56	< 0.005	< 0.005	< 0.005	0.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.77	1.77	< 0.005	< 0.005	< 0.005	1.80
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.10

3.3. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.70	14.8	15.8	0.05	0.46	—	0.46	0.43	—	0.43	—	4,800	4,800	0.19	0.04	—	4,816
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.67	2.86	0.01	0.08	—	0.08	0.08	—	0.08	—	868	868	0.04	0.01	—	871
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.52	< 0.005	0.02	—	0.02	0.01	—	0.01	—	144	144	0.01	< 0.005	—	144
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.35	5.88	0.00	0.00	1.19	1.19	0.00	0.28	0.28	—	1,233	1,233	0.05	0.04	4.17	1,251

Vendor	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
Hauling	0.04	3.11	1.22	0.02	0.03	0.70	0.74	0.03	0.19	0.23	—	2,585	2,585	0.14	0.41	5.80	2,717
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.08	0.95	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	214	214	0.01	0.01	0.33	217
Vendor	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
Hauling	0.01	0.59	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	467	467	0.03	0.07	0.45	491
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.17	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	35.5	35.5	< 0.005	< 0.005	0.05	36.0
Vendor	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
Hauling	< 0.005	0.11	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	77.4	77.4	< 0.005	0.01	0.07	81.3

3.4. Site Preparation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.75	5.70	25.7	0.05	0.16	—	0.16	0.15	—	0.15	—	4,800	4,800	0.19	0.04	—	4,816
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.03	4.64	0.01	0.03	—	0.03	0.03	—	0.03	—	868	868	0.04	0.01	—	871
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.19	0.85	< 0.005	0.01	—	0.01	0.01	—	0.01	—	144	144	0.01	< 0.005	—	144
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.35	5.88	0.00	0.00	1.19	1.19	0.00	0.28	0.28	—	1,233	1,233	0.05	0.04	4.17	1,251
Vendor	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
Hauling	0.04	3.11	1.22	0.02	0.03	0.70	0.74	0.03	0.19	0.23	—	2,585	2,585	0.14	0.41	5.80	2,717
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.06	0.08	0.95	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	214	214	0.01	0.01	0.33	217
Vendor	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
Hauling	0.01	0.59	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	467	467	0.03	0.07	0.45	491
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.17	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	35.5	35.5	< 0.005	< 0.005	0.05	36.0
Vendor	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
Hauling	< 0.005	0.11	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	77.4	77.4	< 0.005	0.01	0.07	81.3

3.5. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	14.4	10.5	0.02	0.62	—	0.62	0.57	—	0.57	—	1,904	1,904	0.08	0.02	—	1,911
Dust From Material Movement	—	—	—	—	—	8.66	8.66	—	4.26	4.26	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	2.60	1.90	< 0.005	0.11	—	0.11	0.10	—	0.10	—	343	343	0.01	< 0.005	—	344

Dust From Material Movement	—	—	—	—	—	1.56	1.56	—	0.77	0.77	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.47	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	56.8	56.8	< 0.005	< 0.005	—	57.0
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.36	4.57	0.00	0.00	1.08	1.08	0.00	0.25	0.25	—	1,066	1,066	0.05	0.04	0.10	1,079
Vendor	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
Hauling	0.11	7.62	3.20	0.04	0.07	1.49	1.56	0.07	0.41	0.48	—	5,562	5,562	0.34	0.89	0.32	5,836
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.86	0.00	0.00	0.19	0.19	0.00	0.05	0.05	—	195	195	0.01	0.01	0.30	197
Vendor	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
Hauling	0.02	1.38	0.57	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	1,001	1,001	0.06	0.16	0.95	1,051
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	32.2	32.2	< 0.005	< 0.005	0.05	32.7
Vendor	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

Hauling	< 0.005	0.25	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	166	166	0.01	0.03	0.16	174

3.6. Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.94	9.82	0.02	0.04	—	0.04	0.04	—	0.04	—	1,904	1,904	0.08	0.02	—	1,911
Dust From Material Movement	—	—	—	—	—	2.25	2.25	—	1.11	1.11	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.17	1.77	< 0.005	0.01	—	0.01	0.01	—	0.01	—	343	343	0.01	< 0.005	—	344
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.20	0.20	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.03	0.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	56.8	56.8	< 0.005	< 0.005	—	57.0

Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.36	4.57	0.00	0.00	1.08	1.08	0.00	0.25	0.25	—	1,066	1,066	0.05	0.04	0.10	1,079
Vendor	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
Hauling	0.11	7.62	3.20	0.04	0.07	1.49	1.56	0.07	0.41	0.48	—	5,562	5,562	0.34	0.89	0.32	5,836
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.86	0.00	0.00	0.19	0.19	0.00	0.05	0.05	—	195	195	0.01	0.01	0.30	197
Vendor	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
Hauling	0.02	1.38	0.57	0.01	0.01	0.27	0.28	0.01	0.07	0.09	—	1,001	1,001	0.06	0.16	0.95	1,051
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	32.2	32.2	< 0.005	< 0.005	0.05	32.7
Vendor	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
Hauling	< 0.005	0.25	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	166	166	0.01	0.03	0.16	174

3.7. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	13.1	10.3	0.02	0.56	—	0.56	0.52	—	0.52	—	1,905	1,905	0.08	0.02	—	1,911
Dust From Material Movement	—	—	—	—	—	8.66	8.66	—	4.26	4.26	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	2.31	1.82	< 0.005	0.10	—	0.10	0.09	—	0.09	—	335	335	0.01	< 0.005	—	337
Dust From Material Movement	—	—	—	—	—	1.52	1.52	—	0.75	0.75	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.42	0.33	< 0.005	0.02	—	0.02	0.02	—	0.02	—	55.5	55.5	< 0.005	< 0.005	—	55.7
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.36	4.22	0.00	0.00	1.08	1.08	0.00	0.25	0.25	—	1,046	1,046	0.01	0.04	0.09	1,058
Vendor	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
Hauling	0.11	7.39	3.13	0.04	0.07	1.49	1.56	0.07	0.41	0.48	—	5,453	5,453	0.30	0.89	0.30	5,726
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.78	0.00	0.00	0.19	0.19	0.00	0.04	0.04	—	187	187	< 0.005	0.01	0.26	189
Vendor	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
Hauling	0.02	1.31	0.55	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	960	960	0.05	0.16	0.87	1,009
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.9	30.9	< 0.005	< 0.005	0.04	31.3
Vendor	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
Hauling	< 0.005	0.24	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	159	159	0.01	0.03	0.14	167

3.8. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.94	9.82	0.02	0.04	—	0.04	0.04	—	0.04	—	1,905	1,905	0.08	0.02	—	1,911

Dust From Material Movement	—	—	—	—	—	2.25	2.25	—	1.11	1.11	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.17	1.73	< 0.005	0.01	—	0.01	0.01	—	0.01	—	335	335	0.01	< 0.005	—	337
Dust From Material Movement	—	—	—	—	—	0.40	0.40	—	0.20	0.20	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.03	0.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	55.5	55.5	< 0.005	< 0.005	—	55.7
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.36	4.22	0.00	0.00	1.08	1.08	0.00	0.25	0.25	—	1,046	1,046	0.01	0.04	0.09	1,058
Vendor	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
Hauling	0.11	7.39	3.13	0.04	0.07	1.49	1.56	0.07	0.41	0.48	—	5,453	5,453	0.30	0.89	0.30	5,726

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.78	0.00	0.00	0.19	0.19	0.00	0.04	0.04	—	187	187	< 0.005	0.01	0.26	189
Vendor	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
Hauling	0.02	1.31	0.55	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	960	960	0.05	0.16	0.87	1,009
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.9	30.9	< 0.005	< 0.005	0.04	31.3
Vendor	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
Hauling	< 0.005	0.24	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	159	159	0.01	0.03	0.14	167

3.9. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	10.7	105	111	0.22	4.01	—	4.01	3.69	—	3.69	—	22,496	22,496	0.91	0.18	—	22,573
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	10.7	105	111	0.22	4.01	—	4.01	3.69	—	3.69	—	22,496	22,496	0.91	0.18	—	22,573
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	7.01	68.4	72.5	0.14	2.62	—	2.62	2.41	—	2.41	—	14,704	14,704	0.60	0.12	—	14,754
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.5	13.2	0.03	0.48	—	0.48	0.44	—	0.44	—	2,434	2,434	0.10	0.02	—	2,443
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.30	2.24	39.0	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,625	8,625	0.36	0.31	26.9	8,752
Vendor	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
Hauling	0.05	3.48	1.38	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,934	2,934	0.15	0.48	6.24	3,086
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.26	2.80	33.0	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,177	8,177	0.11	0.31	0.70	8,272
Vendor	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
Hauling	0.04	3.62	1.39	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,935	2,935	0.15	0.48	0.16	3,081
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.48	1.83	22.7	0.00	0.00	5.48	5.48	0.00	1.28	1.28	—	5,423	5,423	0.07	0.20	7.57	5,493
Vendor	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
Hauling	0.03	2.39	0.91	0.01	0.03	0.53	0.55	0.03	0.14	0.17	—	1,918	1,918	0.10	0.31	1.76	2,015
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.33	4.14	0.00	0.00	1.00	1.00	0.00	0.23	0.23	—	898	898	0.01	0.03	1.25	909
Vendor	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
Hauling	0.01	0.44	0.17	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	318	318	0.02	0.05	0.29	334

3.10. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.73	19.1	128	0.22	0.59	—	0.59	0.57	—	0.57	—	22,496	22,496	0.91	0.18	—	22,573
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.73	19.1	128	0.22	0.59	—	0.59	0.57	—	0.57	—	22,496	22,496	0.91	0.18	—	22,573
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.79	12.5	83.6	0.14	0.38	—	0.38	0.37	—	0.37	—	14,704	14,704	0.60	0.12	—	14,754
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	2.28	15.3	0.03	0.07	—	0.07	0.07	—	0.07	—	2,434	2,434	0.10	0.02	—	2,443
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.30	2.24	39.0	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,625	8,625	0.36	0.31	26.9	8,752
Vendor	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
Hauling	0.05	3.48	1.38	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,934	2,934	0.15	0.48	6.24	3,086
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.26	2.80	33.0	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,177	8,177	0.11	0.31	0.70	8,272
Vendor	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
Hauling	0.04	3.62	1.39	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,935	2,935	0.15	0.48	0.16	3,081
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.48	1.83	22.7	0.00	0.00	5.48	5.48	0.00	1.28	1.28	—	5,423	5,423	0.07	0.20	7.57	5,493
Vendor	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
Hauling	0.03	2.39	0.91	0.01	0.03	0.53	0.55	0.03	0.14	0.17	—	1,918	1,918	0.10	0.31	1.76	2,015
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.33	4.14	0.00	0.00	1.00	1.00	0.00	0.23	0.23	—	898	898	0.01	0.03	1.25	909
Vendor	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
Hauling	0.01	0.44	0.17	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	318	318	0.02	0.05	0.29	334

3.11. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	10.4	99.6	110	0.22	3.74	—	3.74	3.44	—	3.44	—	22,495	22,495	0.91	0.18	—	22,572
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	10.4	99.6	110	0.22	3.74	—	3.74	3.44	—	3.44	—	22,495	22,495	0.91	0.18	—	22,572
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	7.44	71.3	79.1	0.16	2.68	—	2.68	2.46	—	2.46	—	16,112	16,112	0.65	0.13	—	16,167
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.36	13.0	14.4	0.03	0.49	—	0.49	0.45	—	0.45	—	2,667	2,667	0.11	0.02	—	2,677
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.22	2.21	36.6	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,470	8,470	0.09	0.31	24.1	8,588
Vendor	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
Hauling	0.05	3.37	1.34	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,868	2,868	0.15	0.46	5.80	3,014
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.20	2.52	31.1	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,031	8,031	0.10	0.31	0.62	8,126

Vendor	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
Hauling	0.04	3.50	1.36	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,869	2,869	0.15	0.46	0.15	3,009
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.57	1.79	23.3	0.00	0.00	6.01	6.01	0.00	1.41	1.41	—	5,837	5,837	0.07	0.22	7.48	5,912
Vendor	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
Hauling	0.03	2.54	0.97	0.01	0.03	0.58	0.61	0.03	0.16	0.19	—	2,054	2,054	0.10	0.33	1.80	2,157
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.33	4.25	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	966	966	0.01	0.04	1.24	979
Vendor	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
Hauling	0.01	0.46	0.18	< 0.005	0.01	0.11	0.11	0.01	0.03	0.03	—	340	340	0.02	0.05	0.30	357

3.12. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.71	19.0	128	0.22	0.57	—	0.57	0.56	—	0.56	—	22,495	22,495	0.91	0.18	—	22,572
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.71	19.0	128	0.22	0.57	—	0.57	0.56	—	0.56	—	22,495	22,495	0.91	0.18	—	22,572
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.94	13.6	91.7	0.16	0.41	—	0.41	0.40	—	0.40	—	16,112	16,112	0.65	0.13	—	16,167
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35	2.48	16.7	0.03	0.07	—	0.07	0.07	—	0.07	—	2,667	2,667	0.11	0.02	—	2,677
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.22	2.21	36.6	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,470	8,470	0.09	0.31	24.1	8,588
Vendor	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
Hauling	0.05	3.37	1.34	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,868	2,868	0.15	0.46	5.80	3,014
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.20	2.52	31.1	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,031	8,031	0.10	0.31	0.62	8,126
Vendor	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
Hauling	0.04	3.50	1.36	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,869	2,869	0.15	0.46	0.15	3,009
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.57	1.79	23.3	0.00	0.00	6.01	6.01	0.00	1.41	1.41	—	5,837	5,837	0.07	0.22	7.48	5,912
Vendor	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
Hauling	0.03	2.54	0.97	0.01	0.03	0.58	0.61	0.03	0.16	0.19	—	2,054	2,054	0.10	0.33	1.80	2,157
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.33	4.25	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	966	966	0.01	0.04	1.24	979

Vendor	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
Hauling	0.01	0.46	0.18	< 0.005	0.01	0.11	0.11	0.01	0.03	0.03	—	340	340	0.02	0.05	0.30	357

3.13. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	10.2	97.3	110	0.22	3.61	—	3.61	3.32	—	3.32	—	22,494	22,494	0.91	0.18	—	22,571
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	10.2	97.3	110	0.22	3.61	—	3.61	3.32	—	3.32	—	22,494	22,494	0.91	0.18	—	22,571
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.61	34.3	38.8	0.08	1.27	—	1.27	1.17	—	1.17	—	7,924	7,924	0.32	0.06	—	7,951
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	6.26	7.08	0.01	0.23	—	0.23	0.21	—	0.21	—	1,312	1,312	0.05	0.01	—	1,316
Onsite truck	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

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.13	1.93	34.2	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,326	8,326	0.09	0.31	21.6	8,442
Vendor	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
Hauling	0.05	3.25	1.32	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,800	2,800	0.15	0.44	5.38	2,939
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.10	2.22	29.0	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	7,895	7,895	0.10	0.31	0.56	7,990
Vendor	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
Hauling	0.04	3.38	1.32	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,801	2,801	0.14	0.44	0.14	2,935
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.74	0.78	10.7	0.00	0.00	2.95	2.95	0.00	0.69	0.69	—	2,822	2,822	0.04	0.11	3.29	2,858
Vendor	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
Hauling	0.02	1.20	0.47	0.01	0.01	0.28	0.30	0.01	0.08	0.09	—	986	986	0.05	0.15	0.82	1,034
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.14	1.95	0.00	0.00	0.54	0.54	0.00	0.13	0.13	—	467	467	0.01	0.02	0.55	473
Vendor	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
Hauling	< 0.005	0.22	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	163	163	0.01	0.03	0.14	171

3.14. Building Construction (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.73	19.1	128	0.22	0.59	—	0.59	0.57	—	0.57	—	22,494	22,494	0.91	0.18	—	22,571
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.73	19.1	128	0.22	0.59	—	0.59	0.57	—	0.57	—	22,494	22,494	0.91	0.18	—	22,571
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.96	6.73	45.1	0.08	0.21	—	0.21	0.20	—	0.20	—	7,924	7,924	0.32	0.06	—	7,951
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	1.23	8.23	0.01	0.04	—	0.04	0.04	—	0.04	—	1,312	1,312	0.05	0.01	—	1,316
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.13	1.93	34.2	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	8,326	8,326	0.09	0.31	21.6	8,442
Vendor	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
Hauling	0.05	3.25	1.32	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,800	2,800	0.15	0.44	5.38	2,939
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.10	2.22	29.0	0.00	0.00	8.48	8.48	0.00	1.99	1.99	—	7,895	7,895	0.10	0.31	0.56	7,990

Vendor	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
Hauling	0.04	3.38	1.32	0.02	0.04	0.82	0.85	0.04	0.22	0.26	—	2,801	2,801	0.14	0.44	0.14	2,935
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.74	0.78	10.7	0.00	0.00	2.95	2.95	0.00	0.69	0.69	—	2,822	2,822	0.04	0.11	3.29	2,858
Vendor	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
Hauling	0.02	1.20	0.47	0.01	0.01	0.28	0.30	0.01	0.08	0.09	—	986	986	0.05	0.15	0.82	1,034
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.14	1.95	0.00	0.00	0.54	0.54	0.00	0.13	0.13	—	467	467	0.01	0.02	0.55	473
Vendor	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
Hauling	< 0.005	0.22	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	163	163	0.01	0.03	0.14	171

3.15. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	9.65	10.7	0.02	0.40	—	0.40	0.37	—	0.37	—	2,555	2,555	0.10	0.02	—	2,564
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.12	1.14	1.26	< 0.005	0.05	—	0.05	0.04	—	0.04	—	301	301	0.01	< 0.005	—	302
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.21	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	49.8	49.8	< 0.005	< 0.005	—	50.0
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.40	5.02	0.00	0.00	1.19	1.19	0.00	0.28	0.28	—	1,169	1,169	0.05	0.04	0.11	1,183
Vendor	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
Hauling	0.01	0.85	0.33	< 0.005	0.01	0.19	0.19	0.01	0.05	0.06	—	680	680	0.04	0.11	0.04	714
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.62	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	140	140	0.01	0.01	0.21	142
Vendor	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
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	80.1	80.1	< 0.005	0.01	0.08	84.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.04	23.4
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.3	13.3	< 0.005	< 0.005	0.01	13.9

3.16. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	1.25	14.9	0.02	0.05	—	0.05	0.05	—	0.05	—	2,555	2,555	0.10	0.02	—	2,564
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.15	1.75	< 0.005	0.01	—	0.01	0.01	—	0.01	—	301	301	0.01	< 0.005	—	302
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.03	0.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.8	49.8	< 0.005	< 0.005	—	50.0
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.40	5.02	0.00	0.00	1.19	1.19	0.00	0.28	0.28	—	1,169	1,169	0.05	0.04	0.11	1,183
Vendor	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
Hauling	0.01	0.85	0.33	< 0.005	0.01	0.19	0.19	0.01	0.05	0.06	—	680	680	0.04	0.11	0.04	714
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.62	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	140	140	0.01	0.01	0.21	142
Vendor	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
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	80.1	80.1	< 0.005	0.01	0.08	84.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.04	23.4
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.3	13.3	< 0.005	< 0.005	0.01	13.9

3.17. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	3.41	4.72	0.01	0.06	—	0.06	0.06	—	0.06	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	3.41	4.72	0.01	0.06	—	0.06	0.06	—	0.06	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	2.04	2.82	< 0.005	0.04	—	0.04	0.04	—	0.04	—	337	337	0.01	< 0.005	—	338
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.37	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	55.8	55.8	< 0.005	< 0.005	—	56.0
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.44	7.33	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,697	1,697	0.02	0.06	4.84	1,720
Vendor	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
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.50	6.24	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,609	1,609	0.02	0.06	0.13	1,628
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.30	3.90	0.00	0.00	1.01	1.01	0.00	0.24	0.24	—	978	978	0.01	0.04	1.25	990
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.71	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	162	162	< 0.005	0.01	0.21	164
Vendor	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
Hauling	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

3.18. Architectural Coating (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	3.41	4.72	0.01	0.06	—	0.06	0.06	—	0.06	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	3.41	4.72	0.01	0.06	—	0.06	0.06	—	0.06	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	2.04	2.82	< 0.005	0.04	—	0.04	0.04	—	0.04	—	337	337	0.01	< 0.005	—	338
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.37	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	55.8	55.8	< 0.005	< 0.005	—	56.0
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.44	7.33	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,697	1,697	0.02	0.06	4.84	1,720
Vendor	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
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.50	6.24	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,609	1,609	0.02	0.06	0.13	1,628
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.30	3.90	0.00	0.00	1.01	1.01	0.00	0.24	0.24	—	978	978	0.01	0.04	1.25	990
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.71	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	162	162	< 0.005	0.01	0.21	164
Vendor	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
Hauling	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

3.19. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.35	4.69	0.01	0.05	—	0.05	0.05	—	0.05	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.35	4.69	0.01	0.05	—	0.05	0.05	—	0.05	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.18	1.65	< 0.005	0.02	—	0.02	0.02	—	0.02	—	198	198	0.01	< 0.005	—	199
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.22	0.30	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.8	32.8	< 0.005	< 0.005	—	32.9
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.39	6.86	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,668	1,668	0.02	0.06	4.33	1,691
Vendor	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
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.42	0.45	5.80	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,581	1,581	0.02	0.06	0.11	1,600
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.16	2.15	0.00	0.00	0.59	0.59	0.00	0.14	0.14	—	565	565	0.01	0.02	0.66	573
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.39	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	93.6	93.6	< 0.005	< 0.005	0.11	94.8
Vendor	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
Hauling	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

3.20. Architectural Coating (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.35	4.69	0.01	0.05	—	0.05	0.05	—	0.05	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.35	4.69	0.01	0.05	—	0.05	0.05	—	0.05	—	563	563	0.02	< 0.005	—	565
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.18	1.65	< 0.005	0.02	—	0.02	0.02	—	0.02	—	198	198	0.01	< 0.005	—	199
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.22	0.30	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.8	32.8	< 0.005	< 0.005	—	32.9
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.39	6.86	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,668	1,668	0.02	0.06	4.33	1,691
Vendor	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
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.42	0.45	5.80	0.00	0.00	1.70	1.70	0.00	0.40	0.40	—	1,581	1,581	0.02	0.06	0.11	1,600
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.16	2.15	0.00	0.00	0.59	0.59	0.00	0.14	0.14	—	565	565	0.01	0.02	0.66	573
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.39	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	93.6	93.6	< 0.005	< 0.005	0.11	94.8
Vendor	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
Hauling	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

3.21. Mobilization (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.14	2.26	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	474	474	0.02	0.02	1.60	481
Vendor	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
Hauling	0.01	0.49	0.19	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	408	408	0.02	0.07	0.92	429
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	53.7	53.7	< 0.005	< 0.005	0.08	54.5
Vendor	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
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	48.1	48.1	< 0.005	0.01	0.05	50.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.90	8.90	< 0.005	< 0.005	0.01	9.02
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.96	7.96	< 0.005	< 0.005	0.01	8.36

3.22. Mobilization (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.14	2.26	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	474	474	0.02	0.02	1.60	481

Vendor	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
Hauling	0.01	0.49	0.19	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	408	408	0.02	0.07	0.92	429
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	53.7	53.7	< 0.005	< 0.005	0.08	54.5
Vendor	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
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	48.1	48.1	< 0.005	0.01	0.05	50.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.90	8.90	< 0.005	< 0.005	0.01	9.02
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.96	7.96	< 0.005	< 0.005	0.01	8.36

3.23. Commissioning (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.85	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	449	449	< 0.005	0.02	1.17	455
Vendor	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
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	255	255	0.01	0.04	0.49	267
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.12	1.56	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	426	426	0.01	0.02	0.03	431
Vendor	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
Hauling	< 0.005	0.31	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	255	255	0.01	0.04	0.01	267
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	154	154	< 0.005	0.01	0.18	156

Vendor	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
Hauling	< 0.005	0.11	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	90.7	90.7	< 0.005	0.01	0.08	95.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.5	25.5	< 0.005	< 0.005	0.03	25.8
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.0	15.0	< 0.005	< 0.005	0.01	15.7

3.24. Commissioning (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.85	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	449	449	< 0.005	0.02	1.17	455
Vendor	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
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	255	255	0.01	0.04	0.49	267
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.12	1.56	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	426	426	0.01	0.02	0.03	431
Vendor	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
Hauling	< 0.005	0.31	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	255	255	0.01	0.04	0.01	267
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	154	154	< 0.005	0.01	0.18	156
Vendor	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
Hauling	< 0.005	0.11	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	90.7	90.7	< 0.005	0.01	0.08	95.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.5	25.5	< 0.005	< 0.005	0.03	25.8
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.0	15.0	< 0.005	< 0.005	0.01	15.7

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	4/3/2026	4/30/2026	5.00	20.0	Demolition
Site Preparation	Site Preparation	7/1/2026	9/30/2026	5.00	66.0	Retaining Walls
Grading	Grading	10/1/2026	3/31/2027	5.00	130	Unit 3 Basin Backfill, Compact & Grade
Building Construction	Building Construction	2/1/2027	6/29/2029	5.00	630	Civil Earthwork, Foundations, Structural Steel, Mechanical, Electrial
Paving	Paving	10/1/2026	11/30/2026	5.00	43.0	Paving
Architectural Coating	Architectural Coating	3/1/2028	6/29/2029	5.00	348	Architectural Coating
Mobilization	Architectural Coating	5/1/2026	6/30/2026	5.00	43.0	Miscellaneous - Mobilization worker trips and fuel delivery

Commissioning	Architectural Coating	7/1/2029	12/28/2029	5.00	130	Fuel Delivery for Commissioning

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	63.0	0.31
Site Preparation	Air Compressors	Diesel	Average	1.00	6.00	78.0	0.48
Site Preparation	Bore/Drill Rigs	Diesel	Average	1.00	6.00	206	0.50
Site Preparation	Cranes	Diesel	Average	1.00	6.00	226	0.29
Site Preparation	Pumps	Diesel	Average	1.00	2.00	84.0	0.74
Site Preparation	Rubber Tired Loaders	Diesel	Average	5.00	6.00	200	0.36
Grading	Graders	Diesel	Average	1.00	6.00	175	0.41
Grading	Rollers	Diesel	Average	1.00	6.00	81.0	0.38
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	255	0.40
Grading	Rubber Tired Dozers	Diesel	Average	1.00	4.00	255	0.40
Building Construction	Aerial Lifts	Diesel	Average	12.0	6.00	63.0	0.31
Building Construction	Air Compressors	Diesel	Average	1.00	6.00	78.0	0.48
Building Construction	Cranes	Diesel	Average	8.00	6.00	226	0.29
Building Construction	Excavators	Diesel	Average	2.00	6.00	163	0.38
Building Construction	Forklifts	Diesel	Average	7.00	6.00	89.0	0.20
Building Construction	Welders	Electric	Average	6.00	6.00	46.0	0.45
Building Construction	Generator Sets	Diesel	Average	4.00	6.00	84.0	0.74

Building Construction	Graders	Diesel	Average	1.00	6.00	175	0.41
Building Construction	Other Construction Equipment	Diesel	Average	2.00	6.00	82.0	0.42
Building Construction	Other General Industrial Equipment	Diesel	Average	3.00	6.00	35.0	0.34
Building Construction	Pumps	Diesel	Average	1.00	4.00	84.0	0.74
Building Construction	Rollers	Diesel	Average	3.00	6.00	81.0	0.38
Building Construction	Rubber Tired Dozers	Diesel	Average	5.00	6.00	255	0.40
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	6.00	200	0.36
Building Construction	Scrapers	Diesel	Average	4.00	6.00	362	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	6.00	65.0	0.37
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	5.00	6.00	98.0	0.37
Building Construction	Trenchers	Diesel	Average	2.00	6.00	81.0	0.50
Paving	Cranes	Diesel	Average	2.00	6.00	226	0.29
Paving	Excavators	Diesel	Average	1.00	6.00	163	0.38
Paving	Other Construction Equipment	Diesel	Average	1.00	4.00	172	0.42
Paving	Pumps	Diesel	Average	1.00	2.00	84.0	0.74
Paving	Rollers	Diesel	Average	1.00	6.00	81.0	0.38
Paving	Rubber Tired Loaders	Diesel	Average	1.00	6.00	200	0.36
Architectural Coating	Air Compressors	Diesel	Average	2.00	6.00	78.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Tier 4 Final	2.00	8.00	367	0.40
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38

Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	63.0	0.31
Site Preparation	Air Compressors	Diesel	Average	1.00	6.00	78.0	0.48
Site Preparation	Bore/Drill Rigs	Diesel	Tier 4 Final	1.00	6.00	206	0.50
Site Preparation	Cranes	Diesel	Tier 4 Final	1.00	6.00	226	0.29
Site Preparation	Pumps	Diesel	Tier 4 Final	1.00	2.00	84.0	0.74
Site Preparation	Rubber Tired Loaders	Diesel	Tier 4 Final	5.00	6.00	200	0.36
Grading	Graders	Diesel	Tier 4 Final	1.00	6.00	175	0.41
Grading	Rollers	Diesel	Tier 4 Final	1.00	6.00	81.0	0.38
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	6.00	255	0.40
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	4.00	255	0.40
Building Construction	Aerial Lifts	Diesel	Average	12.0	6.00	63.0	0.31
Building Construction	Air Compressors	Diesel	Average	1.00	6.00	78.0	0.48
Building Construction	Cranes	Diesel	Tier 4 Final	8.00	6.00	226	0.29
Building Construction	Excavators	Diesel	Tier 4 Final	2.00	6.00	163	0.38
Building Construction	Forklifts	Diesel	Tier 4 Final	7.00	6.00	89.0	0.20
Building Construction	Welders	Electric	Average	6.00	6.00	46.0	0.45
Building Construction	Generator Sets	Diesel	Tier 4 Final	4.00	6.00	84.0	0.74
Building Construction	Graders	Diesel	Tier 4 Final	1.00	6.00	175	0.41
Building Construction	Other Construction Equipment	Diesel	Tier 4 Final	2.00	6.00	82.0	0.42
Building Construction	Other General Industrial Equipment	Diesel	Average	3.00	6.00	35.0	0.34
Building Construction	Pumps	Diesel	Tier 4 Final	1.00	4.00	84.0	0.74
Building Construction	Rollers	Diesel	Tier 4 Final	3.00	6.00	81.0	0.38
Building Construction	Rubber Tired Dozers	Diesel	Tier 4 Final	5.00	6.00	255	0.40
Building Construction	Rubber Tired Loaders	Diesel	Tier 4 Final	1.00	6.00	200	0.36
Building Construction	Scrapers	Diesel	Tier 4 Final	4.00	6.00	362	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	6.00	65.0	0.37

Building Construction	Tractors/Loaders/Backh	Diesel	Tier 4 Final	5.00	6.00	98.0	0.37
Building Construction	Trenchers	Diesel	Tier 4 Final	2.00	6.00	81.0	0.50
Paving	Cranes	Diesel	Tier 4 Final	2.00	6.00	226	0.29
Paving	Excavators	Diesel	Tier 4 Final	1.00	6.00	163	0.38
Paving	Other Construction Equipment	Diesel	Tier 4 Final	1.00	4.00	172	0.42
Paving	Pumps	Diesel	Tier 4 Final	1.00	2.00	84.0	0.74
Paving	Rollers	Diesel	Tier 4 Final	1.00	6.00	81.0	0.38
Paving	Rubber Tired Loaders	Diesel	Tier 4 Final	1.00	6.00	200	0.36
Architectural Coating	Air Compressors	Diesel	Average	2.00	6.00	78.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	0.15	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	91.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	38.0	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	83.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT

Grading	Hauling	134	12.0	HHDT
Grading	Onsite truck	0.00	0.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	130	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	649	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	10.2	HHDT,MHDT
Building Construction	Hauling	44.0	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	91.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	10.0	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Mobilization	—	—	—	—
Mobilization	Worker	35.0	18.5	LDA,LDT1,LDT2
Mobilization	Vendor	0.00	10.2	HHDT,MHDT
Mobilization	Hauling	6.00	20.0	HHDT
Mobilization	Onsite truck	—	—	HHDT
Commissioning	—	—	—	—
Commissioning	Worker	35.0	18.5	LDA,LDT1,LDT2
Commissioning	Vendor	—	10.2	HHDT,MHDT
Commissioning	Hauling	4.00	20.0	HHDT
Commissioning	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	0.15	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	91.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	38.0	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	83.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	134	12.0	HHDT
Grading	Onsite truck	0.00	0.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	130	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	649	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	10.2	HHDT,MHDT
Building Construction	Hauling	44.0	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT

Paving	—	—	—	—
Paving	Worker	91.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	10.0	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Mobilization	—	—	—	—
Mobilization	Worker	35.0	18.5	LDA,LDT1,LDT2
Mobilization	Vendor	0.00	10.2	HHDT,MHDT
Mobilization	Hauling	6.00	20.0	HHDT
Mobilization	Onsite truck	—	—	HHDT
Commissioning	—	—	—	—
Commissioning	Worker	35.0	18.5	LDA,LDT1,LDT2
Commissioning	Vendor	—	10.2	HHDT,MHDT
Commissioning	Hauling	4.00	20.0	HHDT
Commissioning	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	0.00	0.00	—
Mobilization	0.00	0.00	0.00	0.00	—
Commissioning	0.00	0.00	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	12.0	—
Site Preparation	—	2,400	0.00	0.00	—
Grading	110,000	—	17.5	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Heavy Industry	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	556	690	0.05	0.01
2028	556	690	0.05	0.01
2026	0.00	690	0.05	0.01
2029	556	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	5.52	annual days of extreme heat
Extreme Precipitation	4.90	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	32.1

AQ-PM	76.7
AQ-DPM	95.6
Drinking Water	—
Lead Risk Housing	—
Pesticides	42.7
Toxic Releases	86.5
Traffic	84.1
Effect Indicators	—
CleanUp Sites	72.4
Groundwater	96.6
Haz Waste Facilities/Generators	92.7
Impaired Water Bodies	0.00
Solid Waste	55.5
Sensitive Population	—
Asthma	15.5
Cardio-vascular	28.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—

Insured adults	—
Arthritis	0.0
Asthma ER Admissions	66.0
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	0.0
Physically Disabled	0.0
Heart Attack ER Admissions	61.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	0.0

Elderly	0.0
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	0.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	0.5
Traffic Density	0.0
Traffic Access	87.4
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Project specific
Construction: Construction Phases	Project specific
Construction: Off-Road Equipment	Project specific
Construction: Off-Road Equipment EF	EFs from CalEEMod Appendix D: Default Data Tables
Construction: Dust From Material Movement	Project specific
Construction: Trips and VMT	Project specific

APPENDIX B – SUPPLEMENTAL EMISSION CALCULATIONS

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Vendor Emissions Summary - 1 Cold Start, 1 Shutdown - Compare to Baseline

Table B.1 - Case A - Normal Ops Using 100% NG

-	VOC	CO	NOx	SOx	PM10	PM2.5
Vendor A Total Peak Emissions (lb/day)	267	1,246	581	46.1	194	194
Vendor B Total Peak Emissions (lb/day)	934	2,355	573	47.6	239	239
Vendor C Total Peak Emissions (lb/day)	252	955	479	40.0	217	217
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	374	374
Vendor A Incremental Change in Emissions (lb/day)	-3.1	-2,047	-351	11.0	-180.0	-180.0
Vendor B Incremental Change in Emissions (lb/day)	664	-938	-359	12.5	-134.7	-134.7
Vendor C Incremental Change in Emissions (lb/day)	-18.3	-2,338	-453	4.9	-156.4	-156.4
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Vendor A Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N
Vendor B Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N
Vendor C Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Table B.2 - Case B - Normal Ops Using Minimum 30% H2

-	VOC	CO	NOx	SOx	PM10	PM2.5
Vendor A Total Peak Emissions (lb/day)	263	1,242	570	43.8	191	191
Vendor B Total Peak Emissions (lb/day)	930	2,355	573	42.4	226	226
Vendor C Total Peak Emissions (lb/day)	250	950	470	35.4	236	236
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	374	374
Vendor A Incremental Change in Emissions (lb/day)	-7.6	-2,051	-362	8.7	-182.2	-182.2
Vendor B Incremental Change in Emissions (lb/day)	659	-938	-359	7.3	-147.5	-147.5
Vendor C Incremental Change in Emissions (lb/day)	-20.6	-2,343	-462	0.3	-138.0	-138.0
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Vendor A Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N
Vendor B Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N
Vendor C Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Daily Emissions - Vendor A - 1 Cold Start, 1 Shutdown - Compare to Baseline

Table B.3 - Case A - Normal Ops Using 100% NG

-	VOC	CO	NOx	SOx	PM10	PM2.5
Cold Startup Emissions (lb/hr)	54.0	495	109	0.883	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	54.0	495	109	0.883	6.2	6.2
Warm Startup Emissions (lb/hr)	51	341	82	1.03	7.2	7.2
Warm Startup Duration (hr/day)	0	0	0	0	0	0
Warm Startup Emissions (lb/day)	0	0	0	0	0	0
Shutdown Emissions (lb/hr)	152	1,142	152	0.37	2.6	2.6
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	76.0	571	76.0	0.187	1.30	1.30
Normal Ops Emissions (lb/hr)	6.10	8.00	17.6	2.00	8.27	8.27
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	137	180	396	45.0	186	186
Total Peak Daily Emissions (lb/day)	**267**	**1,246**	**581**	**46.1**	**194**	**194**
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-3.1	-2,047	-351	11.0	-180.0	-180.0
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Table B.4 - Case B - Normal Ops Using Minimum 30% H2

-	VOC	CO	NOx	SOx	PM10	PM2.5
Cold Startup Emissions (lb/hr)	54	495	109	0.883	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	54.0	495	109	0.883	6.2	6.2
Warm Startup Emissions (lb/hr)	51	341	82	1.03	7.2	7.2
Warm Startup Duration (hr/day)	0	0	0	0	0	0
Warm Startup Emissions (lb/day)	0	0	0	0	0	0
Shutdown Emissions (lb/hr)	152	1,142	152	0.37	2.6	2.6
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	76.0	571	76.0	0.187	1.30	1.30
Normal Ops Emissions (lb/hr)	5.90	7.80	17.10	1.90	8.17	8.17
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	133	176	385	42.8	184	184
Total Peak Daily Emissions (lb/day)	**263**	**1,242**	**570**	**43.8**	**191**	**191**
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-7.6	-2,051	-362	8.7	-182.2	-182.2
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Table B.5 - Case A - Normal Ops Using 100% NG

AQIA Emission Rates Natural Gas Fuel Only								
	1-Hour Averaging		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.090E+02	1.375E+01	--	--	--	--	2.12E+05	3.053E+00
SO2	8.828E-01	1.113E-01	--	--	4.607E+01	2.421E-01	1.68E+04	2.421E-01
CO	4.950E+02	6.243E+01	5.510E+02	8.686E+00	--	--	--	--
PM10	--	--	--	--	1.936E+02	1.017E+00	7.07E+04	1.017E+00
PM2.5	--	--	--	--	1.936E+02	1.017E+00	7.07E+04	1.017E+00

[1] 1-Hour Averaging Period (lb/hr) = 1 Hour cold startup emissions

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) =1 Hour cold startup emissions + 7 Hour operational emissions

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

Table B.6 - Case B - Normal Ops Using Minimum 30% H2

AQIA Emission Rates Natural Gas + H2 Fuel								
	1-Hour Averaging		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.710E+01	2.157E+00	--	--	--	--	2.08E+05	2.994E+00
SO2	1.900E+00	2.396E-01	--	--	4.382E+01	2.303E-01	1.60E+04	2.303E-01
CO	7.800E+00	9.837E-01	6.240E+01	9.837E-01	--	--	--	--
PM10	--	--	--	--	1.913E+02	1.005E+00	6.98E+04	1.005E+00
PM2.5	--	--	--	--	1.913E+02	1.005E+00	6.98E+04	1.005E+00

[1] 1-Hour Averaging Period (lb/hr) = 1-Hour Normal Operations

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 8 x 1-Hour Normal Operations

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

Daily Emissions - Vendor B - 1 Cold Start, 1 Shutdown - Compare to Baseline

Table B.7 -Case A - Normal Ops Using 100% NG

-	VOC	CO	NOx	SOx	PM10	PM2.5
Cold Startup Emissions (lb/hr)	520	1400	60	1.05	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	520	1400	60	1.05	6.2	6.2
Warm Startup Emissions (lb/hr)	530.00	1400.00	60.00	1.05	6.2	6.2
Warm Startup Duration (hr/day)	0	0	0	0	0.0	0.0
Warm Startup Emissions (lb/day)	0	0	0	0	0.0	0.0
Shutdown Emissions (lb/hr)	500	1,460	80	1.24	7.2	7.2
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	250.0	730	40.0	0.621	3.60	3.60
Normal Ops Emissions (lb/hr)	7.30	10.00	21	2.04	10.18	10.18
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	164	225	473	45.9	229	229
Total Peak Daily Emissions (lb/day)	**934**	**2,355**	**573**	**47.6**	**239**	**239**
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	664	-938	-359	12.5	-134.7	-134.7
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N

Table B.8 -Case B - Normal Ops Using Minimum 30% H2

-	VOC	CO	NOx	SOx	PM10	PM2.5
Cold Startup Emissions (lb/hr)	520	1,400	60.0	1.0	6.2	6.2
Cold Startup Duration (hr/day)	1.0	1.0	1.0	1.0	1.0	1.0
Cold Startup Emissions (lb/day)	520	1,400	60.0	1.0	6.2	6.2
Warm Startup Emissions (lb/hr)	530	1,400	60.0	1.0	6.2	6.2
Warm Startup Duration (hr/day)	0.0	0.0	0.0	0.0	0.0	0.0
Warm Startup Emissions (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0
Shutdown Emissions (lb/hr)	500	1,460	80.0	1.2	7.2	7.2
Shutdown Duration (hr/day)	0.5	0.5	0.5	0.5	0.5	0.5
Shutdown Emissions (lb/day)	250	730	40.0	0.6	3.6	3.6
Normal Ops Emissions (lb/hr)	7.1	10.0	21.0	1.8	9.6	9.6
Normal Ops Duration (hr/day)	22.5	22.5	22.5	22.5	22.5	22.5
Normal Ops Emissions (lb/day)	160	225	473	41	216	216
Total Peak Daily Emissions (lb/day)	**929.8**	**2,355.0**	**572.5**	**42.4**	**226.0**	**226.0**
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	373.6	373.6
Incremental Change in Emissions (lb/day)	659	-938	-359	7.3	-147.5	-147.5
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	Y	N	N	N	N	N

Table B.9 -Case A - Normal Ops Using 100% NG

AQIA Emission Rates Natural Gas Fuel Only								
	1-Hour Averaging		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	6.000E+01	7.567E+00	--	--	--	--	2.09E+05	3.008E+00
SO2	1.046E+00	1.320E-01	--	--	4.757E+01	2.499E-01	1.74E+04	2.499E-01
CO	1.400E+03	1.766E+02	1.470E+03	2.317E+01	--	--	--	--
PM10	--	--	--	--	2.389E+02	1.255E+00	8.72E+04	1.255E+00
PM2.5	--	--	--	--	2.389E+02	1.255E+00	8.72E+04	1.255E+00

[1] 1-Hour Averaging Period (lb/hr) = 1 Hour cold startup emissions

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) =1 Hour cold startup emissions + 7 Hour operational emissions

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

Table B.10 -Case B - Normal Ops Using Minimum 30% H2

AQIA Emission Rates Natural Gas + H2 Fuel								
	1-Hour Averaging		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	2.100E+01	2.648E+00	--	--	--	--	2.09E+05	3.008E+00
SO2	1.810E+00	2.283E-01	--	--	4.239E+01	2.228E-01	1.55E+04	2.228E-01
CO	1.000E+01	1.261E+00	1.470E+03	2.317E+01	--	--	--	--
PM10	--	--	--	--	2.260E+02	1.188E+00	8.25E+04	1.188E+00
PM2.5	--	--	--	--	2.260E+02	1.188E+00	8.25E+04	1.188E+00

[1] 1-Hour Averaging Period (lb/hr) = 1-Hour Normal Operations

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 8 x 1-Hour Normal Operations

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

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Daily Emissions - Vendor C - 1 Cold Start, 1 Shutdown - Compare to Baseline

Table B.11 - Case A - Normal Ops Using 100% NG

-	VOC	CO	NOx	SOx	PM10	PM2.5
Cold Startup Emissions (lb/hr)	82.1	900	79.5	1.019	7.35	7.35
Cold Startup Duration (hr/day)	0.67	0.67	0.67	0.67	0.67	0.67
Cold Startup Emissions (lb/day)	54.7	600	53	0.679	4.90	4.90
Warm Startup Emissions (lb/hr)	75.00	452.00	75.00	0.96	7.20	7.20
Warm Startup Duration (hr/day)	0	0	0	0	0	0
Warm Startup Emissions (lb/day)	0	0	0	0	0	0
Shutdown Emissions (lb/hr)	161	459	93.4	0.81	8.87	8.87
Shutdown Duration (hr/day)	0.38	0.38	0.38	0.38	0.38	0.38
Shutdown Emissions (lb/day)	61.9	176	35.8	0.310	3.40	3.40
Normal Ops Emissions (lb/hr)	5.90	7.80	17	1.70	9.1	9.1
Normal Ops Duration (hr/day)	22.95	22.95	22.95	22.95	22.95	22.95
Normal Ops Emissions (lb/day)	135	179	390	39.0	209	209
Total Peak Daily Emissions (lb/day)	**252**	**955**	**479**	**40.0**	**217**	**217**
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-18.3	-2,338	-453	4.9	-156.4	-156.4
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Table B.12 - Case B - Normal Ops Using Minimum 30% H2

-	VOC	CO	NOx	SOx	PM10	PM2.5
Cold Startup Emissions (lb/hr)	82.1	900	79.5	1.019	7.35	7.35
Cold Startup Duration (hr/day)	0.67	0.67	0.67	0.67	0.67	0.67
Cold Startup Emissions (lb/day)	54.7	600	53.0	0.679	4.90	4.90
Warm Startup Emissions (lb/hr)	75.00	452.00	75.00	0.96	7.20	7.20
Warm Startup Duration (hr/day)	0	0	0	0	0	0
Warm Startup Emissions (lb/day)	0	0	0	0	0	0
Shutdown Emissions (lb/hr)	161	459	93	1	9	9
Shutdown Duration (hr/day)	0.38	0.38	0.38	0.38	0.38	0.38
Shutdown Emissions (lb/day)	61.9	176	35.8	0.310	3.40	3.40
Normal Ops Emissions (lb/hr)	5.80	7.60	16.60	1.50	9.90	9.90
Normal Ops Duration (hr/day)	22.95	22.95	22.95	22.95	22.95	22.95
Normal Ops Emissions (lb/day)	133	174	381	34.4	227	227
Total Peak Daily Emissions (lb/day)	**250**	**950**	**470**	**35.4**	**236**	**236**
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35	374	374
Incremental Change in Emissions (lb/day)	-20.6	-2,343	-462	0.3	-138.0	-138.0
SCAQMD Mass Daily Emission Threshold (lb/day)	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)	N	N	N	N	N	N

Table B.13 - Case A - Normal Ops Using 100% NG

AQIA Emission Rates
Natural Gas Fuel Only

	1-Hour Averaging		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	5.861E+01	7.391E+00	--	--	--	--	1.75E+05	2.517E+00
SO2	1.240E+00	1.564E-01	--	--	4.000E+01	2.102E-01	1.46E+04	2.102E-01
CO	6.026E+02	7.599E+01	6.572E+02	1.036E+01	--	--	--	--
PM10	--	--	--	--	2.171E+02	1.141E+00	7.93E+04	1.141E+00
PM2.5	--	--	--	--	2.171E+02	1.141E+00	7.93E+04	1.141E+00

[1] 1-Hour Averaging Period (lb/hr) = 0.67 Hour cold startup emissions + 0.33 Hour operational emissions
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 0.67 Hour cold startup emissions + 7.33 Hour operational emissions
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = 0.67 Hour cold startup emissions + 22.95 Hour operational emissions + 0.38 Hour shutdown emissions
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600
[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days
[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

Table B.14 - Case B - Normal Ops Using Minimum 30% H2

AQIA Emission Rates
Natural Gas + H2 Fuel

	1-Hour Averaging		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.660E+01	2.093E+00	--	--	--	--	1.71E+05	2.468E+00
SO2	1.500E+00	1.892E-01	--	--	3.541E+01	1.861E-01	1.29E+04	1.861E-01
CO	7.600E+00	9.584E-01	6.557E+02	1.034E+01	--	--	--	--
PM10	--	--	--	--	2.355E+02	1.237E+00	8.60E+04	1.237E+00
PM2.5	--	--	--	--	2.355E+02	1.237E+00	8.60E+04	1.237E+00

[1] 1-Hour Averaging Period (lb/hr) = 1-Hour Normal Operations
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 8 x 1-Hour Normal Operations
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = 0.67 Hour cold startup emissions + 22.95 Hour operational emissions + 0.38 Hour shutdown emissions
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600
[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days
[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

Vendor Emission Information

Table B.15 - Emission Factors at SCR Exhaust (lb/hr)

#	Vendor	Status	Fuel	VOC[1]	CO	NOx	SOx[2]	PM10	PM2.5	CO2[2,3]	NH3[4]	Gross Power (kW)	Net Power (kW)	MMBTU/hr	MMBTU basis
1	A	Cold Start	Natural Gas	54.0	495	109	0.883	6.20	6.20	147,959	-	-	-	1,142	LHV
2	A	Warm Start	Natural Gas	51.0	341	82.0	1.027	7.20	7.20	172,058	-	-	-	1,328	LHV
3	A	Shutdown	Natural Gas	152	1,142	152	0.374	2.60	2.60	62,708	-	-	-	484	LHV
4	A	Normal	Natural Gas	6.10	8.00	17.6	2.00	8.27	8.27	299,000	16.3	346,000	-	2,422	HHV
5	A	Normal	H2 10%	-	-	-	-	-	-	-	-	-	-	-	-
6	A	Normal	H2 30%	5.90	7.80	17.1	1.90	8.17	8.17	266,000	15.8	346,000	-	2,444	HHV
7	A	Normal	H2 65%	-	-	-	-	-	-	-	-	-	-	-	-
8	B	Cold Start	Natural Gas	520	1,400	60.0	1.05	6.20	6.20	175,364	-	-	-	1,500	HHV
9	B	Warm Start	Natural Gas	530	1,400	60.0	1.05	6.20	6.20	175,364	-	-	-	1,500	HHV
10	B	Shutdown	Natural Gas	500	1,460	80.0	1.24	7.20	7.20	208,098	-	-	-	1,780	HHV
11	B	Normal	Natural Gas	7.30	10.00	21.0	2.04	10.2	10.2	330,700	19.4	346,004	344,904	2,276	LHV
12	B	Normal	H2 30%	7.10	10.00	21.0	1.81	9.61	9.61	333,400	18.8	346,005	344,905	2,278	LHV
13	C	Cold Start	Natural Gas	82.1	900	79.5	1.019	7.35	7.35	170,804	-	-	-	1,461	HHV
14	C	Warm Start	Natural Gas	75.0	452	75.0	0.958	7.20	7.20	160,633	-	-	-	1,374	HHV
15	C	Shutdown	Natural Gas	161	459	93.4	0.810	8.87	8.87	135,716	-	-	-	1,161	HHV
16	C	Normal	Natural Gas	5.90	7.80	17.0	1.70	9.10	9.10	275,502	15.7	346,000	335,200	2,270	HHV
17	C	Normal	H2 30%	5.80	7.60	16.60	1.50	9.90	9.90	247,452	15.4	344,800	335,100	2,303	HHV

1. VOC as methane
2. Startup and Shutdown emissions calculated from fuel use
3. Vendor C EF is for CO2e
4. No data provided for startup or shutdown

Schedule

#	Vendor	Cold Start	Warm Start	Shutdown
1	A	60	60	30
2	B	60	60	30
3	C	40	30	23

Factors

#	Parameter	Value	Units	Reference
1	NG LHV	924	BTU/scf	Vend A SUSD doc
2	NG HHV	1024	BTU/scf	Vend A SUSD doc
3	NG SOx EF	0.71	lb/MMSCF	Vendors - 0.25 gr S/100 scf
4	NG SOx EF	0.00077	lb/MMBTU LHV	Calc
5	NG SOx EF	0.00070	lb/MMBTU HHV	Calc
7	NG CO2 EF	58.76	kg/MMBTU LHV	Calc
6	NG CO2 EF	53.02	kg/MMBTU HHV	40 CFR 98

Vendor A NG - operating point 16 used
Vendor A 10% H2 - N/A
Vendor A 30% H2 - operating point 19 used
Vendor A 65% H2 - N/A
Vendor B NG - column 16 used
Vendor B H2 - column 17 used
Vendor C NG - Case 21 used
Vendor C H2 - Case 21 used

Vendor Emissions Summary - Commissioning - Compare to Baseline

Table B.16 - Commissioning Data

-	VOC	CO	NOx	SOx	PM10	PM2.5
Vendor A Total Peak Emissions (lb/day)	1,600	26,800	4,400	58	280	280
Vendor B Total Peak Emissions (lb/day)[1]	61,783	273,588	8,264	74	204	204
Vendor C Total Peak Emissions (lb/day)	5,345	62,223	3,695	43	252	252
Existing Emissions, Units 1 and 2 (lb/day)	270	3,293	932	35.1	374	374
Vendor A Incremental Change in Emissions (lb/day)	1330	23,507	3468	23.3	-93.6	-93.6
Vendor B Incremental Change in Emissions (lb/day)	61513	270,295	7332	38.6	-169.3	-169.3
Vendor C Incremental Change in Emissions (lb/day)	5074.5	58,930	2763	7.6	-122.0	-122.0
SCAQMD Mass Daily Emission Threshold (lb/day)	75	550	100	150	150	55
Vendor A Exceed SCAQMD Threshold (Y/N)	Y	Y	Y	N	N	N
Vendor B Exceed SCAQMD Threshold (Y/N)	Y	Y	Y	N	N	N
Vendor C Exceed SCAQMD Threshold (Y/N)	Y	Y	Y	N	N	N

1. Vendor B emissions were provided as uncontrolled emissions and do not represent projected actual controlled emissions. It is assumed controlled emissions are over the CEQA significance thresholds.

Table B.17 - AQIA Emission Rates - Vendor A - Case A

AQIA Emission Rates - Vendor A
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	3.000E+02	3.783E+01	--	--	--	--
SO2	2.471E+00	3.116E-01	--	--	5.843E+01	3.071E-01
CO	1.165E+03	1.469E+02	9.322E+03	1.469E+02	--	--
PM10	--	--	--	--	2.800E+02	1.471E+00
PM2.5	--	--	--	--	2.800E+02	1.471E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons from Natural Gas Fuel
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from Natural Gas Fuel
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

Table B.18 - AQIA Emission Rates - Vendor A - Case B

AQIA Emission Rates - Vendor A
Commissioning Emissions Exclusive to H2 Fuel Blend Activites

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	4.514E+01	5.693E+00	--	--	--	--
SO2	1.503E+00	1.895E-01	--	--	3.607E+01	1.895E-01
CO	2.286E+01	2.883E+00	1.829E+02	2.883E+00	--	--
PM10	--	--	--	--	1.961E+02	1.031E+00
PM2.5	--	--	--	--	1.961E+02	1.031E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons From H2 Fuel Blending Activity
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from H2 Fuel Blending Activity
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

Table B.19 - AQIA Emission Rates - Vendor B - Case A

AQIA Emission Rates - Vendor B
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	3.627E+02	4.574E+01	--	--	--	--
SO2	3.070E+00	3.872E-01	--	--	7.368E+01	3.872E-01
CO	1.162E+04	1.465E+03	9.296E+04	1.465E+03	--	--
PM10	--	--	--	--	1.981E+02	1.041E+00
PM2.5	--	--	--	--	1.981E+02	1.041E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons from Natural Gas Fuel
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from Natural Gas Fuel
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

Table B.20 - AQIA Emission Rates - Vendor B - Case B

AQIA Emission Rates - Vendor B
Commissioning Emissions Exclusive to H2 Fuel Blend Activites

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	3.443E+02	4.342E+01	--	--	--	--
SO2	1.724E+00	2.174E-01	--	--	4.138E+01	2.174E-01
CO	1.140E+04	1.438E+03	9.120E+04	1.438E+03	--	--
PM10	--	--	--	--	2.043E+02	1.074E+00
PM2.5	--	--	--	--	2.043E+02	1.074E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons From H2 Fuel Blending Activity
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from H2 Fuel Blending Activity
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

Table B.21 - AQIA Emission Rates - Vendor C - Case A

AQIA Emission Rates - Vendor C
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	2.612E+02	3.294E+01	--	--	--	--
SO2	2.156E+00	2.719E-01	--	--	4.269E+01	2.243E-01
CO	5.730E+03	7.226E+02	4.584E+04	7.226E+02	--	--
PM10	--	--	--	--	2.515E+02	1.322E+00
PM2.5	--	--	--	--	2.515E+02	1.322E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons from Natural Gas Fuel

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from Natural Gas Fuel

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

Table B.22 - AQIA Emission Rates - Vendor C - Case B

AQIA Emission Rates - Vendor C
Commissioning Emissions Exclusive to H2 Fuel Blend Activites

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	1.526E+02	1.925E+01	--	--	--	--
SO2	2.063E+00	2.601E-01	--	--	1.908E+01	1.003E-01
CO	5.730E+03	7.226E+02	4.584E+04	7.226E+02	--	--
PM10	--	--	--	--	1.165E+02	6.120E-01
PM2.5	--	--	--	--	1.165E+02	6.120E-01

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons From H2 Fuel Blending Activity

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from H2 Fuel Blending Activity

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

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Toxics Emissions from Natural Gas - Vendors A, B, C

Table B.23 - Annual Emissions[1,2]

#	CAS#	TAC	Uncontrolled Emission Factor (lb/mmscf)	Controlled Emission Factor (lb/mmscf)	Vendor A (lb/yr)	Vendor B (lb/yr)	Vendor C (lb/yr)
1	106990	1,3 Butadiene	4.38E-04	4.38E-04	9.07	9.45	8.51
2	75070	Acetaldehyde	4.10E-02	1.80E-01	3,729	3,884	3,495
3	107028	Acrolein	6.49E-03	3.69E-03	78.9	82.1	73.2
4	71432	Benzene	1.20E-02	3.33E-03	76.5	79.6	69.4
5	100414	Ethylbenzene	2.63E-02	2.63E-02	545	567	510.7
6	50000	Formaldehyde	7.23E-01	3.67E-01	7,911	8,239	7,320
7	91203	Naphthalene	1.40E-03	1.40E-03	29.0	30.2	27.2
8	N/A	PAH	2.30E-03	2.30E-03	47.7	49.6	44.7
9	1151	Total PAH w/o Naphthalene	9.00E-04	9.00E-04	18.6	19.4	17.5
10	75569	Propylene Oxide	2.92E-03	2.92E-03	60.5	63.0	56.7
11	108883	Toluene	9.56E-02	9.56E-02	1,981	2,063	1,856
12	1330207	Xylenes	5.59E-02	5.59E-02	1,158	1,206	1,086
13	7664417	Ammonia	see below	see below	142,788	169,944	137,532

Ammonia Data

Vendor	Emission Rate (lb/hr)	Hours
A	16.3	8,760
B	19.4	8,760
C	15.7	8,760

1. Emission factors are from AP-42 defaults with CO catalyst (Table 3.4-1 of "Emission Factor Documentation for AP-42 Section 3.1 Stationary Gas Turbines")
2. Ammonia is from vendor data

	Startup: 1 per day, 365 days/year. Assume full fuel r	Normal Ops/Shutdown: remaining hours per day, 365 days per year.	
	Apply uncontrolled EF, except Acetaldehyde.	Apply controlled EF (catalyst still warm in shutdown)	
	Acetaldehyde controlled EF is > uncontrolled		
Vendor A Throughput:	863	19,855	mmscf/yr
Vendor B Throughput:	899	20,679	mmscf/yr
Vendor C Throughput:	542	18,877	mmscf/yr

Table B.24 - Hourly Emissions[1,2]

#	CAS#	TAC	Uncontrolled Emission Factor (lb/mmscf)	Controlled Emission Factor (lb/mmscf)	Vendor A (lb/hr)	Vendor B (lb/hr)	Vendor C (lb/hr)
1	106990	1,3 Butadiene	4.38E-04	4.38E-04	1.04E-03	1.08E-03	9.71E-04
2	75070	Acetaldehyde	4.10E-02	1.80E-01	4.26E-01	4.43E-01	3.99E-01
3	107028	Acrolein	6.49E-03	3.69E-03	1.53E-02	1.60E-02	1.23E-02
4	71432	Benzene	1.20E-02	3.33E-03	2.84E-02	2.96E-02	2.03E-02
5	100414	Ethylbenzene	2.63E-02	2.63E-02	6.22E-02	6.48E-02	5.83E-02
6	50000	Formaldehyde	7.23E-01	3.67E-01	1.71E+00	1.78E+00	1.34E+00
7	91203	Naphthalene	1.40E-03	1.40E-03	3.31E-03	3.45E-03	3.10E-03
8	N/A	PAH	2.30E-03	2.30E-03	5.44E-03	5.67E-03	5.10E-03
9	1151	Total PAH w/o Naphthalene	9.00E-04	9.00E-04	2.13E-03	2.22E-03	2.00E-03
10	75569	Propylene Oxide	2.92E-03	2.92E-03	6.91E-03	7.19E-03	6.47E-03
11	108883	Toluene	9.56E-02	9.56E-02	2.26E-01	2.35E-01	2.12E-01
12	1330207	Xylenes	5.59E-02	5.59E-02	1.32E-01	1.38E-01	1.24E-01
13	7664417	Ammonia	see below	see below	1.63E+01	1.94E+01	1.57E+01

Ammonia Data

Vendor	Emission Rate (lb/hr)	Hours
A	16.3	1
B	19.4	1
C	15.7	1

1. Emission factors are from AP-42 defaults with CO catalyst (Table 3.4-1 of "Emission Factor Documentation for AP-42 Section 3.1 Stationary Gas Turbines")
2. Ammonia is from vendor data

	Startup: 1 hr Vend A and B, 40 mins Vend C. Use fu	Normal Ops: 0 mins Vendor A and B, 20 mins Vendor C	
	Apply uncontrolled EF, except Acetaldehyde.	Apply controlled EF	
	Acetaldehyde controlled EF is > uncontrolled		
Vendor A Throughput:	2.365	0	mmscf/hr
Vendor B Throughput:	2.463	0	mmscf/hr
Vendor C Throughput:	1.485	0.732	mmscf/hr

APPENDIX C – COMMISSIONING AQIA EMISSIONS

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Table C.1 - Background Ambient Air Quality Data

Background Ambient Air Quality Data

Pollutant	Averaging Time	Standard	Monitoring Station Location	2021	2022	2023	Summary	Ambient Air Quality Standard	Exceeds Standard?	Background Concentration Notes
NO_2	1-Hour	Federal	1710 E. 20th Street	104.0	89.4	87.9	93.8	188	No	The design value (=3 year average of 98th percentile of 1-hr daily max).
		California	1710 E. 20th Street	111.0	109.3	105.7	111.0	339	No	Highest of most recent 3 years.
	Annual	Federal	1710 E. 20th Street	24.1	24.1	20.7	24.1	100	No	Highest of most recent 3 years.
		California	1710 E. 20th Street	24.1	24.1	20.7	24.1	56	No	Highest of most recent 3 years.
CO	1-Hour	Federal	1630 N Main St	2,290.4	1,946.8	1,603.3	2,290.4	40,082	No	Highest of most recent 3 years.
		California	1630 N Main St	2,290.4	1,946.8	1,603.3	2,290.4	22,904	No	Highest of most recent 3 years.
	8-Hour	Federal	1630 N Main St	1,832.3	1,717.8	1,374.2	1,832.3	10,307	No	Highest of most recent 3 years.
		California	1630 N Main St	1,832.3	1,717.8	1,374.2	1,832.3	10,307	No	Highest of most recent 3 years.
SO_2	1-Hour	Federal	1710 E. 20th Street (2023, 2022); 7201 W. Westchester Parkway (2021)	10.5	11.5	20.2	14.0	196	No	The design value (=3 year average of 99th percentile of 1-hr daily max).
		California	1710 E. 20th Street (2023, 2022); 7201 W. Westchester Parkway (2021)	20.2	16.0	60.7	60.7	654	No	Highest of most recent 3 years.
	24-Hour	California	1710 E. 20th Street (2023, 2022); 7201 W. Westchester Parkway (2021)	3.9	3.9	13.6	13.6	105	No	Highest of most recent 3 years.

PM_{10}	24-Hour	Federal	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	48.0	57.0	80.0	80.0	150	No	Highest of most recent 3 years.
		California	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	48.0	57.0	80.0	80.0	50	Yes	Highest of most recent 3 years.
	Annual	California	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	22.7	24.7	21.2	24.7	20	Yes	Highest of most recent 3 years.
$PM_{2.5}$	24-Hour	Federal	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	42.9	28.8	26.5	42.9	35	Yes	Highest of most recent 3 years.
	Annual	Federal	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	11.5	10.8	10.1	11.5	12	No	Highest of most recent 3 years.
		California	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	11.5	10.8	10.1	11.5	12	No	Highest of most recent 3 years.

Data Sources:
Data from SCAQMD Historical Data (https://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year). CO and SO_2 data from EPA AirData.

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Table C.2 - Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Fuel Only

LADWP Scattergood CCGT Project - Vendor A - Natural Gas Fuel Only

Commissioning Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Fuel Only

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (µg/m^3)	Background Concentration (µg/m^3)	Modeled + Background Concentration (µg/m^3)	Ambient Air Quality Standard (µg/m^3)	Exceed Standard?
NO_2	1-Hour	Federal[2]	50.6	93.8	144.4	188	No
		California[2]	53.1	111.0	164.1	339	No
CO	1-Hour	Federal	229.0	2,290.4	2,519	40,082	No
		California	229.0	2,290.4	2,519	22,904	No
	8-Hour	Federal	180.0	1,832.3	2,012	10,307	No
		California	180.0	1,832.3	2,012	10,307	No
SO_2	1-Hour	Federal[3]	0.5	14.0	14.5	196	No
		California	0.5	60.7	61.2	654	No
	24-Hour	California	0.2	13.6	13.8	105	No
PM_{10}	24-Hour	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
$PM_{2.5}$	24-Hour	Federal		42.9	-	35	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor A.
Scenario 3 - Natural Gas Fuel at 60% Load, Normal Operations; Exhaust Flow Rate - 761,333 acfm, Exhaust Temperature - 162.5◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor A - Natural Gas Fuel Only

Commissioning Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Fuel Only

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Commissioning	$PM_{2.5}$	24 - Hour	0.77	2.5	No
Commissioning	PM_{10}	24 - Hour	0.77	2.5	No

Notes: Assuming PM10 = PM2.5

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Table C.3 - Air Quality Impact Analysis Modeling Results - Vendor A -Natural Gas Natural Gas + 30% H2 Fuel

LADWP Scattergood CCGT Project - Vendor A - Natural Gas + 30% H2 Fuel

Commissioning Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Natural Gas + 30% H2 Fuel

Pollutant[1]	Averaging Time	Standard	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Modeled + Background Concentration ($\mu g/m^3$)	Ambient Air Quality Standard ($\mu g/m^3$)	Exceed Standard?
NO_2	1-Hour	Federal[2]	7.4	93.8	101.1	188	No
		California[2]	7.8	111.0	118.8	339	No
CO	1-Hour	Federal	4.4	2,290.4	2,295	40,082	No
		California	4.4	2,290.4	2,295	22,904	No
	8-Hour	Federal	3.4	1,832.3	1,836	10,307	No
		California	3.4	1,832.3	1,836	10,307	No
SO_2	1-Hour	Federal[3]	0.3	14.0	14.3	196	No
		California	0.3	60.7	61.0	654	No
	24-Hour	California	0.1	13.6	13.7	105	No
PM_{10}	24-Hour	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
$PM_{2.5}$	24-Hour	Federal		42.9	-	35	

[1] Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor A .
Scenario 27 ; Natural Gas + 30% H2 Fuel at 59% Load, Normal Operations; Exhaust Flow Rate - 784,600 acfm, Exhaust Temperature - 164.7◦F

[2] The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

[3] The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor A - Natural Gas Fuel + 30% H2 Fuel
Commissioning Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas + 30% H2 Fuel

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Commissioning	$PM_{2.5}$	24 - Hour	0.52	2.5	No
Commissioning	PM_{10}	24 - Hour	0.52	2.5	No

Notes: Assuming PM10 = PM2.5

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Table C.4 - Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Fuel Only

LADWP Scattergood CCGT Project - Vendor B - Natural Gas Fuel Only
Commissioning Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Fuel Only

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (µg/m³)	Background Concentration (µg/m³)	Modeled + Background Concentration (µg/m³)	Ambient Air Quality Standard (µg/m³)	Exceed Standard?
NO_2	1-Hour	Federal[2]	42.9	93.8	136.6	188	No
		California[2]	48.5	111.0	159.5	339	No
CO	1-Hour	Federal	1,727.8	2,290.4	4,018	40,082	No
		California	1,727.8	2,290.4	4,018	22,904	No
	8-Hour	Federal	1,315.9	1,832.3	3,148	10,307	No
		California	1,315.9	1,832.3	3,148	10,307	No
SO_2	1-Hour	Federal[3]	0.5	14.0	14.5	196	No
		California	0.5	60.7	61.2	654	No
	24-Hour	California	0.1	13.6	13.8	105	No
PM_{10}	24-Hour	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
$PM_{2.5}$	24-Hour	Federal		42.9	-	35	

[1] Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor B).
Scenario 12 ; Natural Gas Fuel at 56% Load, Normal Operations; Exhaust Flow Rate - 1,042,579 acfm, Exhaust Temperature - 288◦F

[2] The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

[3] The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor B - Natural Gas Fuel Only
Commissioning Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Fuel Only

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Commissioning	$PM_{2.5}$	24 - Hour	0.40	2.5	No
Commissioning	PM_{10}	24 - Hour	0.40	2.5	No

Notes: Assuming PM10 = PM2.5

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Table C.5 - Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Natural Gas + 30% H2 Fuel

LADWP Scattergood CCGT Project - Vendor B - Natural Gas + 30% H2 Fuel
Commissioning Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Natural Gas + 30% H2 Fuel

Pollutant	Averaging Time	Standard	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Modeled + Background Concentration ($\mu g/m^3$)	Ambient Air Quality Standard ($\mu g/m^3$)	Exceed Standard?
NO_2	1-Hour	Federal[2]	41.3	93.8	135.0	188	No
		California[2]	47.0	111.0	158.0	339	No
CO	1-Hour	Federal	1,727.5	2,290.4	4,018	40,082	No
		California	1,727.5	2,290.4	4,018	22,904	No
	8-Hour	Federal	1,318.9	1,832.3	3,151	10,307	No
		California	1,318.9	1,832.3	3,151	10,307	No
SO_2	1-Hour	Federal[3]	0.3	14.0	14.3	196	No
		California	0.3	60.7	61.0	654	No
	24-Hour	California	0.1	13.6	13.7	105	No
PM_{10}	24-Hour	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
$PM_{2.5}$	24-Hour	Federal		42.9	-	35	

[1] Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor B).
Scenario 15 ; Natural Gas + 30% H2 Fuel at 52% Load, Normal Operations; Exhaust Flow Rate - 1,021,058 acfm, Exhaust Temperature - 289◦F

[2] The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

[3] The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor B - Natural Gas Fuel + 30% H2 Fuel

Commissioning Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas + 30% H2 Fuel

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Commissioning	$PM_{2.5}$	24 - Hour	0.42	2.5	No
Commissioning	PM_{10}	24 - Hour	0.42	2.5	No

Notes: Assuming PM10 = PM2.5

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Table C.6 - Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Fuel Only

LADWP Scattergood CCGT Project - Vendor C - Natural Gas Fuel Only
Commissioning Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Fuel Only

Pollutant[1]	Averaging Time	Standard	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Modeled + Background Concentration ($\mu g/m^3$)	Ambient Air Quality Standard ($\mu g/m^3$)	Exceed Standard?
NO_2	1-Hour	Federal[2]	87.7	93.8	181.5	188	No
		California[2]	124.8	111.0	235.8	339	No
CO	1-Hour	Federal	3,042.8	2,290.4	5,333	40,082	No
		California	3,042.8	2,290.4	5,333	22,904	No
	8-Hour	Federal	2,126.7	1,832.3	3,959	10,307	No
		California	2,126.7	1,832.3	3,959	10,307	No
SO_2	1-Hour	Federal[3]	1.1	14.0	15.2	196	No
		California	1.1	60.7	61.9	654	No
	24-Hour	California	0.4	13.6	14.0	105	No
PM_{10}	24-Hour	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
$PM_{2.5}$	24-Hour	Federal		42.9	-	35	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas Fuel at 33% Load, Normal Operations; Exhaust Flow Rate - 661,972 acfm, Exhaust Temperature - 163◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor C - Natural Gas Fuel Only
Commissioning Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Fuel Only

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Commissioning	$PM_{2.5}$	24 - Hour	2.18	2.5	No
Commissioning	PM_{10}	24 - Hour	2.18	2.5	No

Notes: Assuming PM10 = PM2.5

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Table C.7 - Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Natural Gas + 30% H2 Fuel

LADWP Scattergood CCGT Project - Vendor C - Natural Gas + 30% H2 Fuel
Commissioning Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Natural Gas + 30% H2 Fuel

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (µg/m^3)	Background Concentration (µg/m^3)	Modeled + Background Concentration (µg/m^3)	Ambient Air Quality Standard (µg/m^3)	Exceed Standard?
NO_2	1-Hour	Federal[2]	47.7	93.8	141.5	188	No
		California[2]	69.8	111.0	180.8	339	No
CO	1-Hour	Federal	2,910.6	2,290.4	5,201	40,082	No
		California	2,910.6	2,290.4	5,201	22,904	No
	8-Hour	Federal	1,960.4	1,832.3	3,793	10,307	No
		California	1,960.4	1,832.3	3,793	10,307	No
SO_2	1-Hour	Federal[3]	1.0	14.0	15.1	196	No
		California	1.0	60.7	61.8	654	No
	24-Hour	California	0.2	13.6	13.8	105	No
PM_{10}	24-Hour	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
$PM_{2.5}$	24-Hour	Federal		42.9	-	35	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas + 30% H2 Fuel at 32% Load, Normal Operations; Exhaust Flow Rate - 700,515 acfm, Exhaust Temperature - 168◦F

2 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

3 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor C - Natural Gas Fuel + 30% H2 Fuel
Commissioning Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas + 30% H2 Fuel

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Commissioning	$PM_{2.5}$	24 - Hour	0.93	2.5	No
Commissioning	PM_{10}	24 - Hour	0.93	2.5	No

Notes: Assuming PM10 = PM2.5

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LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - Non NOx Criteria Pollutants

AQIA - Concentration - Source Group: VENDA_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.51512	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
8-HR	1ST	1.18825	ug/m^3	368521.51	3753964.12	46.21	0.00	47.68	7/10/2012, 16
24-HR	1ST	0.50886	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	7/13/2014, 24
1-HR	8TH	1.47533	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12

AQIA - Concentration - Source Group: VENDA_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.55812	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
8-HR	1ST	1.22526	ug/m^3	368521.51	3753964.12	46.21	0.00	47.68	7/10/2012, 16
24-HR	1ST	0.52554	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	7/13/2014, 24
1-HR	8TH	1.52035	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12

LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - Non NOx Criteria Pollutants

AQIA - Concentration - Source Group: VENDB_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.20168	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
8-HR	1ST	0.91740	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 16
24-HR	1ST	0.39202	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 24
1-HR	8TH	1.12534	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12

AQIA - Concentration - Source Group: VENDB_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.17903	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
8-HR	1ST	0.89793	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 16
24-HR	1ST	0.38297	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 24
1-HR	8TH	1.10856	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12

LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - Non NOx Criteria Pollutants

AQIA - Concentration - Source Group: VENDC_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	4.02808	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
8-HR	1ST	2.71310	ug/m^3	368393.87	3753972.78	39.61	0.00	43.48	12/16/2016, 16
24-HR	1ST	1.51649	ug/m^3	368519.17	3753887.29	46.72	0.00	47.70	4/26/2014, 24
1-HR	8TH	3.36110	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18

AQIA - Concentration - Source Group: VENDC_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	4.21105	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
8-HR	1ST	2.94320	ug/m^3	368393.87	3753972.78	39.61	0.00	43.48	12/16/2016, 16
24-HR	1ST	1.64925	ug/m^3	368519.17	3753887.29	46.72	0.00	47.70	4/26/2014, 24
1-HR	8TH	3.65647	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18

LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - 1-Hour CAAQS Processing

NO2 - Concentration - Source Group: VENDA_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.36361	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
1-HR	8TH	1.32780	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12

NO2 - Concentration - Source Group: VENDA_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.40231	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
1-HR	8TH	1.36832	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12

NO2 - Concentration - Source Group: VENDB_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.08152	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
1-HR	8TH	1.01280	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12

LADWP Scattergood CCGT CEQA

NO2 - Concentration - Source Group: VENDB_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.06113	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
1-HR	8TH	0.99770	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12

NO2 - Concentration - Source Group: VENDC_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.62527	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
1-HR	8TH	3.02499	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18

NO2 - Concentration - Source Group: VENDC_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.78995	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
1-HR	8TH	3.29082	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18

LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - 1-Hour NAAQS Processing

NO2 - Concentration - Source Group: VENDA_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.34120	ug/m^3	368443.80	3754022.93	42.50	0.00	49.92	
1-HR	8TH	1.29779	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	

NO2 - Concentration - Source Group: VENDA_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.38066	ug/m^3	368443.80	3754022.93	42.50	0.00	49.92	
1-HR	8TH	1.33837	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	

NO2 - Concentration - Source Group: VENDB_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.03425	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	
1-HR	8TH	0.95081	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	

NO2 - Concentration - Source Group: VENDB_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.01913	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	
1-HR	8TH	0.93769	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	

NO2 - Concentration - Source Group: VENDC_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.23976	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	
1-HR	8TH	2.47973	ug/m^3	368381.33	3753959.14	38.37	0.00	43.48	

NO2 - Concentration - Source Group: VENDC_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.46480	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	
1-HR	8TH	2.66294	ug/m^3	368381.33	3753959.14	38.37	0.00	43.48	

AQIA Emission Rates - Vendor A
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	3.000E+02	3.783E+01	--	--	--	--
SO2	2.471E+00	3.116E-01	--	--	5.843E+01	3.071E-01
CO	1.165E+03	1.469E+02	9.322E+03	1.469E+02	--	--
PM10	--	--	--	--	2.800E+02	1.471E+00
PM2.5	--	--	--	--	2.800E+02	1.471E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons from Natural Gas Fuel

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from Natural Gas Fuel

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

AQIA Emission Rates - Vendor B
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging	
Pollutant	**lb/hr[1]**	**g/s[2]**	**lb/8-hr[3]**	**g/s[4]**	**lb/24-hr[5]**	**g/s[6]**
NO2	3.627E+02	4.574E+01	--	--	--	--
SO2	3.070E+00	3.872E-01	--	--	7.368E+01	3.872E-01
CO	1.162E+04	1.465E+03	9.296E+04	1.465E+03	--	--
PM10	--	--	--	--	1.981E+02	1.041E+00
PM2.5	--	--	--	--	1.981E+02	1.041E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons from Natural Gas Fuel

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from Natural Gas Fuel

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

AQIA Emission Rates - Vendor C
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging	
Pollutant	**lb/hr[1]**	**g/s[2]**	**lb/8-hr[3]**	**g/s[4]**	**lb/24-hr[5]**	**g/s[6]**
NO2	2.612E+02	3.294E+01	--	--	--	--
SO2	2.156E+00	2.719E-01	--	--	4.269E+01	2.243E-01
CO	5.730E+03	7.226E+02	4.584E+04	7.226E+02	--	--
PM10	--	--	--	--	2.515E+02	1.322E+00
PM2.5	--	--	--	--	2.515E+02	1.322E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons from Natural Gas Fuel

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from Natural Gas Fuel

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

AQIA Emission Rates - Vendor A
Commissioning Emissions Exclusive to H2 Fuel Blend Activites

Pollutant	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging	
	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	4.514E+01	5.693E+00	--	--	--	--
SO2	1.503E+00	1.895E-01	--	--	3.607E+01	1.895E-01
CO	2.286E+01	2.883E+00	1.829E+02	2.883E+00	--	--
PM10	--	--	--	--	1.961E+02	1.031E+00
PM2.5	--	--	--	--	1.961E+02	1.031E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emissions From H2 Fuel Blending Activity

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from H2 Fuel Blending Activity

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

AQIA Emission Rates - Vendor B
Commissioning Emissions Exclusive to H2 Fuel Blend Activites

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging	
Pollutant	**lb/hr[1]**	**g/s[2]**	**lb/8-hr[3]**	**g/s[4]**	**lb/24-hr[5]**	**g/s[6]**
NO2	3.443E+02	4.342E+01	--	--	--	--
SO2	1.724E+00	2.174E-01	--	--	4.138E+01	2.174E-01
CO	1.140E+04	1.438E+03	9.120E+04	1.438E+03	--	--
PM10	--	--	--	--	2.043E+02	1.074E+00
PM2.5	--	--	--	--	2.043E+02	1.074E+00

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons From H2 Fuel Blending Activity

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from H2 Fuel Blending Activity

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

AQIA Emission Rates - Vendor C
Commissioning Emissions Exclusive to H2 Fuel Blend Activites

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]
NO2	1.526E+02	1.925E+01	--	--	--	--
SO2	2.063E+00	2.601E-01	--	--	1.908E+01	1.003E-01
CO	5.730E+03	7.226E+02	4.584E+04	7.226E+02	--	--
PM10	--	--	--	--	1.165E+02	6.120E-01
PM2.5	--	--	--	--	1.165E+02	6.120E-01

[1] 1-Hour Averaging Period (lb/hr) = Worst Case 1-Hour Emisisons From H2 Fuel Blending Activity

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 1 - Hour Averaging Period x 8

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = Worst Case Daily Emissions from H2 Fuel Blending Activity

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

APPENDIX D – OPERATIONAL AQIA EMISSIONS

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Table D.1 - Background Ambient Air Quality Data

Background Ambient Air Quality Data

Pollutant	Averaging Time	Standard	Monitoring Station Location	2021	2022	2023	Summary	Ambient Air Quality Standard	Exceeds Standard?	Background Concentration Notes
NO_2	1-Hour	Federal	1710 E. 20th Street	104.0	89.4	87.9	93.8	188	No	The design value (=3 year average of 98th percentile of 1-hr daily max).
		California	1710 E. 20th Street	111.0	109.3	105.7	111.0	339	No	Highest of most recent 3 years.
	Annual	Federal	1710 E. 20th Street	24.1	24.1	20.7	24.1	100	No	Highest of most recent 3 years.
		California	1710 E. 20th Street	24.1	24.1	20.7	24.1	56	No	Highest of most recent 3 years.
CO	1-Hour	Federal	1630 N Main St	2,290.4	1,946.8	1,603.3	2,290.4	40,082	No	Highest of most recent 3 years.
		California	1630 N Main St	2,290.4	1,946.8	1,603.3	2,290.4	22,904	No	Highest of most recent 3 years.
	8-Hour	Federal	1630 N Main St	1,832.3	1,717.8	1,374.2	1,832.3	10,307	No	Highest of most recent 3 years.
		California	1630 N Main St	1,832.3	1,717.8	1,374.2	1,832.3	10,307	No	Highest of most recent 3 years.
SO_2	1-Hour	Federal	1710 E. 20th Street (2023, 2022); 7201 W. Westchester Parkway (2021)	10.5	11.5	20.2	14.0	196	No	The design value (=3 year average of 99th percentile of 1-hr daily max).
		California	1710 E. 20th Street (2023, 2022); 7201 W. Westchester Parkway (2021)	20.2	16.0	60.7	60.7	654	No	Highest of most recent 3 years.
	24-Hour	California	1710 E. 20th Street (2023, 2022); 7201 W. Westchester Parkway (2021)	3.9	3.9	13.6	13.6	105	No	Highest of most recent 3 years.

PM_{10}	24-Hour	Federal	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	48.0	57.0	80.0	80.0	150	No	Highest of most recent 3 years.
		California	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	48.0	57.0	80.0	80.0	50	Yes	Highest of most recent 3 years.
	Annual	California	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	22.7	24.7	21.2	24.7	20	Yes	Highest of most recent 3 years.
$PM_{2.5}$	24-Hour	Federal	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	42.9	28.8	26.5	42.9	35	Yes	Highest of most recent 3 years.
	Annual	Federal	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	11.5	10.8	10.1	11.5	12	No	Highest of most recent 3 years.
		California	1710 E. 20th Street (2023, 2022); 1305 E. Pacific Coast Highway (2021)	11.5	10.8	10.1	11.5	12	No	Highest of most recent 3 years.

Data Sources:
Data from SCAQMD Historical Data (https://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year). CO and SO_2 data from EPA AirData.

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Table D.2 - Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Fuel Only

LADWP Scattergood CCGT Project - Vendor A - Natural Gas Fuel Only

Operational Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Fuel Only

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (μg/m³)	Background Concentration (μg/m³)	Modeled + Background Concentration (μg/m³)	Ambient Air Quality Standard (μg/m³)	Exceed Standard?
NO_2	1-Hour[2]	Federal[6]	18.4	93.8	112.2	188	No
		California[6]	19.3	111.0	130.3	339	No
	Annual[3]	Federal	0.7	24.1	24.8	100	No
		California	0.7	24.1	24.8	56	No
CO	1-Hour[2]	Federal	97.3	2,290.4	2,388	40,082	No
		California	97.3	2,290.4	2,388	22,904	No
	8-Hour[4]	Federal	10.6	1,832.3	1,843	10,307	No
		California	10.6	1,832.3	1,843	10,307	No
SO_2	1-Hour[2]	Federal[7]	0.2	14.0	14.2	196	No
		California	0.2	60.7	60.9	654	No
	24-Hour[5]	California	0.1	13.6	13.7	105	No
PM_{10}	24-Hour[5]	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
	Annual[3]	California		24.7	-	20	
$PM_{2.5}$	24-Hour[5]	Federal		42.9	-	35	
	Annual[3]	Federal		11.5	-	12	
		California		11.5	-	12	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor A).
Scenario 3 - Natural Gas Fuel at 60% Load, Normal Operations; Exhaust Flow Rate - 761,333 acfm, Exhaust Temperature - 162.5◦F

2 1-Hour Cold Start Emissions

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor A - Natural Gas Fuel Only
Operational Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Fuel Only

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Operational	$PM_{2.5}$	24 - Hour	0.53	2.5	No
Operational	PM_{10}	24 - Hour	0.53	2.5	No
		Annual	0.23	1.0	No

Notes: Assuming PM10 = PM2.5

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Table D.3 - Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas + 30% H2 Fuel

LADWP Scattergood CCGT Project - Vendor A - Natural Gas + 30% H2 Fuel
Operational Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas Natural Gas + 30% H2 Fuel

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (µg/m^3)	Background Concentration (µg/m^3)	Modeled + Background Concentration (µg/m^3)	Ambient Air Quality Standard (µg/m^3)	Exceed Standard?
NO_2	1-Hour[2]	Federal[6]	2.8	93.8	96.6	188	No
		California[6]	2.9	111.0	113.9	339	No
	Annual[3]	Federal	0.6	24.1	24.7	100	No
		California	0.6	24.1	24.7	56	No
CO	1-Hour[2]	Federal	1.5	2,290.4	2,292	40,082	No
		California	1.5	2,290.4	2,292	22,904	No
	8-Hour[4]	Federal	1.2	1,832.3	1,833	10,307	No
		California	1.2	1,832.3	1,833	10,307	No
SO_2	1-Hour[2]	Federal[7]	0.4	14.0	14.4	196	No
		California	0.4	60.7	61.1	654	No
	24-Hour[5]	California	0.1	13.6	13.7	105	No
PM_{10}	24-Hour[5]	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
	Annual[3]	California		24.7	-	20	
$PM_{2.5}$	24-Hour[5]	Federal		42.9	-	35	
	Annual[3]	Federal		11.5	-	12	
		California		11.5	-	12	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor A).
Scenario 27 ; Natural Gas + 30% H2 Fuel at 59% Load, Normal Operations; Exhaust Flow Rate - 784,600 acfm, Exhaust Temperature - 164.7◦F

2 1-Hour H2 Blend Fueled Operations

3 1 Natural Gas Fueled Cold Start Event, followed by H2 Blend Normal Operations, followed by 1 Natural Gas Fueled Shutdown Event; every day; for 365 Days

4 8 Hours of H2 Blend Fueled Operations

5 1 Natural Gas Fueled Cold Start Event, H2 Blend Normal Operations, 1 Natural Gas Fueled Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value assuming full conversion.

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LADWP Scattergood CCGT Project - Vendor A - Natural Gas Fuel + 30% H2 Fuel

Operational Air Quality Impact Analysis Modeling Results - Vendor A - Natural Gas + 30% H2 Fuel

Scenario	Pollutant	Averaging Time	Modeled Concentration (μg/m^3)	Rule 1303 Table A-2 Significant Change Treshold (μg/m^3)	Exceed Standard?
Operational	$PM_{2.5}$	24 - Hour	0.51	2.5	No
Operational	PM_{10}	24 - Hour	0.51	2.5	No
		Annual	0.22	1.0	No

Notes: Assuming PM10 = PM2.5

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Table D.4 - Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Fuel Only

LADWP Scattergood CCGT Project - Vendor B - Natural Gas Fuel Only
Operational Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Fuel Only

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (µg/m^3)	Background Concentration (µg/m^3)	Modeled + Background Concentration (µg/m^3)	Ambient Air Quality Standard (µg/m^3)	Exceed Standard?
NO_2	1-Hour[2]	Federal[6]	7.1	93.8	100.9	188	No
		California[6]	8.0	111.0	119.0	339	No
	Annual[3]	Federal	0.5	24.1	24.5	100	No
		California	0.5	24.1	24.5	56	No
CO	1-Hour[2]	Federal	208.2	2,290.4	2,499	40,082	No
		California	208.2	2,290.4	2,499	22,904	No
	8-Hour[4]	Federal	20.8	1,832.3	1,853	10,307	No
		California	20.8	1,832.3	1,853	10,307	No
SO_2	1-Hour[2]	Federal[7]	0.2	14.0	14.2	196	No
		California	0.2	60.7	60.9	654	No
	24-Hour[5]	California	0.1	13.6	13.7	105	No
PM_{10}	24-Hour[5]	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
	Annual[3]	California		24.7	-	20	
$PM_{2.5}$	24-Hour[5]	Federal		42.9	-	35	
	Annual[3]	Federal		11.5	-	12	
		California		11.5	-	12	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor B).
Scenario 12 ; Natural Gas Fuel at 56% Load, Normal Operations; Exhaust Flow Rate - 1,042,579 acfm, Exhaust Temperature - 288◦F

2 1-Hour Cold Start Emissions

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor B - Natural Gas Fuel Only
Operational Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Fuel Only

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Operational	$PM_{2.5}$	24 - Hour	0.48	2.5	No
Operational	PM_{10}	24 - Hour	0.48	2.5	No
		Annual	0.19	1.0	No

Notes: Assuming PM10 = PM2.5

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Table D.5 - Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas + 30% H2 Fuel

LADWP Scattergood CCGT Project - Vendor B - Natural Gas + 30% H2 Fuel

Operational Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Natural Gas + 30% H2 Fuel

Pollutant	Averaging Time	Standard	Modeled Concentration (µg/m³)	Background Concentration (µg/m³)	Modeled + Background Concentration (µg/m³)	Ambient Air Quality Standard (µg/m³)	Exceed Standard?
NO_2	1-Hour[2]	Federal[6]	2.5	93.8	96.3	188	No
		California[6]	2.9	111.0	113.9	339	No
	Annual[3]	Federal	0.5	24.1	24.6	100	No
		California	0.5	24.1	24.6	56	No
CO	1-Hour[2]	Federal	1.5	2,290.4	2,292	40,082	No
		California	1.5	2,290.4	2,292	22,904	No
	8-Hour[4]	Federal	21.3	1,832.3	1,854	10,307	No
		California	21.3	1,832.3	1,854	10,307	No
SO_2	1-Hour[2]	Federal[7]	0.3	14.0	14.3	196	No
		California	0.3	60.7	61.0	654	No
	24-Hour[5]	California	0.1	13.6	13.7	105	No
PM_{10}	24-Hour[5]	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
	Annual[3]	California		24.7	-	20	
$PM_{2.5}$	24-Hour[5]	Federal		42.9	-	35	
	Annual[3]	Federal		11.5	-	12	
		California		11.5	-	12	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor B).
Scenario 15 ; Natural Gas + 30% H2 Fuel at 52% Load, Normal Operations; Exhaust Flow Rate - 1,021,058 acfm, Exhaust Temperature - 289◦F

2 1-Hour H2 Blend Fueled Operations

3 1 Natural Gas Fueled Cold Start Event, followed by H2 Blend Normal Operations, followed by 1 Natural Gas Fueled Shutdown Event; every day; for 365 Days

4 8 Hours of H2 Blend Fueled Operations

5 1 Natural Gas Fueled Cold Start Event, H2 Blend Normal Operations, 1 Natural Gas Fueled Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9).

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor B - Natural Gas Fuel + 30% H2 Fuel
Operational Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas + 30% H2 Fuel

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Operational	$PM_{2.5}$	24 - Hour	0.47	2.5	No
Operational	PM_{10}	24 - Hour	0.47	2.5	No
		Annual	0.19	1.0	No

Notes: Assuming PM10 = PM2.5

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Table D.6 - Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas Only

LADWP Scattergood CCGT Project - Vendor C - Natural Gas Fuel Only

Operational Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Fuel Only

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (µg/m³)	Background Concentration (µg/m³)	Modeled + Background Concentration (µg/m³)	Ambient Air Quality Standard (µg/m³)	Exceed Standard?
NO_2	1-Hour[2]	Federal[6]	19.7	93.8	113.4	188	No
		California[6]	28.0	111.0	139.0	339	No
	Annual[3]	Federal	1.2	24.1	25.3	100	No
		California	1.2	24.1	25.3	56	No
CO	1-Hour[2]	Federal	320.0	2,290.4	2,610	40,082	No
		California	320.0	2,290.4	2,610	22,904	No
	8-Hour[4]	Federal	30.5	1,832.3	1,863	10,307	No
		California	30.5	1,832.3	1,863	10,307	No
SO_2	1-Hour[2]	Federal[7]	0.7	14.0	14.7	196	No
		California	0.7	60.7	61.4	654	No
	24-Hour[5]	California	0.3	13.6	14.0	105	No
PM_{10}	24-Hour[5]	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
	Annual[3]	California		24.7	-	20	
$PM_{2.5}$	24-Hour[5]	Federal		42.9	-	35	
	Annual[3]	Federal		11.5	-	12	
		California		11.5	-	12	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) natural gas fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas Fuel at 33% Load, Normal Operations; Exhaust Flow Rate - 661,972 acfm, Exhaust Temperature - 163◦F

2 1 Cold Start Event, followed by Normal Operations, totaling to 1 Hour

3 1 Cold Start Event, followed by Normal Operations, followed by 1 Shutdown Event; every day; for 365 Days

4 1 Cold Start Event, followed by Normal Operations, totaling to 8 Hours

5 1 Cold Start Event, Normal Operations, 1 Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9) and NAAQS 1-Hr processing.

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor C - Natural Gas Fuel Only
Operational Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Fuel Only

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Operational	$PM_{2.5}$	24 - Hour	1.88	2.5	No
Operational	PM_{10}	24 - Hour	1.88	2.5	No
		Annual	0.55	1.0	No

Notes: Assuming PM10 = PM2.5

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Table D.7 - Air Quality Impact Analysis Modeling Results - Vendor B - Natural Gas + 30% H2 Fuel

LADWP Scattergood CCGT Project - Vendor C - Natural Gas + 30% H2 Fuel
Operational Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas Natural Gas + 30% H2 Fuel

Pollutant[1]	Averaging Time	Standard	Modeled Concentration (μg/m³)	Background Concentration (μg/m³)	Modeled + Background Concentration (μg/m³)	Ambient Air Quality Standard (μg/m³)	Exceed Standard?
NO_2	1-Hour[2]	Federal[6]	5.2	93.8	98.9	188	No
		California[6]	7.6	111.0	118.6	339	No
	Annual[3]	Federal	1.1	24.1	25.2	100	No
		California	1.1	24.1	25.2	56	No
CO	1-Hour[2]	Federal	3.9	2,290.4	2,294	40,082	No
		California	3.9	2,290.4	2,294	22,904	No
	8-Hour[4]	Federal	28.0	1,832.3	1,860	10,307	No
		California	28.0	1,832.3	1,860	10,307	No
SO_2	1-Hour[2]	Federal[7]	0.8	14.0	14.8	196	No
		California	0.8	60.7	61.5	654	No
	24-Hour[5]	California	0.3	13.6	13.9	105	No
PM_{10}	24-Hour[5]	Federal	See Significant Change Analysis	80.0	-	150	Go to Significant Change Threshold Analysis
		California		80.0	-	50	
	Annual[3]	California		24.7	-	20	
$PM_{2.5}$	24-Hour[5]	Federal		42.9	-	35	
	Annual[3]	Federal		11.5	-	12	
		California		11.5	-	12	

1 Stack Parameters used to model ground level concentrations were determined by taking the worst case (i.e., lowest exhaust flow rate and temperature) H2 Blend fueled scenario provided by Vendor C).
Scenario 16 ; Natural Gas + 30% H2 Fuel at 32% Load, Normal Operations; Exhaust Flow Rate - 700,515 acfm, Exhaust Temperature - 168◦F

2 1-Hour H2 Blend Fueled Operations

3 1 Natural Gas Fueled Cold Start Event, followed by H2 Blend Normal Operations, followed by 1 Natural Gas Fueled Shutdown Event; every day; for 365 Days

4 8 Hours of H2 Blend Fueled Operations

5 1 Natural Gas Fueled Cold Start Event, H2 Blend Normal Operations, 1 Natural Gas Fueled Shutdown Event

6 The modeled concentration presented is the model predicted maximum hourly value using ARM2 Ratio processing (minimum NO2/NOx ratio of 0.5 and maximum NO2/NOx ratio of 0.9) and NAAQS 1-Hr processing.

7 The modeled concentration presented is the model predicted maximum hourly value (conservative estimate).

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LADWP Scattergood CCGT Project - Vendor C - Natural Gas Fuel + 30% H2 Fuel
Operational Air Quality Impact Analysis Modeling Results - Vendor C - Natural Gas + 30% H2 Fuel

Scenario	Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Rule 1303 Table A-2 Significant Change Treshold ($\mu g/m^3$)	Exceed Standard?
Operational	$PM_{2.5}$	24 - Hour	1.88	2.5	No
Operational	PM_{10}	24 - Hour	1.88	2.5	No
		Annual	0.55	1.0	No

Notes: Assuming PM10 = PM2.5

LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - Non NOx Criteria Pollutants

AQIA - Concentration - Source Group: VENDA_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.51512	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
8-HR	1ST	1.18825	ug/m^3	368521.51	3753964.12	46.21	0.00	47.68	7/10/2012, 16
24-HR	1ST	0.50886	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	7/13/2014, 24
1-HR	8TH	1.47533	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12
ANNUAL		0.20650	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y1		0.21200	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y2		0.20959	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y3		0.21709	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y4		0.19783	ug/m^3	368523.27	3754021.75	46.30	0.00	47.16	
ANNUAL Y5		0.19764	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	

AQIA - Concentration - Source Group: VENDA_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.55812	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
8-HR	1ST	1.22526	ug/m^3	368521.51	3753964.12	46.21	0.00	47.68	7/10/2012, 16
24-HR	1ST	0.52554	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	7/13/2014, 24
1-HR	8TH	1.52035	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12
ANNUAL		0.21412	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y1		0.21979	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y2		0.21715	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y3		0.22504	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y4		0.20495	ug/m^3	368523.27	3754021.75	46.30	0.00	47.16	
ANNUAL Y5		0.20535	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	

AQIA - Concentration - Source Group: VENDB_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.20168	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
8-HR	1ST	0.91740	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 16
24-HR	1ST	0.39202	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 24
1-HR	8TH	1.12534	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12
ANNUAL		0.14907	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y1		0.15192	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y2		0.14960	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y3		0.15704	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y4		0.14323	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y5		0.14534	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	

AQIA - Concentration - Source Group: VENDB_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.17903	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
8-HR	1ST	0.89793	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 16
24-HR	1ST	0.38297	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	8/20/2016, 24
1-HR	8TH	1.10856	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12
ANNUAL		0.14613	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y1		0.14896	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y2		0.14676	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y3		0.15396	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y4		0.14045	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y5		0.14224	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	

AQIA - Concentration - Source Group: VENDC_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	4.02808	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
8-HR	1ST	2.71310	ug/m^3	368393.87	3753972.78	39.61	0.00	43.48	12/16/2016, 16
24-HR	1ST	1.51649	ug/m^3	368519.17	3753887.29	46.72	0.00	47.70	4/26/2014, 24
1-HR	8TH	3.36110	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18
ANNUAL		0.42599	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y1		0.43186	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y2		0.42072	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y3		0.44573	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y4		0.40847	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y5		0.43760	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	

AQIA - Concentration - Source Group: VENDC_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	4.21105	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
8-HR	1ST	2.94320	ug/m^3	368393.87	3753972.78	39.61	0.00	43.48	12/16/2016, 16
24-HR	1ST	1.64925	ug/m^3	368519.17	3753887.29	46.72	0.00	47.70	4/26/2014, 24
1-HR	8TH	3.65647	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18
ANNUAL		0.46054	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y1		0.46652	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y2		0.45447	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y3		0.48193	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	
ANNUAL Y4		0.44213	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	
ANNUAL Y5		0.47446	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	

LADWP Scattergood CCGT CEQA Commissioning AQIA Vendors A,B,C Unitized Emission Rate **- 1-H NAAQS Processing**

NO2 - Concentration - Source Group: VENDA_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.34120	ug/m^3	368443.80	3754022.93	42.50	0.00	49.92	
1-HR	8TH	1.29779	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	

NO2 - Concentration - Source Group: VENDA_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.38066	ug/m^3	368443.80	3754022.93	42.50	0.00	49.92	
1-HR	8TH	1.33837	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	

NO2 - Concentration - Source Group: VENDB_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.03425	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	
1-HR	8TH	0.95081	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	

LADWP Scattergood CCGT CEQA Commissioning AQIA Vendors A,B,C Unitized Emission Rate **- 1-H NAAQS Processing**

NO2 - Concentration - Source Group: VENDB_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.01913	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	
1-HR	8TH	0.93769	ug/m^3	368522.10	3753983.33	46.40	0.00	47.68	

NO2 - Concentration - Source Group: VENDC_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.23976	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	
1-HR	8TH	2.47973	ug/m^3	368381.33	3753959.14	38.37	0.00	43.48	

NO2 - Concentration - Source Group: VENDC_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.46480	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	
1-HR	8TH	2.66294	ug/m^3	368381.33	3753959.14	38.37	0.00	43.48	

LADWP Scattergood CCGT CEQA
Vendors A,B,C Unitized Emission Rate - 1-Hour CAAQS Processing

NO2 - Concentration - Source Group: VENDA_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.36361	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
1-HR	8TH	1.32780	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12

NO2 - Concentration - Source Group: VENDA_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.40231	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	8/4/2015, 11
1-HR	8TH	1.36832	ug/m^3	368431.48	3754013.69	41.96	0.00	49.92	7/20/2013, 12

NO2 - Concentration - Source Group: VENDB_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.08152	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
1-HR	8TH	1.01280	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12

LADWP Scattergood CCGT CEQA

NO2 - Concentration - Source Group: VENDB_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.06113	ug/m^3	368522.69	3754002.54	46.59	0.00	47.65	8/20/2016, 13
1-HR	8TH	0.99770	ug/m^3	368440.91	3754040.78	42.73	0.00	50.02	6/25/2014, 12

NO2 - Concentration - Source Group: VENDC_H2

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.62527	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
1-HR	8TH	3.02499	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18

NO2 - Concentration - Source Group: VENDC_NG

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.78995	ug/m^3	368520.93	3753944.91	46.35	0.00	47.67	3/28/2016, 18
1-HR	8TH	3.29082	ug/m^3	368520.34	3753925.71	46.54	0.00	47.74	4/9/2013, 18

AQIA Emission Rates - Vendor A
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.090E+02	1.375E+01	--	--	--	--	2.12E+05	3.053E+00
SO2	8.828E-01	1.113E-01	--	--	4.607E+01	2.421E-01	1.68E+04	2.421E-01
CO	4.950E+02	6.243E+01	5.510E+02	8.686E+00	--	--	--	--
PM10	--	--	--	--	1.936E+02	1.017E+00	7.07E+04	1.017E+00
PM2.5	--	--	--	--	1.936E+02	1.017E+00	7.07E+04	1.017E+00

[1] 1-Hour Averaging Period (lb/hr) = 1 Hour cold startup emissions

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) =1 Hour cold startup emissions + 7 Hour operational emissions

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

AQIA Emission Rates - Vendor B
Natural Gas Fuel Only

Pollutant	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	6.000E+01	7.567E+00	--	--	--	--	2.09E+05	3.008E+00
SO2	1.046E+00	1.320E-01	--	--	4.757E+01	2.499E-01	1.74E+04	2.499E-01
CO	1.400E+03	1.766E+02	1.470E+03	2.317E+01	--	--	--	--
PM10	--	--	--	--	2.389E+02	1.255E+00	8.72E+04	1.255E+00
PM2.5	--	--	--	--	2.389E+02	1.255E+00	8.72E+04	1.255E+00

[1] 1-Hour Averaging Period (lb/hr) = 1 Hour cold startup emissions

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) =1 Hour cold startup emissions + 7 Hour operational emissions

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

AQIA Emission Rates - Vendor C
Natural Gas Fuel Only

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	**lb/hr[1]**	**g/s[2]**	**lb/8-hr[3]**	**g/s[4]**	**lb/24-hr[5]**	**g/s[6]**	**lb/yr[7]**	**g/s[8]**
NO2	5.861E+01	7.391E+00	--	--	--	--	1.75E+05	2.517E+00
SO2	1.240E+00	1.564E-01	--	--	4.000E+01	2.102E-01	1.46E+04	2.102E-01
CO	6.026E+02	7.599E+01	6.572E+02	1.036E+01	--	--	--	--
PM10	--	--	--	--	2.171E+02	1.141E+00	7.93E+04	1.141E+00
PM2.5	--	--	--	--	2.171E+02	1.141E+00	7.93E+04	1.141E+00

[1] 1-Hour Averaging Period (lb/hr) = 0.67 Hour cold startup emissions + 0.33 Hour operational emissions

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 0.67 Hour cold startup emissions + 7.33 Hour operational emissions

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 0.67 Hour cold startup emissions + 22.95 Hour operational emissions + 0.38 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

AQIA Emission Rates - Vendor A
Natural Gas + H2 Fuel

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.710E+01	2.157E+00	--	--	--	--	2.08E+05	2.994E+00
SO2	1.900E+00	2.396E-01	--	--	4.382E+01	2.303E-01	1.60E+04	2.303E-01
CO	7.800E+00	9.837E-01	6.240E+01	9.837E-01	--	--	--	--
PM10	--	--	--	--	1.913E+02	1.005E+00	6.98E+04	1.005E+00
PM2.5	--	--	--	--	1.913E+02	1.005E+00	6.98E+04	1.005E+00

[1] 1-Hour Averaging Period (lb/hr) = 1-Hour Normal Operations

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 8 x 1-Hour Normal Operations

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

AQIA Emission Rates - Vendor B
Natural Gas + H2 Fuel

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	2.100E+01	2.648E+00	--	--	--	--	2.09E+05	3.008E+00
SO2	1.810E+00	2.283E-01	--	--	4.239E+01	2.228E-01	1.55E+04	2.228E-01
CO	1.000E+01	1.261E+00	1.470E+03	2.317E+01	--	--	--	--
PM10	--	--	--	--	2.260E+02	1.188E+00	8.25E+04	1.188E+00
PM2.5	--	--	--	--	2.260E+02	1.188E+00	8.25E+04	1.188E+00

[1] 1-Hour Averaging Period (lb/hr) = 1-Hour Normal Operations

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 8 x 1-Hour Normal Operations

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 1 Hour cold startup emissions + 22.5 Hour operational emissions + 0.5 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

AQIA Emission Rates - Vendor C
Natural Gas + H2 Fuel

	1-Hour Averaging Period		8-Hour Averaging		24-Hour Averaging		Annual Averaging	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.660E+01	2.093E+00	--	--	--	--	1.71E+05	2.468E+00
SO2	1.500E+00	1.892E-01	--	--	3.541E+01	1.861E-01	1.29E+04	1.861E-01
CO	7.600E+00	9.584E-01	6.557E+02	1.034E+01	--	--	--	--
PM10	--	--	--	--	2.355E+02	1.237E+00	8.60E+04	1.237E+00
PM2.5	--	--	--	--	2.355E+02	1.237E+00	8.60E+04	1.237E+00

[1] 1-Hour Averaging Period (lb/hr) = 1-Hour Normal Operations

[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600

[3] 8-Hour Averaging Period (lb/8-hr) = 8 x 1-Hour Normal Operations

[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600

[5] 24-Hour Averaging Period (lb/24-hr) = 0.67 Hour cold startup emissions + 22.95 Hour operational emissions + 0.38 Hour shutdown emissions

[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600

[7] Annual Averaging Period (lb/yr) = 24 - Hour Averaging Period (lb/day) x 365 days

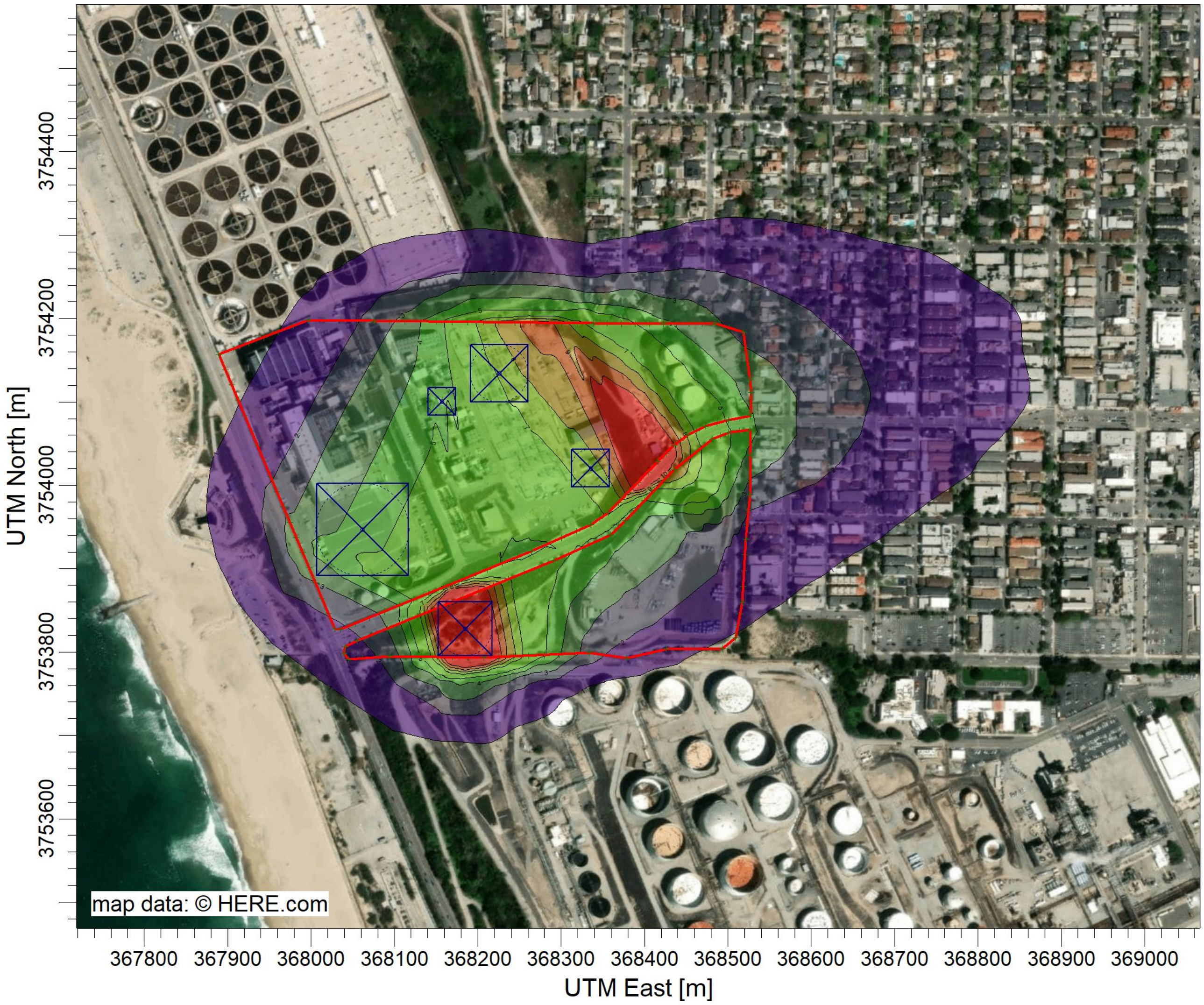
[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

APPENDIX E – CONSTRUCTION HRA MODELING RELATED FILES

Construction HRA - Cancer Risk - FAH Less 16 Year Old Off

PROJECT TITLE:

C:\Lakes\AERMOD View\LADWP_Construction_HRA\LADWP_Construction_HRA.i



Residential Cancer Risk — in a million

Max: 16 [in a million] at (368182.43, 3753864.97)

1 2 3 4 5 7 8 9 10

COMMENTS:	SOURCES: **5**	COMPANY NAME:	
	RECEPTORS: **1190**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:8,474 (0 — 0.3 km)	
	MAX: **16 in a million**	DATE: **4/9/2024**	PROJECT NO.: