4.3 AIR QUALITY

This section describes and evaluates the potential air quality impacts from the Project. The Project site is located within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). In assessing air quality impacts, the following sources were considered: emissions from equipment that will be used during demolition and construction-related activities, operational-related emissions generated from electricity and water use, emissions from motor vehicles generated by trips to and from the Project site, and emissions generated from the power generating equipment and supporting equipment. This section incorporates information from the air quality emissions calculations contained in Appendix D.

4.3.1 ENVIRONMENTAL SETTING

4.3.1.1 Existing Conditions

Grayson Power Plant is located in at 800 Air Way, Glendale, California 91201, just northeast of the Interstate 5 and Highway 134 interchange in an industrial area of the City. The Project power generation equipment will be constructed entirely within the existing Grayson Power Plant, which is bounded to the south by Verdugo Wash and Highway 134, to the west by the Los Angeles River and Interstate 5, to the north by commercial properties, and to the east by commercial and residential properties. The approximate latitude and longitude coordinates of the Project are 34° 09'19" N and 118° 16'42" W. The Grayson Power Plant site is located within the South Coast Air Basin, which is regulated by the SCAQMD.

Regional Climate

The Project site is located on the western side of the San Gabriel Valley of the South Coast Air Basin. The basin is a coastal plain with the Pacific Ocean to the southwest, and enclosed by mountains to the north and east which trap air and pollutants in the valley. The regional climate is considered semi-arid and characterized by hot summers, mild winters, and infrequent seasonal rainfall. Glendale is located inland, where the temperatures are generally higher than along the coast due to the lack of sea breezes, with average monthly highs from 68°F to 91°F and lows from 44°F to 62°F. The relative humidity inland is also lower than along the coast (Western Regional Climate Center, 2015).

Due to the topography and weather conditions of the basin, temperature inversions tend to form. These inversion layers prevent the vertical mixing of warm and cooler layers of the air and allow pollutants to remain at ground level. The coastal location of the basin also creates a wind pattern that blows offshore at night and onshore during the day, so that air pollutants formed in the heat of the day tend to stay inland. Major coastal cities with high population density and heavy vehicular traffic, combined with the climate and geographical configuration, influence air quality throughout the basin.

Ambient Air Quality

The U.S. Environmental Protection Agency (USEPA) establishes national ambient air quality standards (NAAQS) to regulate the concentration of six criteria pollutants in the atmosphere: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur oxides (SO_X), particulate matter (PM10 and PM2.5), and lead (Pb). These pollutants are considered harmful to the public health and the environment (CARB, 2009).

The USEPA designates the attainment status of areas in the nation for each criteria pollutant, based on whether NAAQS are met. A "non-attainment area" does not meet the standard and is subject to a State Implementation Plan to attain the standard. Similarly, the California Air Resources Board (CARB) has set its own stricter ambient air quality standards for California, and designates regions in the state as attainment or non-attainment based on those standards. The California ambient air quality standards (CAAQS) include sulfates as a criteria pollutant, which is not addressed in the federal standards.

Both state and federal ambient air quality standards are provided as the maximum allowable concentration over an averaging time of measurement. Maximum concentrations reflect levels of pollutants that can adversely affect human health. The averaging times reflect the potential for short-term or long-term effects. Table 4-5 shows the NAAQS and CAAQS (SCAQMD 2016a).

Table 4-5 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	Federal Standards
Ozone	1-Hour (ppm)	0.09	--
	8-Hour (ppm)	0.070	0.070 [a]
Carbon Monoxide	1-Hour (ppm)	20	35
	8-Hour (ppm)	9	9
Nitrogen Dioxide	1-Hour (ppm)	0.18	0.100 [b]
	AAM (ppm)	0.03	0.053
Sulfur Dioxide [c]	1-Hour (ppm)	0.25	0.075
	3-Hour (ppm)	--	0.5
	24-Hour (ppm)	0.04	--
PM10	24-Hour (µg/m³)	50	150
	AAM (µg/m³)	20	--
PM2.5	24-Hour (µg/m³)	--	35 [d]
	AAM (µg/m³)	12	12 [e]
Lead	30-Day (µg/m³)	1.5	--
	Rolling 3-Month (µg/m³)	--	0.15
Sulfate	24-Hour (µg/m³)	25	--
Hydrogen Sulfide	1-Hour (ppm)	0.03	--
Vinyl Chloride	24-Hour (ppm)	0.010	--

Notes:
AAM = Annual Arithmetic Mean
µg/m3 = microgram(s) per cubic meter
ppm = parts per million

Pollutant	Averaging Time	California Standards	Federal Standards

a) On October 1, 2015, USEPA established a new 8-hour ozone standard of 0.070 ppm, effective December 28, 2015.
b) Based on the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area.
c) On June 2, 2010, USEPA established a new 1-hour SO2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The USEPA also revoked both the 24-hour SO2 standard of 0.14 ppm and the annual primary SO2 standard of 0.030 ppm, effective August 23, 2010.
d) Based on 98 percent of the daily concentrations averaged over 3 years.
e) Based on the 3-year average of the weighted annual mean concentrations.

Source: California Air Resource Board, 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf (CARB 5/4/2016)

Table 4-6 provides the attainment status of the South Coast Air Basin relative to federal and California ambient air quality standards. The South Coast Air Basin is currently not in attainment with federal or California Ozone standards, California PM10 standards, and both federal and California PM2.5 standards.

Table 4-6 State and Federal Air Quality Designations for South Coast Air Basin

Pollutant	Averaging Time	State Designation	Federal Designation
Ozone	1-Hour	Non-attainment	N/A
	8-Hour	Non-attainment	Non-attainment
Carbon Monoxide	1-Hour	Attainment	Attainment
	8-Hour	Attainment	Attainment
Nitrogen Dioxide	1-Hour	Attainment	Attainment
	Annual	Attainment	Attainment
Sulfur Dioxide	1-Hour	Attainment	Attainment
	24-Hour	Attainment	N/A
PM10	24-Hour	Non-attainment	Attainment
	Annual	Non-attainment	N/A
PM2.5	24-Hour	N/A	Non-attainment
	Annual	Non-attainment	Non-attainment
Lead	30-Day	Attainment	N/A
	Quarter	N/A	Non-attainment (Partial)
Sulfate	24-Hour	Attainment	N/A

Notes:
N/A = not applicable
Lead is in partial non-attainment on the Los Angeles County portion of the Basin.

Sources: SCAQMD 2016b: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15
CARB 2017b: www.arb.ca.gov/desig/changes.htm#summaries;
EPA 2017: http://www3.epa.gov/airquality/greenbook/

Criteria Pollutants

Ozone (O_3) is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X) react with heat and sunlight. Exposure to ground-level ozone can trigger coughing and shortness of breath. It can also aggravate asthma and other lung diseases. Ground-level ozone can also damage sensitive vegetation and ecosystems.

The South Coast Air Basin is currently designated as non-attainment for ozone by both USEPA and CARB. SCAQMD, as the local air district governing South Coast Air Basin, has developed an USEPA approved 8-hour ozone control plan (Air Quality Management Plan) with new emission reduction commitments to meet the attainment of federal 8-hour standard by 2032. Implementation of the Air Quality Management Plant is also expected to demonstrate attainment with the revoked 1-hour ozone standard by 2023. Construction of new emission sources such as those proposed for the Project that are in compliance with New Source Review and applicable local, state and federal air quality regulations would be in conformance with the Air Quality Management Plan.

Carbon monoxide (CO) is a colorless, odorless gas formed by incomplete combustion processes. Most CO pollution in the South Coast Air Basin comes from mobile sources. CO reduces oxygen delivery to organs and tissues, resulting in detrimental effects on body systems. With extremely high exposure, CO can cause death. The South Coast Air Basin is designated as attainment with CO standards by both the USEPA and CARB.

Nitrogen dioxide (NO_2) is used as the indicator for the larger group of nitrogen oxides (NO_X). Other nitrogen oxides include nitrous acid (HNO_2) and nitric acid (HNO_3). Nitric oxide (NO_X) produced from combustion reacts with oxygen in the atmosphere to form NO_2. Health effects from exposure to NO_2 include airway inflammation and aggravated respiratory ailments in sensitive groups. The South Coast Air Basin is currently designated as attainment for NO_2 by the USEPA and CARB.

Sulfur dioxide (SO_2) is part of a larger group of gases known as sulfur oxides (SO_X). SO_2 is formed from the combustion of sulfur-containing fossil fuels, mainly from mobile sources, refineries and other industrial facilities. Exposure to SO_2 can have an adverse effect on the respiratory system. SO_2 emissions in the basin are low due to the use of natural gas by stationary sources and low sulfur transportation fuels. The South Coast Air Basin is designated as attainment for SO_2 by both the USEPA and CARB.

Particulate matter (PM) is a mixture of extremely small solid and liquid particles, including soil, dust, metals, acids (such as nitrates and sulfates), and organic chemicals. The USEPA classifies PM into two categories: PM10 and PM2.5. PM10 consists of coarser particles smaller than 10 micrometers in diameter, which is generally found in dusty areas like roadways and construction sites. PM2.5 is a subset of PM10 and consists of finer particles 2.5 micrometers and smaller in

diameter, which are generally found in smoke and haze. Exposure to PM can lead to damaging health effects on the respiratory system.

The South Coast Air Basin is designated as attainment by the USEPA and non-attainment by CARB for PM10 standards. The South Coast Air Basin is designated as non-attainment by the USEPA and CARB for PM2.5 standards. SCAQMD adopted an Air Quality Management Plan to meet attainment status for the federal 24-hour PM2.5 standard by 2014; however, since the attainment has not yet been achieved due to the impacts of recent drought conditions, a new PM2.5 control strategy is developed to ensure attainment status of the federal 24-hour PM2.5 standard by 2019. For the federal annual PM2.5 standard, the attainment status is expected to be obtained by 2021. The construction of new emission sources, such as those proposed for the Project, that are in compliance with New Source Review and applicable local, state, and federal air quality regulations would be in conformance with the Air Quality Management Plan.

Lead (Pb) is a metal that can be found naturally in the environment and in manufactured products. Historically, the major source of lead emissions was from the use of leaded-fuels. Motor vehicle gasoline fuels no longer contain lead, which significantly decreased lead levels in the atmosphere. Today, the major sources of lead emissions are from lead smelters, battery manufacturing operations, and piston-engine aircraft using leaded gasoline. Lead exposure can result in adverse health impacts to the nervous, kidney, immune, reproductive, developmental, and cardiovascular systems.

USEPA revised the federal lead standard from 1.5 micrograms per cubic meter (ug/m^3), which was established in 1978, to 0.15 ug/m^3 on October 15, 2008. A portion of Los Angeles County was designated as non-attainment in the year 2010. In response to the non-attainment designation, the State submitted *the Final 2010 Lead State Implementation Plan – Los Angeles County to EPA*, which provides steps taken that brought Los Angeles County into attainment by December 31, 2015. A request to USEPA to re-designate Los Angeles County to attainment status is currently being prepared.

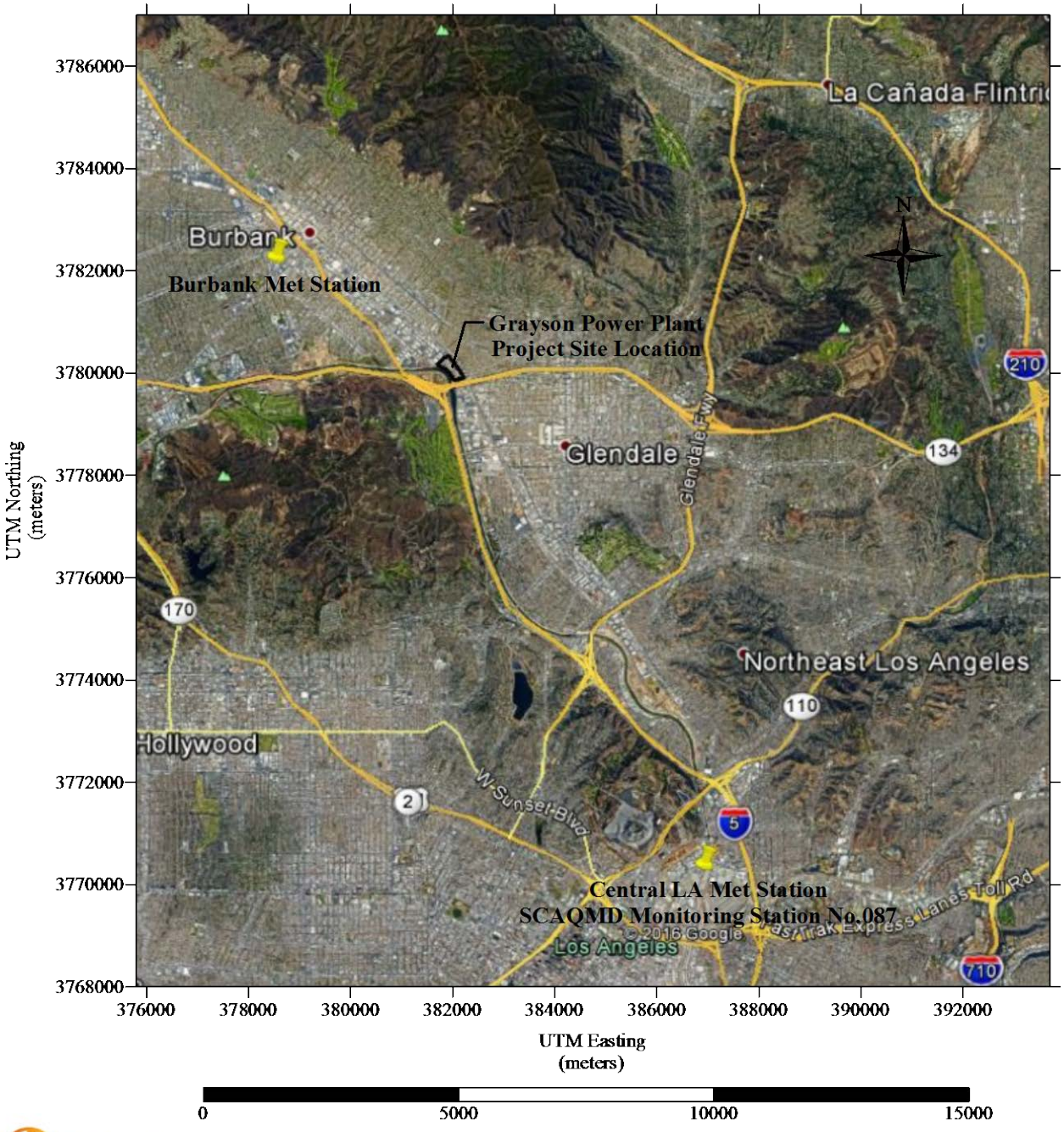
Sulfates (SO_4^{2-}) are oxidized form of SO_2 in the atmosphere. This conversion takes place quickly especially in urban areas of California due to regional meteorological features. High exposure can increase respiratory stress and cardio-pulmonary disease. Sulfates can also lower visibility and damage the environment and property. The South Coast Air Basin is designated as attainment for sulfates by CARB.

Existing Air Quality

The three closest monitoring stations to the Project site are located in Burbank, Central Los Angeles, and Pasadena. The Burbank monitoring station, however, was closed in 2014. Between the remaining two stations, Central Los Angeles monitoring station (CARB Monitoring Site 70087/ SCAQMD Station No. 087) is selected based on the location of the station. This monitoring station is located approximately 6.9 miles from the Project site. Additionally, based on a review of

meteorological data collected at the Burbank monitoring station, this station is also downwind of the Project site for most meteorological conditions. Therefore, it is expected the short and long term air quality impacts of the Project will occur in proximity to this monitoring station. Figure 4-7 shows the location of the Project related to the monitoring stations.

Figure 4-7 Location of Grayson Power Plant in Relation to Burbank Meteorological Monitoring Station and SCAQMD Background Monitoring Station No. 087



Stantec

SCAQMD and CARB publish information for ambient air quality data on both sites. The SCAQMD data summary is used as the primary source, and the CARB database is used when information is not available on the SCAQMD data summary. Table 4-7 presents a three-year background of the criteria pollutants monitored at the Los Angeles-North Main Street monitoring stations through the year 2015. Monitoring data for the year 2016 have not been fully compiled and released by SCAQMD or CARB.

Table 4-7 Maximum Background Pollutant Concentrations and Exceedances of State/Federal AAQS at Central Los Angeles Monitoring Station

Pollutant	Averaging Time	2013	2014	2015
Ozone	1-Hour (ppm)	0.081	0.113	0.104
	Days Exceeding State Standard	(0)	(3)	(2)
	8-Hour (ppm)	0.069	0.094	0.074
	Days Exceeding State Standard	(0)	(7)	(6)
	Days Exceeding Federal Standard	(0)	(6)	(6)
Carbon Monoxide	1-Hour (ppm)	2.5[a]	2.5 [a]	3.17 [a]
	8-Hour (ppm)	2.0	2.0	1.8
	Days Exceeding State Standard	(0)	(0)	(0)
	Days Exceeding Federal Standard	(0)	(0)	(0)
Nitrogen Dioxide	1-Hour (ppm)	0.0903	0.0821	0.0791
	Days Exceeding State Standard	(0)	(0)	(0)
	AAM (ppm)	0.0218	0.0222	0.0222
	98th Percentile 1-Hour (ppm)	0.0626	0.0674	0.0624
Sulfur Dioxide	1-Hour (ppm)	0.00603	0.0054	0.0126
	Days Exceeding State Standard	(0)	(0)	(0)
	24-Hour (ppm)	0.0017[a]	0.0014[a]	0.001 [a]
	99th Percentile 1-Hour (ppm)	0.0052	0.0044	0.0063
PM10	24-Hour (µg/m³)	57	87	88
	% of Days Above State Standard	(2%)	(9%)	(8%)
	% of Days Above Federal Standard	(0%)	(0%)	(0%)
	AAM (µg/m³)	29.5	35.4	33.1
PM2.5	24-Hour (µg/m³)	43.1	59.9	56.4
	% of Days Above Federal Standard	(0.3%)	(1.8%)	(2.0%)
	AAM (µg/m³)	11.95	12.36	12.38
	98th Percentile 24-Hour (µg/m³)	29	34.5	38
Lead	30-Day (µg/m³)	0.013	0.013	0.013
	Quarter (µg/m³)	0.011	0.01	0.01
Sulfate	24-Hour (µg/m³)	5.8	11	6.1
	State Standard	(0%)	(0%)	(0%)

Notes:
ppm = parts per million of air by volume
µg/m³ = micrograms per cubic meter
AAM = annual arithmetic mean
(#) = Number of days exceeding the federal or state standard
(%) = Percentage of samples exceeding the federal or state standard
Data obtained from CARB; all unmarked data from SCAQMD

Pollutant	Averaging Time	2013	2014	2015
Sources: South Coast Air Quality Management District (SCAQMD, 2015)– Historical Air Quality by Year, Data Tables 2013 – 2015 (www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year) California Air Resources Board (CARB, 2014) – Air Quality and Meteorological Information System (www.arb.ca.gov/agmis2/agdselect.php?tab=daily)				

4.3.2 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

USEPA implements the federal Clean Air Act, a law that regulates air emissions from stationary and mobile sources. NAAQS were established under the Clean Air Act to regulate pollutants considered harmful to public health and the environment. Areas that are in attainment of the NAAQS are regulated under the Prevention of Significant Deterioration program, while areas that are not in attainment of the NAAQS are regulated under the nonattainment New Source Review program. The New Source Review and Prevention of Significant Deterioration requirements apply to new construction or modification of industrial sources that emit air pollutants.

The CARB implements the California Clean Air Act which preceded the federal Clean Air Act and established stricter ambient air quality standards (AAQS). Each of the 35 local Air Pollution Control Districts in California has its own New Source Review program and issues permits for the construction and operation of stationary emission sources. Depending on the amount of pollutants that will be emitted from a source and the area designation for that pollutant, the source may be required to install Best Available Control Technology. In addition, sources may also be required to mitigate or "offset" the increases in emissions.

This Project is subject to SCAQMD rules and regulations. SCAQMD has the principal responsibility for developing plans to meet the NAAQS and CAAQS; implementing permit programs for the construction, modification, and operation of air pollution sources; and adopting or enforcing air pollution regulations for non-mobile sources. The nonattainment New Source Review program has also been delegated by USEPA to SCAQMD and implemented through SCAQMD Regulation XIII.

The following Table 4-8 summarize the applicable federal, state, and local air LORS for the Project.

Table 4-8 Applicable Federal, State, Local LORS for Air Quality

LORS	Administering Agency
Federal	
Title 40 CFR, Part 50 - National Primary and Secondary Ambient Air Quality Standards	USEPA Region IX
Title 40 CFR, Part 52, Subpart A, Section 52.21 - Prevention of Significant Deterioration of Air Quality	SCAQMD with USEPA Region IX oversight
Title 40 CFR, Part 60, Subpart IIII - Standards of Performance of Stationary Compression Ignition Reciprocating Internal Combustion Engines	SCAQMD with USEPA Region IX oversight
Title 40 CFR, Part 60, Subpart KKKK - Standards of Performance of Stationary Combustion Turbines	SCAQMD with USEPA Region IX oversight
Title 40 CFR, Part 63, Subpart YYYY - National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Gas Turbines	SCAQMD with USEPA Region IX oversight
Title 40 CFR, Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Internal Reciprocating Combustion Engines	USEPA Region IX, with reporting by Title V sources to SCAQMD
Title 40 CFR, Part 70 - State Operating Permit Programs	SCAQMD with USEPA Region IX oversight
Title 40 CFR, Part 72 – Acid Rain Program	SCAQMD with USEPA Region IX oversight
State	
California Code of Regulations, Section 41700	SCAQMD with CARB oversight
California Code of Regulations, Section 93115 - Airborne Toxics Control Measure for Stationary Compression Ignition Internal Compression Engines	SCAQMD through adoption and enforcement of Rule 1147
Local	
SCAQMD Rule 403 – Fugitive Dust	SCAQMD
SCAQMD Rule 407 – Liquid and Gaseous Air Contaminants	SCAQMD
SCAQMD Rule 409 – Combustion Contaminants	SCAQMD
SCAQMD Rule 431.1 – Sulfur Content of Gaseous Fuels	SCAQMD
SCAQMD Rule 475 - Electric Power Generating Equipment	SCAQMD
SCAQMD Regulation IX - Standards of Performance for New Stationary Sources	SCAQMD with USEPA Region IX oversight
SCAQMD Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines	SCAQMD
SCAQMD Rule 1135 - Emissions of Oxides of Nitrogen from Electric Power Generating Systems	SCAQMD
SCAQMD Regulation XIII – New Source Review	SCAQMD
SCAQMD Rule 1401 - New Source Review of Toxic Air Contaminants	SCAQMD
SCAQMD Rule 1403 - Asbestos Emissions from Demolition/Renovation Activities	SCAQMD
SCAQMD Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines	SCAQMD

LORS	Administering Agency
SCAQMD Regulation XVII – Prevention Significant of Deterioration	SCAQMD with USEPA Region IX oversight
SCAQMD Regulation XXX – Title V	SCAQMD with USEPA Region IX oversight
SCAQMD Regulation XXXI – Acid Rain Permit	SCAQMD with USEPA Region IX oversight

Federal LORS

Title 40 CFR, Part 50 – National Primary and Secondary Ambient Air Quality Standards

This subpart of the CFR establishes national primary and secondary ambient air quality standards for criteria pollutants. A dispersion modeling analysis was conducted as part of the overall air quality impact analysis of the Project. In addition to federal ambient air quality standards, the model was used to determine any exceedances with the state ambient air quality standards.

Title 40 CFR, Part 52, Subpart A, Section 52.21 – Prevention of Significant Deterioration (PSD) of Air Quality

This subpart of the Code of Federal Regulations sets forth requirements when a significant increase of attainment air contaminants occurs at an existing major stationary source of criteria pollutants, or when a new facility is considered a major source. Prevention of Significant Deterioration applies when the region is in attainment with federal ambient air quality standards for a pollutant. In the South Coast Basin, attainment with federal air quality standards has been reached for NO_2, SO_2, CO, and PM10. As a natural gas fired combined/simple cycle power plant, the applicable Prevention of Significant Deterioration threshold for power plants is 100 tons of a Prevention of Significant Deterioration pollutant per year. Currently the Grayson Power Plant exceeds this threshold for at least one pollutant and is considered to be a major source. Since the facility is a major stationary source, a Prevention of Significant Deterioration analysis must be conducted if the facility has an emission increase of greater than 40 tons per year for NO_2 and SO_2, 15 tons per year for PM10, and 100 tons per year for CO. The net emission increase is determined based on the potential to emit of the new equipment versus the actual emissions from the replaced equipment.

The net emissions increase of the Project is not expected to exceed the emission increase thresholds that would define a significant increase. Additionally, after the modification, the facility is not expected to emit more than 100 tons per year of any attainment pollutants. Therefore, a Prevention of Significant Deterioration permit is not required for the Project, although Best Available Technology will be enforced for CO through Prevention of Significant Deterioration.

Prevention of Significant Deterioration applicability to greenhouse gas (GHG) emissions are discussed in the GHG section of this report (Section 4.6).

Title 40 CFR, Part 60, Subpart KKKK – Standards of Performance of Stationary Combustion Turbines

New Source Performance Standards subpart KKKK sets emission standards and compliance schedules for NO_X and SO_X from stationary gas turbines. SCAQMD has been delegated the authority to implement and enforce these federal regulations. Under SCAQMD Regulation IX, this subpart was adopted and made part of the Rules and Regulations of the SCAQMD.

Based on this subpart, the emission standard for NO_X is 42 parts per million by volume (ppmv) @ 15% O_2, and the turbine shall not burn any fuel containing total sulfur in excess of 0.06 lbs. sulfur dioxide per one million British thermal units (SO_2/MMBtu) heat input. The proposed gas turbines will meet these emission standards by complying with lower SCAQMD Best Available Control Technology emission standards of 2.5 or 2.0 ppmv @ 15% O_2 for NO_X and 0.002 lb./MMBtu (0.75 grains of Sulfur/scf) for SO_X.

Title 40 CFR, Part 63, Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Gas Turbines

National Emission Standards for Hazardous Air Pollutants Subpart YYYY establishes national emission and operating limitations for hazardous air pollutants emissions from stationary combustion turbines. National Emission Standards for Hazardous Air Pollutants Subpart YYYY is typically less stringent than the policies and rules enforced by SCAQMD to manage emissions of organic and hazardous air pollutants. Therefore, the Project is expected to comply with federal emission standards by complying with SCAQMD regulations.

Title 40 CFR, Part 70 – State Operating Permit Programs

The requirements of the operating permit program under this regulation apply to facilities that are classified as major sources or subject to certain New Source Performance Standards requirements. The operating permit program implements Title V of the federal Clean Air Act and is carried out at the regional level under SCAQMD's Regulation XXX. All applicable federal performance standards, operating, monitoring, recordkeeping, and reporting requirements have to be issued for permits under this regulation.

A facility in the South Coast Air Basin is subject to Title V requirements if it has the potential to emit greater than 10 tons per year of NO_X or VOC, 100 tons per year of SO_X, 50 tons per year of CO, or 70 tons per year of PM10; 25 tons per year for combined hazardous air pollutants or 10 tons per year for individual hazardous air pollutants. Facilities with power generating systems rated above 25 MW area also subject to Title V permitting requirements. The Grayson Repowering Project will exceed the thresholds above for NO_X and VOCs, as well as the generator rating threshold. A Title V permit application for this Project will be submitted to comply with this regulation.

Title 40 CFR, Part 72 – Acid Rain Program

This subpart sets forth emission standards for SO_2 and NO_X emissions from electric generating units. The acid rain program requires the facility to cover SO_2 emissions with "SO_2 allowances" or purchases of SO_2 on the open market.

Grayson Power Plant is subject to the requirements of the Federal Acid Rain program (Title IV permit). The Project will replace existing electric generating units with four new combustion turbines, that are each capable of generating more than 25 MW. The City will comply with this regulation through the purchase of SO_2 allowance in the open market as needed and will monitor and report emissions as required.

State LORS

Title 17 California Code of Regulations, Section 41700

This regulation prohibits the discharge of air contaminants from a facility in quantities that will negatively affect the health and safety of the public, businesses, or properties. The Project will be subject to permit conditions that ensure no adverse public health effects or nuisance will result from the discharge of air contaminants from the facility.

Title 17 California of Regulations, Sections 931115 through 93115.5

This regulation is also known as the Airborne Toxics Control Measure for Stationary Compression Ignition Engines and affects emergency diesel-fueled engines that would be included in the Project. The Airborne Toxics Control Measure mandates the use of specified engine technology for new installations and grants discretion to SCAQMD to enforce additional restrictions. SCAQMD implements the Airborne Toxics Control Measure through its own regulation (Rule 1470). The proposed emergency engine to be included in the Project meets the Airborne Toxics Control Measure provisions for new emergency engines.

Local LORS

SCAQMD Rule 403 – Fugitive Dust

The purpose of this rule is to reduce PM emissions from man-made fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. During the construction phase of the Project, control measures, such as applying sufficient amount of water on the disturbed surfaces, covering truck loads when hauling material, etc., would be taken to demonstrate compliance with Rule 403.

SCAQMD Rule 407 – Liquid and Gaseous Air Contaminants

This rule limits CO emissions to 2,000 ppm and SO_X emissions to 500 ppm, averaged over 15 consecutive minutes. The proposed equipment will meet the CO limit. The proposed equipment is exempt from the SO_X limit of this rule because it complies with the sulfur content requirements of Rule 431.1 for gaseous fuels.

SCAQMD Rule 409 – Combustion Contaminants

This rule prohibits contaminant emissions of more than 0.1 grain per cubic foot of gas at 12 percent CO_2 at standard conditions, averaged over 15 consecutive minutes. The proposed equipment will only combust natural gas as fuel. Therefore, the Project is expected to comply with Rule 409.

SCAQMD Rule 431.1 – Sulfur Content of Gaseous Fuels

This rule limits the sulfur content of natural gas not to exceed 16 ppmv calculated as hydrogen sulfide (H_2S). The sulfur content of natural gas combusted in the proposed gas turbines will be less than 12.6 ppmv or 0.75 grains of sulfur per 100 scf of natural gas. Therefore, the Project will comply with this rule.

SCAQMD Rule 475 – Electric Power Generating Equipment

This rule applies to power generating equipment greater than 10MW installed after May 7, 1976 and established limit for combustion contaminants emissions of 11 pounds per hour (lbs. /hr.) or 0.01 gr/scf. The combustion contaminants emissions are estimated to be 1.5 lbs. /hr. for 0.002 gr/scf for the combined cycle gas turbines and 1.7 lbs. /hr. or 0.002 gr/scf for the simple cycle gas turbines. Therefore, compliance with this rule is expected.

SCAQMD Regulation IX – Standards of Performance for New Stationary Sources

This regulation incorporates Title 40 CFR, Part 60 of the Code of Federal Regulations (CFR), and is applicable to all new, modified, or reconstructed sources of air pollution. Subparts KKKK of this regulation apply to the proposed turbines. These subparts establish emission limits, monitoring, and test method requirements. Compliance with Subpart KKKK will be achieved through the application of Best Available Control Technology.

SCAQMD Rule 1110.2 Emission Standards for Stationary Internal Combustion Engines

This rule specifies emission standards for stationary internal combustion engines, but also provides exemptions from technical standards for emergency engines that are operated less than 200 hours per year. The proposed emergency engine will qualify for the Rule 1110.2 technology exemptions and operator logs will be used to demonstrate eligibility for the exemption (SCAQMD, 2016c).

SCAQMD Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Systems

Rule 1135 applies to electric power generating systems, which are defined as boilers and their replacement unit. The rule limits NO_X emissions from all affected units (combined) at Grayson Power Plant to 35 tons per year. Boilers 3, 4, and 5 (108 MW) are affected by Rule 1135 annual NO_X limit. The annual emission limit will also carry over to an equivalent 108 MW of the turbines that would replace Boilers 3, 4, and 5. The proposed gas turbines replacing the boilers are expected to have a lower NO_X emission rates than the existing boilers; therefore, the Project will comply with Rule 1135.

SCAQMD Regulation XIII – New Source Review

The SCAQMD regulatory framework includes two options for implementing new source review. Certain facilities included in the Regional Clean Air Market cap and trade program for NO_X and SO_X are subject to the new source review requirements of Regulation XX. Facilities that are not part of the Regional Clean Air Market are subject to the NO_X and SO_X new source review requirements of Regulation XIII. New source review for VOC, CO, and PM is administered through Regulation XIII for all facilities. Glendale Water and Power opted out of the Regional Clean Air Market and is therefore subject to the new source review requirements of Regulation XIII for all criteria pollutants.

SCAQMD Rule 1303 – New Source Review Requirements: Best Available Control Technology

Rule 1303(a) requires any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia to meet the Best Available Control Technology requirement. Best Available Control Technology is the most stringent emission limitation or control technology which has been achieved in practice, is contained in any state implementation plan approved by the USEPA, or is another technology that has been found to be technologically feasible and cost effective by the Air District. Table 4-9 provides a summary of recent Best Available Control Technology determination for the proposed equipment.

Table 4-9 Best Available Control Technology Determinations for Natural Gas Combustion Turbines

Equipment Type	Pollutant	Best Available Control Technology Emission Rate
Combined Cycle Natural Gas Combustion Turbine	NO_X CO VOC PM10/2.5 SO_X NH_3	2.0 ppmvd @ 15% O_2, 1-hour avg. 1.5 ppmvd @ 15% O_2, 1-hour avg. 2.0 ppmvd @ 15% O_2, 1-hour avg. Natural gas fuel Natural gas fuel containing fuel sulfur content of no more than 1 grain/100 scf 5.0 ppmvd @ 15% O_2, 1-hour avg.
Simple Cycle Natural Gas Combustion Turbine	NO_X CO VOC PM10/2.5 SO_X NH_3	2.5 ppmvd @ 15% O_2, 1-hour avg. 2.0 ppmvd @ 15% O_2, 1-hour avg. 2.0 ppmvd @ 15% O_2, 1-hour avg. Natural gas fuel Natural gas fuel containing fuel sulfur content of no more than 1 grain/100 scf 5.0 ppmvd @ 15% O_2, 1-hour avg.

SCAQMD Rule 1303 – New Source Review Requirements: Air Quality Impact Analysis

Rule 1303(b)(1) requires an analysis to demonstrate compliance with ambient air quality standards. An air quality dispersion analysis must be conducted using a mass emissions-based analysis or an approved dispersion model to evaluate the impacts of the project.

SCAQMD Rule 1303 – New Source Review Requirements: Emissions Offsets

Rule 1303(b)(2) requires that an emission increase of nonattainment air contaminants is to be offset by either Emission Reduction Credits approved pursuant to Rule 1309, allocations from the Priority Reserve pursuant to Rule 1309.1, or allocations form the Offset Budget pursuant to Rule 1309.2. In most cases, SCAQMD regulations require an emission offset ratio of 1.2:1 to be applied to Emission Reduction Credits purchased in the open market. An offset ratio of 1:1 is applied to allocations from the Priority Reserve or SCAQMD offset budgets. The additional offset ratio applied to open market purchases allows SCAQMD to demonstrate new emission reductions throughout the region.

For the Project, the emission offset calculation is based on the new emission sources potential to emit, less eligible emission reductions from existing equipment will be removed from service. For the purpose of determining emission offset requirements, emissions are calculated on a 30-day average (total monthly emissions, divided by 30 days per month).

The Project may qualify for the following offset exemptions as provided in Rule 1304:

- *Rule 1304(a)(1) – Replacements*

  Based on Rule 1304(a)(1), One of the proposed gas turbines in either a simple or combined cycle mode that would replace the existing gas turbines 8A and 8BC is eligible for an exemption from modeling and emission offset requirements because:

  - The proposed gas turbines are functionally identical to the existing turbines;
  - The maximum rating of one new turbine in one million British thermal units per hour (MMBtu/hr.) is not higher than the maximum combined rating of turbines 8A and 8BC;
  - The potential to emit air contaminants from one new turbine is not greater than emissions from the replaced turbines, if they were operated at the same conditions and if current Best Available Control Technology were applied.

- *Rule 1304(a)(2) – Electric Utility Steam Boiler Replacement*

  Pursuant to Rule 1304(a)(2), modeling and offset exemptions are granted for replacement of electric utility steam boiler(s) with combined cycle gas turbine(s), intercooled chemically-recuperated gas turbines, other advanced gas turbine(s), solar, geothermal, wind energy, or other equipment to the extent that such equipment will allow compliance with Rule 1135. The exemption applies only to the extent that the new equipment has a maximum electrical power rating (in megawatts) that does not allow any increase in electricity generating capacity on a per-utility basis. Emissions attributed to the difference between existing and new generating capacity must be offset with Emission Reduction Credits.

  The proposed gas turbines in either simple or combined cycle are eligible for this exemption.

In cases where a project is exempt from emission offsets pursuant to SCAQMD Rule 1304, the air district assumes the responsibility for ensuring that the increase in emissions is otherwise mitigated through SCAQMD's own offset accounts. These accounts are funded through real, quantifiable, and permanent emission reductions that are in excess of any rule requirements. An example of emission reductions used to fund the accounts include reductions from facility or process shut-downs. SCAQMD Rule 1315 – Federal New Source Review Tracking System ensures that the SCAQMD offset banks comply with USEPA standards for emissions offsetting programs. This rule also establishes a basin-wide threshold for emission increases from new sources to establish a no-net increase in emissions over a threshold that SCAQMD established for CEQA. If that threshold is reached, SCAQMD is required to discontinue issuing permits for new emission sources until the bank is replenished through emission decreases or until a new threshold is proposed in a new CEQA process. Those thresholds have not been reached and are not expected to be reached during the period in which the Project would be permitted by SCAQMD.

SCAQMD Rule 1401 – New Source Review of Toxic Air Contaminants

Rule 1401 establishes allowable risk thresholds for permit units that emit Toxic Air Contaminants. Depending on the pollutant, the rule specifies limits for maximum individual cancer risk (MICR), cancer burden, and/or non-cancer acute and chronic Hazard Indices (HI and HC).

The proposed equipment combusts exclusively natural gas; therefore, emissions of toxic air contaminants listed in Table I of Rule 1401 are expected. A health risk assessment is required to calculate the levels of MICR, cancer burden, acute and chronic HI at residential and worker receptor locations surrounding the facility. The Project's health risk assessment is further discussed in Section 4.3.4 and is included in Appendix D.

SCAQMD Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities

Rule 1403 establishes work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACM). The requirements include asbestos surveying, notification, ACM removal procedures and time schedules, ACM handling and clean-up procedures, storage, disposal, and landfilling requirements for asbestos-containing waste materials (ACWM). Glendale Water and Power will comply with the requirements outline in this rule prior to removal of ACM during the demolition phase.

SCAQMD Rule 1470 –Requirements for Stationary Diesel-fueled and Other Compression Ignition Internal Combustion Engines

Rule 1470 implements the provisions of the State Airborne Toxics Control Measure for compression-ignition internal combustion engines by establishing operating limits and emission standards. The proposed Project's emergency engine would be subject to the provisions in Rule 1470 for new emergency engines. The selection of an engine meeting current Best Available Control Technology levels, including the installation of a diesel particulate filter, and operating restrictions to be specified in the SCAQMD operating permit will ensure compliance with Rule 1470.

SCAQMD Regulation XVII – Prevention of Significant Deterioration

Regulation XVII sets forth requirements when a significant increase of attainment air contaminants occurs at an existing major stationary source of criteria pollutants. As discussed in the above section of 40 CFR, Part 52, Subpart A, Section 52.21, Prevention of Significant Deterioration permitting for this Project is not required because no significant increase of attainment pollutants will result from the Project and potential emissions for the facility will be below Prevention of Significant Deterioration major source thresholds. However, Regulation XVII specified that Best Available Control Technology be applied to all criteria pollutants, even those that are exempt from Best Available Control Technology pursuant to Regulation XIII. Best

Available Control Technology for CO emissions will, therefore, be enforced through Regulation XVII, Rule 1702.

SCAQMD Regulation XXX – Title V

This regulation implements the operating permit requirements of Title V of the Clean Air Act as amended in 1990. USEPA has delegated to SCAQMD implementation authority over the federal program through local regulations that are as stringent, if not more stringent, than the federal regulations. Therefore, compliance with this regulation will result in compliance with the federal Title V program.

The Project will exceed the Title V applicability thresholds listed in this regulation for several pollutants; therefore, a Title V application will be submitted as part of the permitting process.

SCAQMD Regulation XXXI – Acid Rain Permit Program

As discussed in the federal LORS section, the Acid Rain Program is applicable to the Project and is expected to comply with the requirement of this program. The required Title V permit applications will be submitted as part of the permitting process.

4.3.3 ENVIRONMENTAL IMPACTS

4.3.3.1 Methodology

Criteria Pollutant Environmental Impacts

Thresholds of Significance

Since the facility location is under SCAQMD jurisdiction, the air quality impacts from the Project will be compared with SCAQMD's significance thresholds, listed in Table 4-10.

Table 4-10 SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NOx	100 lbs./day	55 lbs./day
VOC	75 lbs./day	55 lbs./day
PM10	150 lbs./day	150 lbs./day
PM2.5	55 lbs./day	55 lbs./day
SOx	150 lbs./day	150 lbs./day
CO	550 lbs./day	550 lbs./day
Lead	3 lbs./day	3 lbs./day
Toxic Air Contaminants and Odor Thresholds		
Toxic Air Contaminants (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	

Mass Daily Thresholds	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
Ambient Air Quality Standards for Criteria Pollutants	
NO_2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)
PM10 24-hour average annual average	Increase of 10.4 µg/m³ (construction) & 2.5 µg/m³ (operation) 1.0 µg/m³
PM2.5 24-hour average	Increase of 10.4 µg/m³ (construction) & 2.5 µg/m³ (operation)
SO_2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)
Sulfate 24-hour average	25 µg/m³ (state)
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)
Lead 30-day Average Rolling 3-month average	1.5 µg/m³ (state) 0.15 µg/m³ (federal)

4.3.4 PROJECT IMPACTS

Threshold: ***Would the Project conflict with or obstruct the implementation of the applicable air quality plan?***

As shown in Table 4-5, the South Coast Air Basin has the following designations:

- Non-attainment area for both federal (1-hour (hr) and 8-hr) and state (8-hr) ozone standards;
- Non-attainment for State PM10 standard and unclassified/attainment with federal PM10 standards;
- Non-attainment for both federal and state PM2.5 standards; and
- Attainment by the State and unclassified/attainment by USEPA for NO_2, CO, and SO_2.

The SCAQMD is the agency responsible for attaining timely compliance with federal standards within the Los Angeles County portion of the South Coast Air Basin. The SCAQMD is responsible for developing portions of the State implementation and Air Quality Management Plan. Those

portions deal with certain stationary and area source controls as well as coordination with local transportation planning agencies to develop transportation control measures. CARB is responsible for submitting the state implementation plan to USEPA.

The Project will be required to comply with all applicable District rules and regulations. The SCAQMD rules and regulations that result from the SCAQMD air quality attainment planning process specify the emissions control and offset requirements for new sources. The Project will use Best Available Control Technology to control the Project's emissions. Additionally, the facility will offset the required emissions in accordance to SCAQMD Rule 1303.

To analyze the impact of the Project to the national and state ambient air quality, criteria pollutant emissions from construction activity of the Project and operating the proposed power plant were quantified.

Construction Impacts

The Project is to repower the Grayson Power Plant by replacing existing power generating equipment with new and more efficient natural gas-fired combustion turbines. Emissions due to the construction activities are largely caused during demolition and construction.

Emissions from demolition/construction activity were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.1. CalEEMod calculates both the daily maximum and annual average emissions for criteria pollutants and annual greenhouse gases (GHG). The model calculates emissions for demolition, site preparation, grading, building, coating and paving activities from the following sources:

- Off-road construction equipment;
- Fugitive dust from material movement in site preparation and grading, demolition, and vehicle trips;
- On-road mobile equipment associated with workers, vendors, and haulers; and
- VOC emissions associated with the application of architectural coatings.

For this Project, the model parameters provided in Table 4-11 were used to estimate demolition and construction emissions. CalEEMod default factors were used for other input parameters such as off-road equipment load factors, worker and hauler trip mileage, and VOC coatings content.

Table 4-11 CalEEMod Input Parameters

Input Parameters Type	Specification
Project Location:	Glendale
Land Use Type[a]:	General Light Industry Other Asphalt Surfaces (Paved surfaces)
Total Floor Surface Area (est.)[a]:	22,900 ft^2 for general light industry 130,680 ft^2 for other asphalt surfaces
Lot Acreage:	10 acres
Paving Acreage:	3 acres
Workforce:	50 employees for operation 293 workers during construction (this number represents the estimated number of workers will be hired, but not the maximum number of workers will be working in the same day).
Construction Schedule (5 days/week working schedule):	
Demolition: Site Preparation: Grading: Building Construction: Grading (2nd phase): Architectural Coating: Paving:	216 working days (June, 2018 – March, 2019) 0 working days 45 working days (April, 2019 – May, 2019) 459 working days (April, 2019 – December, 2020) 45 working days (December 2019 – January, 2020) 21 working days (November 2020) 21 working days (January 2021)
Off-Road Equipment:	
Demolition Phase	
Cranes (150 hp): Excavators (242 hp): Forklifts (60 hp): Graders (175 hp): Other General Ind. Equipment (300 hp): Rollers (Compactor)(100 hp): Rubber Tired Dozers (148 hp): Tractors/Loaders/Backhoes (200 hp): Tractors/Loaders/Backhoes (98 hp):	1 Unit; 5 hours/day 2 Units; 4 hours/day 2 Units; 3 hours/day 1 Unit; 1 hour/day 1 Unit; 3 hours/day 1 Unit; 1 hour/day 2 Units; 5 hours/day 2 Units; 5 hours/day 2 Units; 6 hours/day
Grading	
Excavators (242 hp): Graders (175 hp): Rollers (Compactor) (100 hp): Rubber Tired Dozers (148 hp): Tractors/Loaders/Backhoes (200 hp): Tractors/Loaders/Backhoes (98 hp):	2 Units; 5 hours/day 1 Unit; 6 hours/day 1 Unit; 6 hours/day 1 Unit; 6 hours/day 2 Units; 5 hours/day 2 Units; 5 hours/day
Building Construction	
Aerial Lifts (Man Lifts) (40 hp): Cranes (150 hp): Cranes (500 hp): Cranes (250 hp): Excavators (242 hp): Forklifts (60 hp): Other Const. Equipment (350 hp): Other General Ind. Equipment (300 hp): Other Mat. Hand. Equipment (184 hp): Rollers (Compactor) (100 hp):	4 Units; 2 hours/day 4 Units; 3 hours/day 2 Units; 1 hours/day 2 Units; 1 hour/day 2 Units; 1 hour/day 4 Units; 4 hours/day 2 Units; 1 hour/day 1 Unit; 2 hours/day 2 Units; 2 hours/day 1 Unit; 1 hour/day

Input Parameters Type	Specification
Tractors/Loaders/Backhoes (200 hp):	2 Units; 1 hour/day
Tractors/Loaders/Backhoes (98 hp):	2 Units; 1 hour/day
Grading (2nd phase)	
Graders (175 hp):	1 Unit; 5 hours/day
Rollers (Compactor) (100 hp):	1 Unit; 6 hours/day
Rubber Tired Dozers (148 hp):	1 Unit; 5 hours/day
Tractors/Loaders/Backhoes (200 hp):	1 Unit; 5 hours/day
Tractors/Loaders/Backhoes (98 hp):	1 Unit; 5 hours/day
Architectural Coating	
Air Compressor (78 hp):	1 Unit; 6 hours/day (CalEEMod Default)
Paving	
Aerial Lifts (Man Lifts) (40 hp):	1 Unit; 1 hour/day
Cranes (150 hp):	1 Unit; 6 hours/day
Forklifts (60 hp):	1 Unit; 5 hours/day
Pavers (130 hp):	2 Units: 8 hours/day (CalEEMod Default)
Paving Equipment (132 hp):	2 Units; 8 hours/day (CalEEMod Default)
Rollers (80 hp):	2 Units; 8 hours/day (CalEEMod Default)
Dust from Material Movement:	
Total Acres Graded:	7 acres
Total Acres Graded (2nd Phase):	3 acres
Material (Soil) Imported:	35,000 cubic yards
Material (Soil) Imported (2nd Phase):	15,000 cubic yards
Demolition:	
Amount of material demolished (est.):	50,000 tons of debris
Construction Vehicles Trips[b]:	
Demolition:	104 worker trips/day; 4 vendor trips/day; 6,320 hauling trips
Grading:	22 worker trips/day; 4,500 hauling trips
Grading (2nd Phase):	22 worker trips/day; 2,250 hauling trips
Building Construction:	313 worker trips/day; 12 vendor trips/day; 5,616 hauling trips
Paving:	16 worker trips/day; 4 vendor trips/day; 336 hauling trips
Architectural Coating:	6 worker trips/day
Architectural Coating[c]:	
Coated Interior Area:	17,850 ft^2
Coated Exterior Area:	54,935 ft^2
Construction Mitigation:	
Utilize Tier 2 for engine rated less than 100 hp and Tier 3 for engine rated more than 100 hp. Water disturbed area three times per day to minimize fugitive dust (PM10 and PM2.5) emissions.	
Note: a) The Project buildings total 22,900 ft^2 and consists of an office/control room building (2 floors) and warehouse/maintenance building (2 floors). These structures are the only occupied buildings on the facility site. 130,680 ft^2 reflects the estimated 3 acres of paved surface areas. b) The worker vehicles will be mix of light duty autos and light duty trucks. The vendor and hauling vehicles include heavy duty trucks. Vendor vehicles include trucks delivering material and supplies and fuel trucks. Hauling vehicles include trucks hauling demolition waste, off-road equipment, large equipment, concrete, piles, soils, and asphalt. The daily worker and vendor trips reflect the number of trips made by workers and vendors during the peak month of each stage of construction activities. c) The coated surface areas are as follow: • Heat recovery steam generator Unit 10: 20,572 ft^2 (exterior only) • Heat recovery steam generator Unit 11: 20,572 ft^2 (exterior only)	

Input Parameters Type	Specification
• Warehouse & maintenance building: 23,800 ft² (exterior and interior) • Asphalt surfaces (6% of total surface area): 7,841 ft² (exterior only)	

The Project will utilize the existing pipelines for natural gas supply, water supply, and sewer discharge; therefore, no new offsite pipelines construction will be expected. No new offsite transmission lines will be constructed for the Project. Existing transmission lines will be utilized to connect the electric generating equipment to the City's distribution grid.

Table 4-12 summarizes the emission of the Project during construction phase and compares the emissions to the mass daily significance threshold of construction activity. CalEEMod model outputs are included in Appendix D.1.

Table 4-12 Air Quality Impact Due to Construction Activities

Pollutant	CalEEMod Output Daily Maximum Unmitigated, lbs./day	CalEEMod Output Daily Maximum with Enhanced Management Practices lbs./day	Significance Thresholds Mass Daily Thresholds (lb./day)	Exceed Significance Mass Daily Threshold
NO_X	96.55	80.82	100	NO
CO	70.15	74.38	550	NO
VOC	20.61	19.60	75	NO
PM10	13.59	10.08	150	NO
PM2.5	6.95	4.98	55	NO
SO_X	0.20	0.19	150	NO

As shown in Table 4-12, the air quality impacts due to the construction of the Project are below the mass daily significance thresholds. Even though the air quality impact is already below the significance threshold, the following additional enhanced construction management practices will be implemented to further minimize emissions during construction:

a) Utilize tier 2 engines (or newer) rated below 100 hp and tier 3 engines (or newer) rated 100 hp to 750 hp for the off-road diesel-fired equipment.

b) Use ultra-low sulfur diesel fuel (15 ppm sulfur) in all diesel-fueled equipment.

c) Apply sufficient amount of water to prevent the generation of visible dust plumes.

d) Stabilize material while loading, transporting, and unloading to reduce fugitive emissions.

e) Establish traffic and parking areas for construction activities using road barriers.

f) Provide covers for trucks hauling materials.

g) Treat or gravel unpaved roads exiting the construction site to prevent track out to public roadways.

h) Remove ACM and handling ACWM in accordance to the SCAQMD Rules 1403 requirements during demolition activities.

These control measures ensure compliance with SCAQMD Rule 403 and 1403. Based on the foregoing, Project construction of the Project would not conflict with or obstruct implementation of the air quality plan and the potential impact would be less than significant.

The SCAQMD has also developed localized significance thresholds to assess the localized air quality impacts from construction activities based upon project location and distance to the nearest sensitive receptor. Localized significance thresholds are applicable to NOX, CO, PM10, and PM2.5.

SCAQMD provides a lookup table for allowable emissions in pounds per day as a function of receptor distance from 25 to 500 meters and the size of the project. The size of the Project is larger than five acres; however, localized significance thresholds for a five-acre project is used to provide a more conservative analysis (SCAQMD does not offer thresholds for projects that are larger than five acres. Because significance thresholds are more generous as the size of a project increases, the use of the five-acre threshold supports a conservative analysis for the Project. Table 4-13 shows the comparison of calculated daily NOx, CO, PM10, and PM2.5 emissions with the allowable daily emissions threshold for a five-acre project. Daily emissions of all pollutants during construction activities are below the SCAQMD LST in all cases, daily construction.

Table 4-13 Localized Significance Threshold for Emissions from Construction Activities

Pollutant	NO_x (lbs./day)	CO (lbs./day)	PM10 (lbs./day)	PM2.5 (lbs./day)
Project Net Increase (Unmitigated)	95.41	65.79	12.50	6.65
Project Net Increase with Enhanced Management Practices	79.68	70.02	8.98	4.68
LST for 5 acre project with the nearest senstivie receptor distance of 500 meters	212	10,666	219	126
Exceed Threshold:	NO	NO	NO	NO

As shown in Table 4-13, the air quality impact from the Project during the construction phase is expected to be below the significance threshold to the nearest sensitive receptors.

Operation Impacts

Operational emissions will come mainly from stationary equipment, but some indirect emissions such as those from the daily transportation of employees, visitors, contractors, and goods.

Emissions from stationary equipment were calculated using SCAQMD Best Available Control Technology standards, manufacturer guaranteed emission factors, laboratory and source test data, and default emission factors provided by USEPA AP-42 or CARB (EPA 2000). The maximum daily emissions were then compared to SCAQMD mass daily significance thresholds.

Operation Impacts due to Facility Occupancy

The emissions produced by the occupants of the facility were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.1. CalEEMod calculates indirect operational emissions caused by the occupancy of the facility, which includes the usage of VOC containing consumer products, such as cleaning supplies, architectural coating for maintaining the buildings, landscaping equipment, electricity and water consumption, and on-road mobile emissions. The two-story plant operation and maintenance building will be the only occupied building for this Project. A total of fifty employees will be responsible for operations and routine maintenance of the facility and will generate on-road commute emissions in addition to the emissions from material deliveries to the site. Table 4-14 summarizes the daily emissions caused by these fifty employees in operating the facility.

Table 4-14 Criteria Pollutant Emission Summary – Facility Occupancy

Pollutant	Max. Daily Emissions (lbs./day)	Annual Emission (tons/year)
NO_X	0.58	0.09
CO	1.45	0.19
VOC	0.69	0.12
PM10	0.40	0.05
PM2.5	0.12	0.02
SO_X	0.0055	0.0008

The daily indirect emissions caused by employees operating the facility would be included to overall operations emissions. However, as shown in Table 4-14, these daily emissions were estimated to be less than two pounds and the contribution to the overall operational emissions are expected to be negligible. CalEEMod model outputs are included in Appendix D.1.

Operation Impacts due to Off-Road Equipment and Vehicle Trips

During commissioning of the proposed turbines, there would be minimal utilization of off-road equipment, such as forklift and man lift, and trips made by construction workers and haulers for cleaning as part of the final phase of construction (which overlaps with initial plant operations). The emissions from these sources during commissioning were estimated to be less than one pound per day; therefore, the contribution to the overall impacts for facility operations are expected to be negligible. A detailed construction equipment list and emissions inventory for commissioning activities is included in Appendix D.1.

Operation Impacts due to Stationary Equipment

The new emission sources of the Project consist of two combined cycle turbines, two simple cycle turbines, one emergency engine, an oil water separator system, and two cooling towers. Tables 4-15 through 4-19 summarizes the maximum hourly emissions, maximum daily emissions, thirty-day average daily emissions, and maximum annual emissions from these emission sources. Appendix D.2 includes more detailed emission inventory of these emission sources.

Table 4-15 NO_X Emissions from the New Equipment

Pollutant	Max. Hourly (lbs./hour)	Max. Daily (lbs./day)	30-Day Average (lbs./day)[a]	Max. Annual (tons/year)
Unit 10 (CCCT)	32.58	423.93	97.45	13.93
Unit 11 (CCCT)	32.58	423.93	97.45	13.93
Unit 12 (SCCT)	97.19	1,110	99.95	11.77
Unit 13 (SCCT)	97.19	1,110	99.95	11.77
Emergency Engine	5.85	5.85	0.84	0.15
Oil Water Separator System	0	0	0	0
North Cooling Tower	0	0	0	0
South Cooling Tower	0	0	0	0

Note:
[a]30-Day average reflects maximum monthly emissions divided by 30 days.
[b]The maximum hourly emissions for the new turbines are based on the higher emission rates during turbine startup or emission control unit maintenance (uncontrolled emissions).

Table 4-16 CO Emissions from the New Equipment

Pollutant	Max. Hourly (lbs./hour)	Max. Daily (lbs./day)	30-Day Average (lbs./day)[a]	Max. Annual (tons/year)
Unit 10 (CCCT)	57.63	207.49	53.07	7.89
Unit 11 (CCCT)	57.63	207.49	53.07	7.89
Unit 12 (SCCT)	42.07	539.04	76.95	10.87
Unit 13 (SCCT)	42.07	539.04	76.95	10.87
Emergency Engine	3.27	3.27	0.47	0.15
Oil Water Separator System	0	0	0	0
North Cooling Tower	0	0	0	0
South Cooling Tower	0	0	0	0

Note:
[a]30-Day average reflects maximum monthly emissions divided by 30 days.
[b]The maximum hourly emissions for the new turbines are based on the higher emission rates during turbine startup or emission control unit maintenance (uncontrolled emissions).

Table 4-17 VOC Emissions from the New Equipment

Pollutant	Max. Hourly (lbs./hour)	Max. Daily (lbs./day)	30-Day Average (lbs./day)[a]	Max. Annual (tons/year)
Unit 10 (CCCT)	7.35	49.41	30.83	4.85
Unit 11 (CCCT)	7.35	49.41	30.83	4.85
Unit 12 (SCCT)	2.70	52.02	11.30	1.70
Unit 13 (SCCT)	2.70	52.02	11.30	1.70
Emergency Engine	0.19	0.19	0.027	0.005
Oil Water Separator System	0	0	0	0
North Cooling Tower	0	0	0	0
South Cooling Tower	0	0	0	0

Note:
[a]30-Day average reflects maximum monthly emissions divided by 30 days.
[b]The maximum hourly emissions for the new turbines are based upon the higher emission rates during turbine startup or emission control unit maintenance (uncontrolled emissions).

Table 4-18 PM10/PM2.5 Emissions from the New Equipment

Pollutant	Max. Hourly (lbs./hour)	Max. Daily (lbs./day)	30-Day Average (lbs./day)[a]	Max. Annual (tons/year)
Unit 10 (CCCT)	3.65	41.65	33.13	5.23
Unit 11 (CCCT)	3.65	41.65	33.13	5.23
Unit 12 (SCCT)	2.70	44.97	11.85	1.83
Unit 13 (SCCT)	2.70	44.97	11.85	1.83
Emergency Engine	0.01	0.01	0.002	0.0003
Oil Water Separator System	0	0	0	0
North Cooling Tower	0.11	2.7	2.7	0.49
South Cooling Tower	0.11	2.7	2.7	0.49

Note:
[a]30-Day average reflects maximum monthly emissions divided by 30 days.
[b]The maximum hourly emissions for the new turbines are based upon 100% operating load.

Table 4-19 SO_X Emissions from the New Equipment

Pollutant	Max. Hourly (lbs./hour)	Max. Daily (lbs./day)	30-Day Average (lbs./day)[a]	Max. Annual (tons/year)
Unit 10 (CCCT)	1.04	23.83	22.46	3.55
Unit 11 (CCCT)	1.04	23.83	22.46	3.55
Unit 12 (SCCT)	1.18	26.87	5.84	0.86
Unit 13 (SCCT)	1.18	26.87	5.84	0.86
Emergency Engine	0.005	0.01	0.001	0.0002
Oil Water Separator System	0	0	0	0
North Cooling Tower	0	0	0	0
South Cooling Tower	0	0	0	0

Note:
[a]30-Day average reflects maximum monthly emissions divided by 30 days.
[b]The maximum hourly emissions for the new turbines reflect 100% operating load.

Specifications and Operating Parameters for Natural Gas-fired Combustion Turbines

The Project consists of replacing the existing power generating equipment with new and more efficient power generating equipment, which includes two natural gas-fired combustion turbines in simple cycle operating mode and two natural gas-fired combustion turbines in combined cycle operating mode. The Project also includes cooling towers, an emergency engine, and an oil water separator system. An existing 50 MW simple cycle turbine is not part of the Project and will continue to operate during construction of the Project.

Each of the new simple cycle turbine blocks will include one Siemens Industrial Trent 60 natural gas-fired combustion turbine, emission control system, and ancillary equipment that would generate approximately 60 MW of net electric output at average annual site conditions. Each of the combined cycle turbine power blocks will consist of one Siemens SGT-800 natural gas-fired combustion turbine, heat recovery steam generator, one Siemens SST-400 steam turbine, a recycled water cooled steam condenser, and ancillary equipment that would generate approximately 71 MW of net electric output at average annual site conditions.

An ambient temperature of 50 ^{o}F, which reflects the lowest monthly average temperature of the Project site, was used to analyze the air quality impacts from operating these new turbines during the commissioning period and commercial operation. The heat input rate is expected to be higher at low ambient temperatures than at high temperatures; therefore, emissions will be higher at low ambient temperatures.

The following Table 4-20 summarizes the equipment specifications for the new turbines:

Table 4-20 Proposed Equipment Specifications

Description	Specification
Combined Cycle Gas Turbines	
Manufacturer	Siemens
Model	SGT-800
Gas Turbine Power Output (kWe) @ 100% Operating Load	52,300
Total Turbine Power Output (kWe) @ 100% Operating Load	74,900
Heat Input Rate HHV (MMBtu/hr.) @ 100% Operating Load	512
Exhaust Stack Flow @ 100% Operating Load, ACFM	295,826
Exhaust Stack Temperature @ 100% Operating Load, ^{o}F	183
Simple Cycle Gas Turbines	
Manufacturer	Siemens (Rolls-Royce)
Model	Industrial Trent 60
Total Turbine Power Output (kWe) @ 100% Operating Load	63,910
Heat Input Rate HHV (MMBtu/hr.) @ 100% Operating Load	577
Exhaust Stack Flow @ 100% Operating Load, ACFM	724,693
Exhaust Stack Temperature @ 100% Operating Load, ^{o}F	760

Combustion Turbine Operating Parameters

To evaluate air quality impacts, the hourly potential emissions from operating the proposed turbines were calculated based upon 100 percent operating load for the combined and simple cycle gas turbines. For monthly and annual potential emissions, 90 percent operating load was used for the combined cycle gas turbines, and 100 percent operating load was used for the simple cycle gas turbines. The operational emissions estimation included the emissions during turbines startup and shutdown modes, during the maintenance of emission control system.

The air quality impacts of the proposed turbines have been analyzed based on the fact the new power-generating equipment combust exclusively natural gas. The following emission factors were used to estimate criteria pollutant emissions:

- Combined Cycle Turbines
    - 2.0 ppmv at 15 percent O_2 for NO_X, 1.5 ppmv at 15 percent O_2 for CO, and 2.0 ppmv at 15 percent O_2 for VOC were used for controlled emissions as determined by SCAMQD as Best Available Control Technology.
    - 1.5 lbs. /hour PM10/PM2.5 emission rates is based on the manufacturer expectation.
    - 2.14 lbs. /mmcf SO_X emission rates is based on the concentration limit of 16 ppmv of sulfur compounds calculated as H_2S in natural gas.
    - 17 ppmv at 15 percent O_2 for NO_X, 5 ppmv at 15 percent O_2 for CO, and 2.0 ppmv at 15 percent O_2 for VOC were used as uncontrolled emissions as provided by the manufacturer.
    - Each turbine is expected to be operated no more than 720 hours per month and 7,596 hours per year at 90 percent average operating load.
    - During the startup and shutdown operating modes, higher emission rates would be expected than the steady-state operating mode because the emission control system are not fully functional. Cold, warm, and hot startup emission rates were estimated based on an extended gas turbine shutdown for greater than 20 hours, between 8 to 20 hours and less than 8 hours respectively.
    - The manufacturer estimates startup duration of 40 minutes and shutdown duration of 8 minutes. The number cold or warm startups and shutdown were estimated to be 5 per month and 28 per year; the number hot startups and shutdown would be 2 per month and 39 per year. Table 4-21 incudes startup and shutdown emission rates for combined cycle turbines.

Table 4-21 Startup and Shutdown Emission Rates Combined Cycle Gas Turbine

Pollutants	Startup (Cold& Warm) 40 minutes	Startup (Hot) 40 minutes	Shutdown 8 minutes
NO_X, lbs./event	18.92	15.42	6.4
CO, lbs./event	57.05	46.25	6.7
VOC, lbs./event	6.91	6.91	2.9
PM10/2.5, lbs./event	3.03	3.03	1.0
SO_X, lbs./event	0.2	0.20	0.02

- Simple Cycle Turbines

    - 2.3 ppmv at 15 percent O_2 for NO_X, 2.0 ppmv at 15 percent O_2 for CO, and 2.0 ppmv at 15 percent O_2 for VOC were used for controlled emissions as determined by SCAMQD as Best Available Control Technology.

    - 1.7 lbs. /hour PM10/2.5 emission rates are estimated based on permitted level for simple cycle turbines operating at other power plants.

    - 2.14 lbs./mmcf SO_X emission rates are based on the concentration limit of 16 ppmv of sulfur compounds calculated as H_2S in natural gas.

    - 45 ppmv at 15 percent O_2 for NO_X, 32 ppmv at 15 percent O_2 for CO, and 3.6 ppmv at 15 percent O_2 for VOC were used as uncontrolled emissions as provided by the manufacturer.

    - Each turbine is expected to be operated no more than 170 hours per month and 1,700 hours per year at 100 percent operating load.

    - The startup and shutdown duration were estimated to be 30 and 12 minutes respectively. The number of startups and shutdown are estimated to be 54 per month and 621 per year. Table 4-22 includes startup and shutdown emission rates for the simple cycle turbines

Table 4-22 Startup and Shutdown Emission Rates Simple Cycle Gas Turbine

Pollutants	Startup: 30 minutes	Shutdown: 12 minutes
NO_X, lbs./event	20.00	6.3
CO, lbs./event	22.12	6.9
VOC, lbs./event	1.79	0.6
PM10/2.5, lbs./event	1.61	0.74
SO_X, lbs./event	0.34	0.02

Commissioning Period

Commissioning operations without emission controls in place are likely to occur over a 95-day period. However, to conservatively assess the peak daily and monthly impacts of commissioning operations, such commissioning operations were compressed into a 30-day period in the air quality impact analysis. Should commissioning operations be stretched beyond a 30-day period, the peak daily impacts would be equal to or less than the results reflected in this analysis. Commissioning operations for the four turbines will be sequential and commissioning activities will overlap with the operating phase of any previously commissioned units.

During commissioning, each turbine will be initially operated at various load rates in the absence of emission control systems to ensure proper operation of the equipment. Emissions during commissioning period were calculated based on 318 hours of uncontrolled emissions, 41 startups/shutdowns, and 369.2 hours of controlled emissions for each of combined cycle turbines; and 146 hours of uncontrolled emissions, 54 startups/shutdowns, and 195.2 hours of controlled emissions for each of the simple cycle gas turbines.

Tables 4-23 and 4-24 summarize the monthly and annual emissions during the commissioning period comparing those emissions with the emissions during normal operations. Appendix D.2 includes the detailed emission inventory and list of activities during commissioning period.

Table 4-23 Emissions Comparison for Maximum Monthly and Annual Emissions During Commissioning and Normal Period for Combined Cycle Turbine

Pollutant	Emission during Commissioning Month (lbs./month)	Monthly Emission Post Commissioning (lbs./month)	Annual Emission with Commissioning Month (tons/year)	Annual Emission without Commissioning Month (tons/year)
NO_X	12,813	2,923	19.18	13.93
CO	5,144	1,592	9.79	7.89
VOC	1,316	925	5.10	4.85
PM10	1,196	994	5.39	5.23
PM2.5	1,196	994	5.39	5.23
SO_X	727	674	3.62	3.55

Table 4-24 Emissions Comparison for Maximum Monthly and Annual Emissions During Commissioning and Normal Period for Simple Cycle Turbine

Pollutant	Emission during Commissioning Month (lbs./month)	Monthly Emission Post Commissioning (lbs./month)	Annual Emission with Commissioning Month (tons/year)	Annual Emission without Commissioning Month (tons/year)
NO_X	16,580	2,998	19.08	11.77
CO	8,222	2,308	14.08	10.87
VOC	816	339	1.96	1.70
PM10	718	356	2.03	1.83
PM2.5	718	356	2.03	1.83
SO_X	421	175	1.00	0.86

Specifications and Operating Parameters for the Emergency Engine

The Project would include an installation of diesel-fired engine as an emergency engine primarily serves the existing Unit 9 turbine. The engine would be expected to be utilized no more than 1 hour per day, 4.33 hours per month, and 52 hours per year. The estimated operating load would be 50 percent. Additionally, it is expected the engine NO_X, CO, VOC, and PM10/PM2.5 emission rates would meet the USEPA Tier 2 emission standards. SO_X emission rate is estimated based on diesel fuel containing no more than 15 ppmw of sulfur compounds, fuel density of 7.05 lbs./gal and engine fuel consumption rate.

Specifications and operating Parameters for Cooling Tower

The Project would replace the existing five cooling towers with two new cooling towers. Each of the cooling towers is a two-cell cooling system with a total water flow rate of 18,000 gallons per minute. The towers serve as cooling systems to support condensation of the steam exhaust from the steam turbines as part of the combined cycle turbines process. PM10/PM2.5 emissions are expected from the cooling towers due to the total dissolved solid in the circulating water, which eventually discharged to the atmosphere. PM10/PM2.5 emissions were estimated based on concentration of total dissolved solid in circulating water, drift loss of circulating water, and the water flow. Maximum daily emission of PM10/PM2.5 from each cooling tower were calculated to be 2.70 lbs. /day.

Specifications and Operating Parameters for the Oil / Water Separator

The Project would include an installation of one oily water separator to separate accumulated oil from the wastewater from process area and equipment. The accumulated oil may result from equipment leakage, spills, and equipment wash-downs. The separator consists of underground tank with a capacity of 3,000 gallons and a maximum throughput of 300 gallons per minute. VOC emission may occur from this unit; however, the emissions are expected to be negligible since the unit is underground, covered, and the collected oils are mainly heavy lubricating oils, which typically contain small amount of VOC.

Replaced Power Generating Equipment

The Project will include the demolition of three boilers (Units 3, 4, and 5) and three turbines (Units 8A, 8B, and 8C). The emissions from these replaced units were calculated based on the average of 2015 and 2016 SCAQMD Annual Emission Report, the adjustment to current Best Available Control Technology emission standards, and actual annual operating days in accordance with SCAQMD Rule 1306(c). Table 4-25 summarizes the daily average emissions of these replaced units. Appendix D.2 includes more detailed information of the emission inventory.

Table 4-25 Average Daily Emissions of Replaced Equipment

Pollutant	Boiler 3 (lbs./day)	Boiler 4 (lbs./day)	Boiler 5 (lbs./day)	Gas Turbine 8A (lbs./day)	Gas Turbine 8BC (lbs./day)
NO_X	12	21	54	8	7
CO	62	114	314	4	3
VOC	12	21	52	3	2
PM10	22	38	93	5	4
PM2.5	22	38	93	5	4
SO_X	4	6	14	1	1

Significance Determination Based on Mass Daily Thresholds

To evaluate the air quality impacts of the Project, maximum daily emissions from the new equipment were compared with the significance daily thresholds for operations. Since the Project includes the demolition of existing emission sources (three boilers and three combined cycle turbines), emissions from these replaced equipment was calculated as an emission baseline. The emissions from these replaced units were calculated based on the average of 2015 and 2016 SCAQMD Annual Emission Report, the adjustment to current Best Available Control Technology emission standards, and actual annual operating days in accordance with SCAQMD Rule 1306(c).

Maximum daily emissions for the new turbines were calculated based on the following operating scenario:

- In a single day of operation with peak emissions and normal operations but no maintenance, all turbines would be operated under the allowable daily operating schedule without any maintenance hours.
- In a single day of operations with peak emissions, including maintenance emissions, one simple cycle turbine would be operated with 10 hours of maintenance. The other turbines would be operated within the allowable daily operation schedule, but without maintenance operations (it is assumed that only one turbine would undergo maintenance activities in any single day). Since 10 hours will also be the allowable annual maintenance limit, this operating scenario can occur a maximum of only 4 days in the annual operating schedule.

Table 4-26 shows the Project overall mass daily and compare to the mass daily significance thresholds.

Table 4-26 Project Maximum Net Daily Emissions

Pollutant	NO_X (lbs./day)	CO (lbs./day)	VOC (lbs./day)	PM10 (lbs./day)	PM2.5 (lbs./day)	SO_X Lbs./day
New turbines (without maint.)	648	623	179	173	173	101
New Turbines (with maint.)	1,570	1,017	191	173	173	101
New Emergency Engine	6	3	0.19	0.01	0.01	0.01
New Cooling Towers	0	0	0	5.4	5.4	0
Facility Occupancy	0.58	1.45	0.69	0.40	0.12	0.006
Less: Replaced Equipment (actual historic)	102	497	90	162	162	26
Net Increase (turbines without maint.)	**553**	**130**	**90**	**16**	**16**	**75**
Net Increase (turbines with maint.)	**1,475**	**524**	**102**	**16**	**16**	**75**
Sig. Thresholds (Operation)	55	550	55	150	55	150
Exceed Thresholds	YES	NO	YES	NO	NO	NO
Exceed Thresholds after New Source Review Offsets	NO	N/A	NO	NO	N/A	NO

Note:
1. The net emissions increase does not reflect emission offsets that will be required pursuant to SCAQMD Rule 1302. With the retirement of emission offsets to offset any emission increase of NO_X, VOC, PM10 and SO_X; the net increase of all pollutants will be below the significance thresholds.
2. CO and PM2.5 emissions are not required to be offset per SCAQMD Rule 1302 nor do they exceed the applicable SCAQMD daily mass emissions thresholds.

New Source Review Emission Offset Requirements

In accordance to SCAQMD Rule 1303, the net emission increase of the Project shall be offset by Emission Reduction Credits. The emergency engine and the turbine used to replace existing units 8A, 8BCC are exempt from offset requirements pursuant to the provisions of SCAQMD Rule 1304 noted below. SCAQMD will offset the emissions for offset exempt units to demonstrate no net emission increase of non-attained pollutants in the South Coast Air Basin due to the installation of these new devices. Offsets for these exempt sources will be provided through SCAQMD's internal account in accordance with the conditions of SCAQMD Rule 1315.

- Replacement in kind pursuant to Rule 1304(a)(1)
  The net emission increase of equipment can be offset by replacing it with functionally identical equipment and there is no increase in maximum rating and potential to emit of any pollutants when the replaced equipment was operated at the same conditions and the current Best Available Control Technology were applied.

- Emergency equipment pursuant to Rule 1304(a)(3)
  The source is exclusively used as emergency standby equipment for nonutility electrical power generation or any other emergency equipment as approved by the Executive Officer or designee, provided the source does not operate more than 200 hours per year.

In replacing electric utility steam boilers with new turbines, SCAQMD through its internal account can offset the emissions of the new turbines; however, the facility must pay fees to SCAQMD. The amount of fees are calculated in accordance with Rule 1304.1. The City may choose to exercise this offset option.

Glendale Water & Power will be required to purchase emission reduction credits to offset the remaining increase in potential emissions from the other three new natural gas-fired combustion turbines. The required Emission Reduction Credits will be purchased through the open market.

Pursuant to the offset calculation methodology specified in SCAQMD Rule 1306, Glendale Water and Power will be required to purchase emission reduction credits to offset the 30-day average net emission increase in NO_X, VOC, PM10 and SO_X of the Project in order to obtain air permits. The amount of emissions to be offset may vary depending on how all three available options in purchasing the Emission Reduction Credits are utilized, due to differences in calculating net emission increases. Table 4-27 shows the estimated range of Emission Reduction Credits to be required to mitigate emissions from the Project.

Table 4-27 Emission Reduction Credits Estimation

Pollutant	NO_X 30-Day Avg. (lbs./day)	VOC 30-Day Avg. (lbs./day)	PM10 30-Day Avg. (lbs./day)	SO_X 30-Day Avg. (lbs./day)
Emissions for New Turbines	395	84	90	57
Less Emissions from Replaced Equipment	102	89	162	25
Total ERC requirements (After 1.2:1 Offset Ratio)	154 – 252	0 – 41	0 – 44	0 - 29

Prevention of Significant Deterioration Determination (PSD)

As discussed in the previous section, Prevention of Significant Deterioration applies to pollutants for which a region is in attainment with federal NAAQS. For the South Coast Air Basin, applicable PSD pollutants include NO_2, SO_2, CO and PM10. Since the facility is currently a major PSD source, further analysis is required if the net increase emissions determined based on the potential to emit of new equipment versus actual emissions of replaced equipment, exceed 40 tons per year for NO_2 or SO_2, 15 tons per year for PM10, or 100 tons per year for CO. Table 4-28 summarizes the net increase emission for PSD determination and shows that PSD significant increases thresholds are not expected to be met. Appendix D.3 includes the detailed PSD determination emission inventory.

Table 4-28 PSD Annual Emissions for Prevention of Significant Deterioration Determination

Equipment	NO_2 (tons/year)	CO (tons/year)	PM10 (tons/year)	SO_2 (tons/year)
Potential Emissions from New Units				
SCC-800 Unit 10	13.92	7.89	5.23	3.55
SCC-800 Unit 11	13.92	7.89	5.23	3.55
TRENT60 Unit 12	11.77	10.87	1.83	0.86
TRENT60 Unit 13	11.77	10.87	1.83	0.86
Cooling Tower (North)	0	0	0.49	0
Cooling Tower (South)	0	0	0.49	0
Emergency Engine	0.15	0.09	0.0003	0.0002
Total Emissions of New Units:	**51.53**	**37.61**	**15.1**	**8.82**
Historic Actual Emissions from Existing Units to be Replaced				
Boiler 3	3.61	5.53	1.87	0.3
Boiler 4	6.76	12.77	4.01	0.64
Boiler 5	15.92	29.2	8.04	1.23
Gas Turbine 8A	2.13	9.07	0.97	0.04
Gas Turbine 8BC	1.46	10.42	0.5	0.02
Less: Total Emissions of Replaced Units:	**29.88**	**66.99**	**15.39**	**2.23**
Net Emissions Increase:	**21.65**	**(29.38)**	**(0.29)**	**6.59**

Note:
1. The emissions of replaced units were calculated based on the average emissions reported in SCAQMD Annual Emission Report for 2015 and 2016.

As shown in Table 4-28, the net emission increase attributed to the Project are expected to be below the PSD significance thresholds. Based on the SCAQMD engineering evaluation, the potential annual emissions of Unit 9 are 45 tons for NO_X, 30.8 tons for CO, 15.4 tons for PM10/PM2.5, and 3.8 tons for SO_2. Therefore, the plant-wide annual emissions after the modification are estimated to be 96.5 tons for NO_2, 68.4 tons for CO, 30.5 tons for PM10/PM2.5, and 12.6 tons for SO_2. These emission levels are below the PSD major source threshold of 100 tons per year for any of the attainment pollutants.

PSD is also applicable for a major stationary source located within 10 kilometers of Class I area if the emission increase would impact the Class I area by 1.0 $\mu g/m^3$ (24-hour average). The closest Class I area to the facility is San Gabriel Wilderness, which is located approximately 27 kilometers to the northeast of the facility. As such, the Project is not expected to cause any significant impact to the Class I area and it is not subject to further PSD analysis.

Air Quality Impact Analysis

Air dispersion modeling was conducted to analyze the worst-case ground-level impacts resulting from the Project and compare the results with the federal and state ambient air quality standards. A modeling protocol was submitted and approved by the SCAQMD staff to ensure the modeling would be conducted in accordance with SCAQMD Modeling Guidance and Standards and is included in Appendix D.4. Air dispersion modeling serves as a refined and

appropriate alternative to using only mass emission thresholds for determining the significance of project impacts.

The air dispersion modeling was conducted using the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Dispersion Model (AERMOD), Version 16216r. AERMOD is a Gaussian plume dispersion model which is based on planetary boundary layer principles for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions with the probability density function and the superposition of several Gaussian plumes (SCAQMD 2006).

NO_2 1-hour Background Data for NAAQS

Preliminary emission modeling of the Project showed that while the combustion turbines and cooling towers do not significantly affect ambient air quality, the emergency engine may contribute to off-site 1-hour NO_2 concentrations. The engine is an intermittent emission source because it will be utilized as an emergency power generator.

Given to this situation where an intermittent emission source causing a significant impact of 1-hour NO_2 concentrations, multiyear averages of the 98th percentile of the background concentrations by season and hour-of-day would be a more appropriate methodology in incorporating the background concentrations to the Project impact than using a uniform monitored background contribution. Additionally, the seasonal and hour-of-day background values should be based on the 3rd highest value for each season and hour-of-day combination as recommended by USPEA Air Quality Modeling Group and approved by SCAQMD.

Ambient Air Quality Impact Analysis Results

Table 4-29 provides a summary of all results of the ambient air quality impact analysis. The background concentration for each pollutant is based upon the highest values recorded for the years 2013 through 2015.

These results show that local ambient concentrations of NO_2, CO and SO_2 are below state and federal ambient air quality thresholds after emissions from the Project are considered. The results also show that although ambient PM2.5 and PM10 currently exceed state and federal standards, the incremental increases in ambient concentrations of these pollutants are below significance thresholds established by SCAQMD. Detailed model input and output information is provided in Appendix D.4.

Table 4-29 Ambient Air Quality Impact Analysis Results

Pollutant	Avg. Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
NO_2[b]	1-HR		0.09 ppm		0.18 ppm	CAAQS
Scenario 1		0.075 ppm		0.166 ppm		
Scenario 2		0.075 ppm		0.166 ppm		
Scenario 3		0.075 ppm		0.166 ppm		
Scenario 4		0.075 ppm		0.166 ppm		
Scenario 5		0.076 ppm		0.166 ppm		
NO_2[b,c]	1-HR (98th %)	(Background included)	---		0.10 ppm	NAAQS
Scenario 1		0.099 ppm		0.099 ppm		
Scenario 2		0.098 ppm		0.098 ppm		
Scenario 3		0.098 ppm		0.098 ppm		
Scenario 4		0.098 ppm		0.098 ppm		
Scenario 5		0.099 ppm		0.099 ppm		
NO2[d]	Annual	0.0002 ppm	0.022 ppm	0.022 ppm	0.03 ppm	CAAQS
NO2[d,e]	Annual	0.0002 ppm	0.022 ppm	0.022 ppm	0.03 ppm	CAAQS
CO	1-HR		3.166 ppm		20 ppm	CAAQS
Scenario 1		0.16 ppm		3.33 ppm		
Scenario 2		0.13 ppm		3.30 ppm		
Scenario 3		0.13 ppm		3.30 ppm		
Scenario 4		0.13 ppm		3.30 ppm		
Scenario 5		0.13 ppm		3.30 ppm		
CO	8-HR	0.030 ppm	2.00 ppm	2.03 ppm	9 ppm	CAAQS
PM10	24-HR	0.849 ug/m^3	88 ug/m^3	88.85 ug/m^3	Allowable increase of 2.5 ug/m^3	CAAQS / SCAQMD Allowable Increase
PM10[f]	24-HR (6th highest over 5 years)	0.723 ug/m^3	88 ug/m^3	88.72 ug/m^3	150 ug/m^3	NAAQS
PM10	Annual	0.152 ug/m^3	35.40 ug/m^3	35.55 ug/m^3	Allowable increase of 1.0 ug/m^3	CAAQS / SCAQMD Allowable Increase
PM10[e]	Annual	0.155 ug/m^3	35.40 ug/m^3	35.56 ug/m^3	Allowable increase of 1.0 ug/m^3	CAAQS / SCAQMD Allowable Increase
PM2.5	24-HR	0.849 ug/m^3	59.90 ug/m^3	60.75 ug/m3	Allowable increase of 2.5 ug/m^3	CAAQS / SCAQMD Allowable Increase
PM2.5[g]	24-HR (8th highest)	0.623 ug/m^3	38.00 ug/m^3	38.62 ug/m3	Below SIL of 1.2 ug/m^3	USEPA Significant Impact Level (SIL)

Pollutant	Avg. Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
PM2.5	Annual	0.152 ug/m^3	12.38 ug/m^3	12.53 ug/m^3	Below SIL of 0.3 ug/m^3 Allowable increase of 1.0 ug/m^3	USEPA Significant Impact Level (SIL) CAAQS / SCAQMD Allowable Increase
PM2.5[e]	Annual	0.155 ug/m^3	12.38 ug/m^3	12.54 ug/m^3	Below SIL of 0.3 ug/m^3 Allowable increase of 1.0 ug/m^3	USEPA Significant Impact Level (SIL) CAAQS / SCAQMD Allowable Increase
SO_2 Scenario 1 Scenario 2 Scenario 3 Scenario 4 Scenario 5	1-HR	 0.00059 ppm 0.00053 ppm 0.00049 ppm 0.00051 ppm 0.00042 ppm	0.0126 ppm	 0.013 ppm 0.013 ppm 0.013 ppm 0.013 ppm 0.013 ppm	0.25 ppm	CAAQS
SO_2[h] Scenario 1 Scenario 2 Scenario 3 Scenario 4 Scenario 5	1-HR (99th %)	 0.00056 ppm 0.00048 ppm 0.00047 ppm 0.00043 ppm 0.00035 ppm	0.0063 ppm	 0.007 ppm 0.007 ppm 0.007 ppm 0.007 ppm 0.007 ppm	0.075 ppm	NAAQS
SO_2	24-HR	0.00018 ppm	0.0017 ppm	0.002 ppm	0.04 ppm	CAAQS

Notes:

a) The background value is based on the highest concentrations monitored during 2013 through 2015 at Central Los Angeles monitoring station.
b) The NO_2 1-hour modeling was refined using the AERMOD Ambient Ratio Method Version 2 (ARM2) option.
c) The 3rd highest hourly concentrations for each season averaged over 3-year period were used to determine background for 1-hour NAAQS. The modeled concentration were based on the 8th highest hourly concentrations averaged over five years period.
d) The NO_2 annual modeling was refined using the AERMOD ARM option, which assumed a 80% conversion factor of NO_X to NO_2.
e) The modeled concentrations were based on emission rates during commissioning year.
f) The PM10 24-hour modeled values were based on the maximum 6th highest concentration over 5-year period.
g) The PM2.5 24-hour modeled values were based on the 8th highest concentration averaged over 5-year period with the background concentrations of 98th percentile of 24-hour data averaged over 3-year period.
h) The SO_2 1-hour modeled values were based on the 4th highest concentration averaged over 5-year period with the background concentrations of 98th percentile of 1-hour data averaged over 3-year period.
i) The pollutants with 1-hour average standard were modeled based on the following turbines operating profile for one hour operation:
    1) 1 simple cycle turbine (Unit 12) operating at 100% load with controlled emissions, one startup, and one shutdown; 1 simple cycle turbine (Unit 13) operating at 100% load, which consist of uncontrolled

Pollutant	Avg. Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
emissions and each of the combined cycle turbines (Unit 10 and 11) operating at 100% load with one cold start and controlled emissions 2) All turbines operating at 100% load consist of controlled emissions without startups and shutdowns. 3) All turbines operating at 75% load consist of controlled emissions without startups and shutdowns. 4) All turbines operating at 50% load consist of controlled emissions without startups and shutdowns. 5) At minimum load (30% load), each of the combined cycle turbines (Unit 10 and 11) has a cold start and controlled emissions in the one-hour period. One simple cycle (Unit 13) operates at 30% load which consist of uncontrolled emissions; the other simple cycle (Unit 12) also operates at 30% load which consist of a startup, a shutdown, and controlled emission in the one-hour period.						

Level of Significance before Mitigation

Less than Significant

Threshold: Would the Project conflict with or obstruct the implementation of the applicable air quality plan

The Project would not conflict with or obstruct the implementation of the applicable air quality plan because the significance levels of the Project from construction and operation activities are determined to be below the significance thresholds.

Construction Activities

The maximum daily emission caused by construction activities were calculated to be below the significance mass daily threshold for all criteria pollutants as summarized in Tables 4-12 and 4-13. Nevertheless, voluntary measures will be taken to further reduce emissions from construction equipment, and compliance with SCAQMD Rule 463 will also further reduce construction-related emissions.

The City shall require each of its construction and demolition contractors to make a good faith effort to find and use off-road construction equipment with engines rated between 100 hp and 750 hp to meet Tier 3 California Emission Standards for Off-Road Compression-Ignition engines as specified in Title 13, California Code of Regulations section 2433(b)(1). Contractors shall also be required to make a good faith effort to find and use construction equipment with engines rated between 50 and 99 hp to meet Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines. Again, these measures are not required to demonstrate that the Project's impacts are less than significant. They are instead simply voluntary environmental stewardship measures that the City will pursue.

Mitigation Measures:

No mitigation is required

Operation Activities

The net increase of CO, PM10, PM2.5, and SO_X emissions from Project operations are estimated to be below the significance daily mass emission thresholds as reflected in Table 4-13. Additionally, the ambient air quality impact analysis, as shown in Table 4-29, demonstrates that the Project will not be expected to cause or significantly add to a violation of national and California ambient air quality standards. Furthermore, the net emission increase of PM10 and SO_X will be offset using emission reductions from SCAQMD internal account to account for Rule 1304(a)(1) offset exemptions for replacement of functionally identical equipment.

The net increase of NO_X emissions from Project operations are estimated to exceed SCAQMD's daily mass emission significance threshold. However, the ambient air quality impact analysis shows the NO_2 emissions from this Project will not exceed the national and California ambient air quality standards as reflected in Table 4-29. Additionally, the increase in NO_X emissions from the Project will be offset through the purchase of Emissions Reduction Credits in the open market and allocations from SCAQMD internal accounts. The requirement to offset emission increases is a component of SCAQMD regulations and must be met prior to issuance of a construction permit.

The net increase of VOC emissions from Project operations are estimated to exceed the daily mass emission significance threshold. Additionally, there is no ambient air quality standard for VOC and no guidance to determine the significance of ambient concentrations of VOC. The increase in VOC emissions attributed to the Project will be fully offset using emission reductions from SCAQMD internal account to account for Rule 1304(a)(1) offset exemptions for replacement of functionally identical equipment.

Both NO_X and VOC emissions are regulated as precursors to ozone formation. Project-based modeling to determine if a project-level increase in NO_X or VOC emissions may affect regional ozone formation is not considered to be practical by US EPA or SCAQMD. As an alternative to complex modeling, on December 2, 2016, USEPA published "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program", which is a guidance document for using an EPA screening tool that helps one determine if an increase in NOx or VOX emissions could potentially result in significant ozone creation.

The EPA screening tool is suggested for larger projects where the level of precursor pollutants exceeds 40 tons per year. Although the increase in potential emissions resulting from the Project will be significantly below 40 tons per year, the screening tool was utilized to study how significant NO_X and VOC emissions of the Project are relative to ozone formation. The tool relies upon Modeled Emission Rates for Precursors (MERPs). The value of a MERP is calculated based on the critical air quality threshold of 1.0 ppb ozone and modeled reference emission rates (500 TPY) and air quality impact index from hypothetical sources in a local basin (SCAB). Based upon the model and its reference values, the emission rate threshold for NO_X and VOC as ozone

precursor pollutants in the SCAB are 595 tons per year and 8,333 tons per year, respectively. Since the Project will emit much lower NO_X and VOC emissions than these threshold values, it is expected NO_X and VOC emissions from the Project will not result in significant ozone formation.

Mitigation Measures:

No mitigation is required

Level of Significance after Mitigation:

Less than Significant Impact

Threshold: ***Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?***

The criteria pollutant emissions caused by the construction and operation of the Project are determined to be less than significant by complying with SCAQMD rules and regulations. Additionally, as shown in Table 4-29, the Project would not result in significant changes to existing air quality for which the region will be nonattainment under federal or state ambient air quality standards.

Level of Significance before Mitigation:

Less than Significant

Mitigation Measures:

No mitigation is required

Level of Significance after Mitigation:

Less than Significant Impact

Threshold: ***Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?***

As shown in Table 4-29, the Project is not expected to violate any air quality standard or contribute substantially to an existing or projected air quality violation. As discussed in the previous section, the air quality impact during the construction phase does not exceed the mass daily significance thresholds; and the air quality impact in operating the facility will be below the ambient air quality standards based on the air dispersion modeling conducted.

Level of Significance before Mitigation:

Less than Significant Impact

Mitigation Measures:

No mitigation is required

Level of Significance after Mitigation:

Less than Significant Impact

Threshold: ***Would the Project expose sensitive receptors to substantial pollutant concentrations?***

The Project site is located in an industrial area of the City of Glendale at 800 Air Way Glendale, California 91201, northeast of the Interstate 5 and Highway 134 interchange. There is no K-12 school within 1,000 feet; the closes K-12 school will be Mark Keppel Elementary school, which is located more than 0.6 miles northeast from the emission sources. The nearest residential receptor is located approximately 694 feet (211 meters) from the emission sources and the nearest worker/commercial receptor is located approximately 572 feet (174 meters) from the emission sources. Both receptors are located in the northeast direction of the emission sources.

Based on the result of ambient air quality analysis shown in Table 4-29, criteria pollutant concentrations from the Project are expected to disperse substantially before reaching any sensitive receptors. The Project will neither cause, nor substantially add to an existing violation of state or federal ambient air quality standards. Additionally, impacts from construction activities are expected to be below daily significance thresholds as well as localized significance levels as reflected in tables 4-12 and 4-13 and analyzed in Section 4.3.4.

Level of Significance before Mitigation:

Less than Significant Impact

Mitigation Measures

No mitigation is required

Level of Significance after Mitigation:

Less than Significant Impact

Toxic Air Contaminant Health Impacts

This section discusses whether the toxic air contaminant emissions from the Project. A detailed Tier IV health risk assessment was performed to quantify and assess potential health risk impacts. The health risk assessment modeling was conducted using the air dispersion model (BREEZE

AERMOD) and the CARB Hotspots Analysis Reporting Program Version 2 in accordance with OEHHA and SCAQMD guideline.

The health risk assessment generally consists of the following steps to estimate health impacts:

1. Identify the types and amount of toxic air contaminants generated from the Project;
2. Estimate ground level Toxic Air Contaminants concentrations at each receptor location using air dispersion modeling;
3. Estimate the amount of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
4. Characterize the potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Toxic Air Contaminants Emissions Inventory

Toxic Air Contaminant emissions associated with the Project will consist primarily of combustion byproducts produced by the new turbines, the existing turbine (Unit 9), and the emergency engine. Toxic Air Contaminants are compounds designated by the California Office of Environmental Health Hazard Assessment as pollutants that may cause a significant health hazard.

Toxic Air Contaminants emissions from the turbines were calculated based on the USEPA AP-42 Toxic Air Contaminants emission factors and vendor guarantees on the ammonia hourly emissions. Toxic Air Contaminants emissions from the emergency engine were estimated based on USEPA AP-42 Toxic Air Contaminants emission factors and the control efficiency of diesel particulate filter. Tables 4-30 and 4-31 summarize the maximum hourly and annual Toxic Air Contaminants emissions from the combustion turbines and emergency engine. Detailed emission calculations for the air toxics are provided in Appendix D.5.

Table 4-30 Maximum Hourly Toxic Air Contaminants Emission Summary

Pollutant	CAS	New Turbines (lb. /hr.)	Emergency Engine (lb. /hr.)
Ammonia	766417	1.58E+01	---
Acetaldehyde	75070	3.83E-01	1.06E-04
Acrolein	107028	7.88E-03	3.31E-05
Benzene	71432	7.10E-03	3.26E-03
Butadiene, 1,3-	106990	9.37E-04	---
Ethylbenzene	100414	6.97E-02	---
Formaldehyde	50000	7.84E-01	3.32E-04
Naphthalene	91203	2.83E-03	5.47E-04
PAHs (excluding naphthalene)	1151	9.80E-04	8.92E-04
Propylene	115071	---	1.17E-02
Propylene Oxide	75569	6.32E-02	---

Pollutant	CAS	New Turbines (lb. /hr.)	Emergency Engine (lb. /hr.)
Toluene	108883	2.83E-01	1.18E-03
Xylenes	1330207	1.39E-01	8.12E-04
Diesel PM	9901	---	1.26E-02

Table 4-31 Maximum Annual Toxic Air Contaminants Emission Summary

Pollutant	CAS	New Turbines (lb. /yr.)	Emergency Engine (lb. /yr.)
Ammonia	766417	7.28E+04	---
Acetaldehyde	75070	1.71E+03	5.51E-03
Acrolein	107028	3.53E+01	1.72E-03
Benzene	71432	3.18E+01	1.70E-01
Butadiene, 1,3-	106990	4.19E+00	---
Ethylbenzene	100414	3.12E+02	---
Formaldehyde	50000	3.51E+03	1.73E-02
Naphthalene	91203	1.27E+01	2.84E-02
PAHs (excluding naphthalene)	1151	4.38E+00	4.64E-02
Propylene	115071	---	6.10E-01
Propylene Oxide	75569	2.82E+02	---
Toluene	108883	1.27E+03	6.15E-02
Xylenes	1330207	6.23E+02	4.22E-02
Diesel PM	9901	---	6.54E-01

Air Dispersion Modeling of Toxic Air Contaminants Emissions

The AERMOD dispersion model was used to estimate the ground level Toxic Air Contaminants concentration resulting from the Project. The AERMOD settings, equipment exhausts parameters, meteorological data used for the criteria pollutant air quality impact analysis were also used to determine the expected dispersion of Toxic Air Contaminants from the Project (SCAQMD 2014). A normalized emission rate of one gram per second was used to model each source and ultimately factored to the emission rates in tables 4-30 and 4-31. Similar to the air quality impact analysis, a uniform Cartesian receptor grid covering an area of 36 square kilometers with 50 meters spacing was used in addition to the identification of discrete receptors for nearby sensitive and off-site worker receptor locations.

Health Risk Characterization

The result of the dispersion modeling analysis was imported to the OEHHA Hotspots Analysis Reporting Program Version 2 to determine maximum individual cancer risk (MICR) and non-cancer acute and chronic health risks. As defined in SCAQMD Rule 1401, MICR is the estimated probability of a potential maximally exposed individual contracting cancer as a result of exposure to Toxic Air Contaminants. Cancer risks were estimated based on 30-year continuous exposure duration for residential and sensitive receptors and a 25 year, 5 day per week, and 8 hours per day exposure duration for worker receptors. The selected exposure durations reflect

both OEHHA and SCAQMD guidelines for conducting health risk assessments. Based upon SCAQMD Rule 1401 and the SCAQMD CEQA significance thresholds, a cumulative MICR increase less than 10 in a million is considered to be less than significant when Best Available Control Technology for Toxics is used. Additionally, in accordance with SCAQMD guidelines, a cancer burden greater than 0.5 excess cancer cases in areas with an incremental increase greater than one in one million individuals is considered to be significant.

To assess acute and chronic non-cancer exposures, annual and 1-hour Toxic Air Contaminants ground-level concentrations are compared with the reference (safe) exposure levels (REL), which is developed by Office of Environmental Health Hazard Assessment. A hazard index (HI) is the ratio of Toxic Air Contaminants exposure of one hour for acute and long-term level for chronic from the facility to the REL. The total HI is calculated separately for acute and chronic effects. A total hazard index of less than one is considered to be below significance. Detail MICR and HI for acute and chronic results are provided in Appendix D.5.

Hotspots Analysis Reporting Program Version 2 Output

Table 4-32 shows the MICR, acute HI, and chronic HI values of residential and worker receptors for the Project. The MICR and HI values were calculated based on the combined impact of all chemicals.

Table 4-32 Increase in Health Risk

HARP2 Output	Residential Receptor	Worker Receptor	Significance Threshold
MICR	0.91E-06	0.06E-06	10.00E-06
Acute HI	0.0073	0.0065	1.00
Chronic HI	0.0024	0.0026	1.00

As shown in the Table 4-32, health risks that the Project poses to nearby residential and worker receptors are expected to be below the significance thresholds. Site maps showing the residential and worker receptors locations where the highest Toxic Air Contaminants impact of the Project are provided in Appendix D.5.

Cancer Burden

Pursuant to OEHHA guideline and SCAQMD policy, if MICR at a representative receptor location is greater than 1.00E-06, an additional analysis must be conducted to determine the Cancer Burden for the Project. In this case, the MICR for residential and worker receptor were calculated to be less than the threshold to trigger the Cancer Burden analysis. Therefore, Cancer Burden analysis is not required.

Toxic Air Contaminants Emissions Impact Due to Earth Moving Activity during Construction Phase

Toxic air contaminants emissions associated with the earth moving activity will consist primarily of combustion byproducts from off-road equipment and vehicles trips. The construction of the facility is anticipated to take place over a period of 27 months. Therefore, Toxic Air Contaminants emissions from construction activity are not expected to have health significant impacts on cancer and non-cancer chronic risks because these risks are typically assessed for continuous exposure for 30 years. Additionally, the heaviest impacts of earth moving activity can be expected to occur within the fence line of the power plant. Therefore, the Toxic Air Contaminants emission impacts from the earth moving activity are expected to be less than significant.

Level of Significance before Mitigation:

Less than Significant Impact.

Mitigation Measures:

No mitigation is required

Level of Significance after Mitigation:

Less than Significant Impact