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Facility Name: El Segundo Energy Center, LLC

Facility ID: 115663
NAICS Code: 221112

Equipment Location & Mailing Address:
El Segundo Energy Center, LLC
301 Vista del Mar
El Segundo, CA 90245

Application No.: 627771-Title V Revision
Application Submittal Date: 11/24/2020

Application No.: 627769-Gas Turbine Modification, Unit No. 5
Application Submittal Date: 11/24/2020

Application No.: 627770-Gas Turbine Modification, Unit No. 7
Application Submittal Date: 11/24/2020

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1. EQUIPMENT DESCRIPTIONS

Section H of the Facility Permit ID# 115314: Facility Description and Equipment Specific Conditions.

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
System 2: GAS TURBINE, POWER GENERATION					
GAS TURBINE, UNIT NO. 5, NATURAL GAS, SIEMENS, MODEL SGT6-5000F, RAPID-RESPONSE, COMBINED CYCLE, ~~2,096~~ 2,250 MMBTU/HR AT ~~78~~ 68 DEGREES F, WITH DRY LOW-NOX COMBUSTORS WITH A/N ~~596833~~ 627769 GENERATOR, HEAT RECOVERY STEAM, UNFIRED STEAM TURBINE, 67.7 MW GENERATOR, ~~219~~ 222.5 MW	D67	C75	NOX: MAJOR SOURCE	**CO:** 2 PPMV NATURAL GAS (4) [Rule 1703(a)(2)-PSD-BACT, 10-7-1988]; **CO:** 2000 PPMV (5) [Rule 407, 4-2-1982]; **NOX:** 2 PPMV NATURAL GAS (4) [Rule 1303(a)(1)-BACT, 5-10-1996, Rule 1303(a)(1)-BACT, 12-6-2002; Rule 1703(a)(2)-PSD-BACT, 10-7-1988]; **NOX:** 15 PPMV NATURAL GAS (8) [40CFR60 Subpart KKKK, 7-6-2006]; **PM**: 0.01 GRAIN/DSCF (5) [Rule 475, 10-8-1976, Rule 475, 8-7-1978]; **PM**: 0.1 GRAIN/DSCF (5A) [Rule 409, 8-7-1981]; **PM**: 11 LBS/HR NATURAL GAS (5B) [Rule 475, 10-8-1976, Rule 475, 8-7-1978]; **SO2**: (9) [40CFR72-Acid Rain Provisions, 11-24-1997]; **SOX**: 0.06 LBS/MMBTU NATURAL GAS (8) [40 CFR60 Subpart KKKK, 7-6-2006]; **VOC:** 2 PPMV NATURAL GAS (4) [Rule 1303(a)(1)-BACT, 5-10-1996; Rule 1303(a)(1)-BACT, 12-6-2002]	A63.2, A99.7, A99.8, A99.9, A195.8, 195.9, A195.10, A327.1, A433.1, B61.2, C1.10, C1.11 D12.10, D29.8, D29.9, D82.4, D82.5, E193.2, K40.4, K67.5

STACK NO. 5, DIAMETER: 20 FT 11 IN, HEIGHT: 210 FT 0 IN ~~596833~~ A/N: 627769	S78	C76			
GAS TURBINE, UNIT NO. 7, NATURAL GAS, SIEMENS, MODEL SGT6-5000F, RAPID-RESPONSE, COMBINED CYCLE, ~~2,096~~ 2,250 MMBTU/HR AT ~~78~~ 68 DEGREES F, WITH DRY LOW-NOX COMBUSTORS WITH A/N ~~596834~~ 627770 GENERATOR, HEAT RECOVERY STEAM, UNFIRED STEAM TURBINE, 67.7 MW GENERATOR, ~~219~~ 222.5 MW	D68	C79	NOX: MAJOR SOURCE	**CO:** 2 PPMV NATURAL GAS (4) [Rule 1703(a)(2)-PSD-BACT, 10-7-1988]; **CO:** 2000 PPMV (5) [Rule 407, 4-2-1982]; **NOX:** 2 PPMV NATURAL GAS (4) [Rule 1303(a)(1)-BACT, 5-10-1996, Rule 1303(a)(1)-BACT, 12-6-2002; Rule 1703(a)(2)-PSD-BACT, 10-7-1988]; **NOX:** 15 PPMV NATURAL GAS (8) [40CFR60 Subpart KKKK, 7-6-2006]; **PM**: 0.01 GRAIN/DSCF (5) [Rule 475, 10-8-1976, Rule 475, 8-7-1978]; **PM**: 0.1 GRAIN/DSCF (5A) [Rule 409, 8-7-1981]; **PM**: 11 LBS/HR NATURAL GAS (5B) [Rule 475, 10-8-1976, Rule 475, 8-7-1978]; **SO2**: (9) [40CFR72-Acid Rain Provisions, 11-24-1997]; **SOX**: 0.06 LBS/MMBTU NATURAL GAS (8) [40 CFR60 Subpart KKKK, 7-6-2006]; **VOC:** 2 PPMV NATURAL GAS (4) [Rule 1303(a)(1)-BACT, 5-10-1996; Rule 1303(a)(1)-BACT, 12-6-2002]	A63.2, A99.7, A99.8, A99.9, A195.8, 195.9, A195.10, A327.1, A433.1, B61.2, C1.10, C1.11, D12.10, D29.8, D29.9, D82.4, D82.5, E193.2, K40.4, K67.5

STACK NO. 7, DIAMETER: 20 FT 11 IN, HEIGHT: 210 FT 0 IN A/N: ~~596834~~ 627770	S82	C80			

2. INTRODUCTION/HISTORY, SCOPE OF PERMIT AND RECOMMENDATION

Title V is a national operating permit program for air pollution sources. Facilities subject to Title V must obtain a Title V permit and comply with specific Title V procedures to modify the permit. This Statement of Basis is for a De Minimis Significant Title V revision. Title V does not necessarily include any new requirements for reducing emissions. It does, however, include new permitting, noticing, recordkeeping, and reporting requirements. Title V facilities are also required to certify compliance with their permit on an annual basis.

Pursuant to Title V of the federal Clean Air Act and South Coast AQMD Rule 3004(f), a Title V permit shall expire five years from the date of issuance unless such permit has been renewed. Accordingly, each facility is required to submit a Title V renewal application and request the South Coast AQMD to renew their Title V permit. The proposed permit incorporates updates to the facility information provided in the facility's Title V renewal application and to all rules and regulations that are currently applicable to the facility.

The South Coast AQMD implements Title V through Regulation XXX – Title V permits, adopted by the South Coast AQMD Governing Board in order to comply with EPA's requirement that local air permitting authorities develop a Title V program. Regulation XXX was developed with the participation of the public and affected facilities through a series of public workshops, working group meetings, public hearings and other meetings.

The Title V major source threshold for a particular pollutant depends on the attainment status of the pollutant. For the federal standards, NO_2, SO_2, CO, and PM_{10} are in attainment, while $PM_{2.5}$ is serious non-attainment and ozone is extreme non-attainment. Lead is in partial non-attainment (Los Angeles County only). For the state standards, PM_{10}, $PM_{2.5}$, and ozone are non-attainment, while NO_2 and CO are attainment.

For the South Coast Air Basin (SOCAB) the threshold levels are as follows:

Table 1: Title V Major Source Threshold for Criteria Pollutants

Pollutant	SOCAB Major Source Thresholds (tons per year)
VOC	10
NOx	10
SOx	100
CO	100
PM-10	100
PM-2.5	70
Single HAP	10
Combination of HAPS	25

A Title V de minimis significant permit revision is proposed to be issued to cover the operations of El Segundo Energy Center, LLC, 301 Vista del Mar, El Segundo, CA 90245. The Title V de minimis significant permit revision is a proposal to increase the maximum heat input rating of the two gas turbines operated by the facility for power generation. The facility has submitted the necessary information and applications forms to evaluate the de minimis significant permit revision.

The following is a summary of the applications submitted by the facility:

Application Number	Purpose	Fee*
627769	Gas Turbine Modification Unit No. 5	$22,654.60 + $11,327.30
627770	Gas Turbine Modification Unit No. 7	$11,327.30 + $5,663.65
627771	Title V Facility Permit Revision	$2,729.86
	Total Fee	$53,702.71

*Fee Includes 50% Discount for Identical Equipment as well as additional 50% per unit for Expedited Processing

3. FACILITY DESCRIPTION

El Segundo Energy Center, LLC is an existing facility located in the City of El Segundo that is in the business of producing electrical power on-demand. The facility operates two (2) natural gas fired Siemens model SGT6-5000F rapid-response turbines configured for combined cycle electrical generation. Each combustion turbine generator (CTG) unit is equipped with selective catalytic reduction (SCR) system and oxidation (CO) catalyst for air pollution control. Each CTG unit is currently rated at 2,096 mmBtu/hr heat input and 219 MW output of electrical generation from the combustion turbine. Each combustion turbine is also tied into a heat recovery steam generator, with the steam generator producing an additional 67.7 MW of power. The total net plant generating capacity is 573 MW. Each of the CTG units are subject to BACT emission limits of 2 ppmv for NOx, 2 ppmv for CO and 2 ppmv for VOC averaged over a 60-minute basis. The respective SCR units for the CTGs are subject to BACT emission limit of 5 ppmv for NH_3 averaged over a 60-minute basis. The facility has auxiliary equipment that include an ammonia storage tank.

Summary of Permitted Equipment

Equipment
2- Gas Turbine Generator, natural gas fired, 219 MW, dry low NOx combustors, combined cycle, with a heat recovery steam generator (HRSG) and a 67.7 MW steam turbine generator
2- SCR/Oxidation Catalyst
Aqueous Ammonia Underground Storage Tank, 20,000 gallons

4. CONSTRUCTION AND PERMITTING HISTORY

The facility was originally constructed in the 1950's and at the time consisted of four utility boiler units. Boilers 1 and 2 were 175 MW units and Boilers 3 and 4 were 335 MW units. The initial Title V permit was issued to the facility in August of 1999. In 2007 the facility submitted permit applications, as part of the El Segundo Power Redevelopment (ESPR) project, in which three of the original boilers were decommissioned (two boiler units which were physically removed) and were replaced by the two existing combined cycle turbine generation units currently on site. After planning modifications, the ESPR project began in 2010. The ESPR project was completed in August of 2013 and replaced 573 MW of the original generating capacity of 1,020 MW with the combined cycle turbine generation units. The facility proposed a second project known as the El Segundo Power Facility Modification (ESPFM) project to finalize removal of the two physically remaining utility boiler units (one remaining active; the other decommissioned) and replace the remaining generation capacity of the original boilers with a mixture of different turbine generation units. Applications for the ESPFM project were submitted to the South Coast AQMD in March of 2013 but were subsequently cancelled in September of 2016. The facility conducted a thermal efficiency modification for the two combined cycle gas turbines in 2018. The most recent Title V permit was issued on December 2, 2019. There have been no permit revisions since the most recent Title V permit renewal.

5. PROCESS DESCRIPTION

El Segundo Energy Center, LLC currently operates its two combined cycle gas turbines based on allowable maximum heat rate input of 2,096 million British Thermal Units per hour (MMBtu/hr) for a maximum electrical power output of 219 megawatts (MW) for the individual turbine. Due to recent increase in electrical demand for capacity from peak electrical generating, the facility has discussed operational changes to increase this peak generating capacity of the facility. During the facility's operation of the equipment during emergency peak power demand the facility conducted analysis and believes the equipment is capable of a higher maximum heat rate input and that the facility must limit its operations of the combustion gas turbines (CGT) even under normal high peak demand events to remain under the 2,096 MMBtu/hr maximum heat input rating. The facility is requesting to increase its maximum heat rate input from 2,096 MMBtu/hr to 2,250 MMBtu/hr per turbine; which they estimate is more representative of the actual maximum heat rate input and will also allow them to increase the maximum power generation capacity of the CGTs from the current 219 MW to 222.5 MW per turbine during peak power demand events. This will increase the facility's overall generating capacity from 573.4 MW to 580.4 MW. This modification would not require any physical modification of the equipment, simply an allowance to permit fuel usage to the maximum heat rate requested of 2,250 MMBtu/hr for the respective CGTs.

An increase of maximum heat rate input will result in an increase in the hourly and daily emissions of nitrogen oxides (NOx), sulfur oxides (SOx), carbon monoxide (CO), volatile organic compounds (VOC) and particulate matter (PM10) emissions.

In an effort to minimize the emissions impact from the operational modification, the facility is also requesting a proposed daily fuel limit for each CGT to reduce the total amount of emissions increased on a daily rate based on the proposed maximum heat input rate modification. The facility would limit its fuel usage based on a maximum heat rate of 51,130 MMBtu per day. The new fuel limit would minimize the impact on the maximum daily emissions of the pollutants.

6. REGULATORY APPLICABILITY DETERMINATION

Applicable legal requirements for which the equipment is required to comply are identified in the Title V permit (for example, Section D, E, and H of the proposed Title V permit). The South Coast AQMD has evaluated the applicable requirements for the proposed modifications and determined that it complies with all applicable rule and regulations. Applicability determinations (i.e., determinations made by the South Coast AQMD with respect to what legal requirements apply to a specific piece of equipment, process, or operation) can be found herein for the proposed de minimis significant revision.

The following discusses the applicable local and federally enforceable rules and requirements for the proposed modification as part of the de minimis significant revision to the Title V permit.

Rule 212-Standards for Approving and Issuing Public Notice (March 1, 2019)

This rule establishes standards for issuing public notice prior to issuance of a new or modified Permit to Construct or Permit to Operate.

212(c)(1): This section of the rule requires Public Notice for any new or modified permit unit located within 1,000 ft of a school. There are no schools within 1,000 ft of the facility. Therefore, Public Notice will not be required as per this section of the rule.

212(c)(2): This section requires Public Notice for any new or modified facility that emits criteria pollutants up to a certain threshold and is subject to Regulation XXX, RECLAIM program or Title V program or within the Outer Continental Shelf facilities. As shown in table below, the total daily emissions increase from the proposed modification does not exceed the daily thresholds of Rule 212(g); therefore, the project does not trigger a public notice for section (c)(2).

Summary of the maximum daily emissions increase:

Pollutant	Total project increase in emissions- lbs/day,	Allowed limit-lbs/day	Trigger Public Notice
NOx	+3.10	40	No
VOC	+1.08	30	No
CO	+1.90	220	No
PM10	+7.48	30	No
SOx	+1.16	60	No

212(c)(3): This section requires Public Notice for any new or modified permit unit, or source under RECLAIM or Title V programs with an increase in emissions of toxic pollutants, that is determined to expose a person to a maximum individual cancer risk (MICR) up to a threshold described in Rule 212(c)(3) and evaluated under guidelines in Rule 1401(e). Toxic emissions are based on fuel usage of the respective permit units. There will be no increase in annual fuel usage based on the modification which would affect MICR. There are no expected toxic emissions increase for the project, therefore the project does not trigger public notice for section (c)(3).

Rule 218-Continuous Emissions Monitoring (May 14, 1999)

This rule applies to all sources that require CEMS as specified in the regulations or permit conditions except for cases specified in paragraph (b)(1) of this rule. The turbines have CEMS for CO and NOx. Because NOx CEMS was installed to comply with the RECLAIM program, NOx CEMS is not subject to this rule, under the exception provided by (b)(1)(A). The permit condition D82.4 specifies the facility to operate CO CEMS to demonstrate compliance with emission limit of 2.0 ppmv at 15% O_2 on a dry basis. Continued compliance is expected.

Rule 401-Visible Emissions (November 9, 2001)

This rule prohibits visible emissions from operating equipment exceeding Ringelmann No. 1 for a period aggregating more than 3 minutes in any hour.

Visible emissions are not expected from a well-maintained and properly operated equipment. Continued compliance is expected.

Rule 402-Nuisance (May 7, 1976)

This rule prohibits discharge of air contaminants or materials which may cause nuisance to any considerable number of persons or to the public.

No public nuisance is expected with the proper operation of the equipment. Continued compliance is expected.

Rule 407-Liquid and Gaseous Air Contaminants (April 2, 1982)

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. BACT for CO when the turbines were initially permitted was established to be 2.0 ppmv and CEMS is used to monitor CO emissions which is well below the 2,000 ppmvd limit. SO_2 limit is exempt per (c)(2), as Rule 431.1 “Sulfur Content of Gaseous Fuels” applies. Continued compliance is expected.

Rule 409-Combustion Contaminants (October 6, 2006)

This rule requires a person to not discharge combustion contaminants exceeding 0.23 gram per cubic meter (0.1 grain per standard cubic foot), calculated as 12% CO_2. The facility is required by permit condition to test for PM emissions once every three years. Results of the latest source test show compliance as verified during the last facility inspection. Continued compliance is expected.

Rule 431.1 Sulfur Content of Gaseous Fuels (June 12, 1998)

The rule prohibits the sale of natural gas within the South Coast AQMD's jurisdiction with sulfur content in excess of 16 ppmv. The turbines are fired with commercial grade natural gas that meets the sulfur limit of the rule.

Rule 475-Electric Power Generating Equipment (August 7, 1978)

This rule applies to power generating equipment rated at greater than 10 net MW permitted after May 7, 1976. The rule requires the equipment to discharge particulate matter no more than 11 pounds per hour and 0.01 gr/scf, calculated at 3% O_2 on a dry basis averaged over at least 15 minutes.

The facility is required by permit condition to test for PM emissions once every 3 years. Results of the latest source test show compliance as verified during the last facility inspection. Continued compliance is expected.

Rule 1135-Emissions of Oxides of Nitrogen from Electricity Generating Facilities (November 2, 2018)

This rule was amended on November 2, 2018 as part of an effort to sunset the RECLAIM program. Previously, the rule was not applicable to facilities under RECLAIM program per Rule 2001. Prior to Rule 2001's amendment in October 5, 2018, NOx and SOx RECLAIM facilities are not subject to the NOx and SOx-related provisions of rules listed in Rule 2001, including Rule 1135. The latest Rule 2001 (amended October 5, 2018), states "NOx RECLAIM facilities are required to comply with all NOx provisions in rules contained in Table 1 that are adopted or amended on or after October 5, 2018." Therefore, Rule 1135 applies to the facility.

Subparagraph (d)(1)(B) specifies boilers and gas turbines installed prior to November 2, 2018 to meet NOx and ammonia emissions limits on or before January 1, 2024, as shown below:

Table 5: Rule 1135 NOx and Ammonia Emissions Limits

Equipment Type	NOx (ppmv)[1]	Ammonia (pmv)	O_2 Correction (%, dry)
Combined Cycle Gas Turbine	2	5	15

[1] *The NOx emission limits in table shall not apply during start-up, shutdown, and tuning.*

The turbines meet the current NOx BACT concentration limit of 2.0 ppmv as well as the ammonia slip limit of 5.0 ppmv. Therefore, the turbines will meet the limits of this rule.

Paragraph (d)(3) requires each electricity generating unit to have in its permit: limitations for duration of start-ups and shutdowns, mass emissions, and number of start-ups and shutdowns, and if applicable tunings, by January 1, 2024. The permit includes a limitation for the duration of start-up and shutdown, and as part of the modification there will be additional limits to the number of start-ups, shutdowns included. Compliance with this section is expected.

Paragraphs (e)(1) and (e)(2) require current and former NOx RECLAIM sources to comply with Rule 2012 "Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx)", with some exclusions for former NOx RECLAIM sources. El Segundo Energy Center, LLC is currently under NOx RECLAIM and complies with Rule 2012 by operating NOx CEMS to monitor NOx emissions.

Paragraph (e)(6) requires each electric generating unit with catalytic control devices to conduct quarterly source tests of ammonia emissions during the first 12 months of operation of the catalytic control device and annually, thereafter. If an annual ammonia source test is failed, four consecutive quarterly source tests must demonstrate compliance with the ammonia emissions limits prior to resuming annual source tests. Permit condition D29.8 includes provisions for source tests consistent with this rule requirement.

Furthermore, (e)(6) specifies test methods for demonstrating compliance with ammonia emissions limits. It requires facilities to either install certified ammonia CEMS or to conduct periodic source tests using South Coast AQMD Method 207.1. Permit condition D29.8 specifies the operator to conduct periodic source tests using South Coast AQMD Methods 207.1.

Paragraphs (e)(7) and (e)(8) specify records requirements for former RECLAIM and non-RECLAIM sources for NOx. Currently, El Segundo Energy Center LLC is a RECLAIM facility; therefore, the two paragraphs do not apply.

As discussed above, El Segundo Energy Center, LLC is in compliance with Rule 1135.

<u>Reg. XIII – New Source Review (NSR)</u>

Regulation XIII- New Source Review sets forth pre-construction review requirements for new, modified, or relocated facilities to ensure that the operation of such facilities does not interfere with progress in attainment of the National Ambient Air Quality Standards (NAAQS), and that future economic growth within the District is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. In addition to nonattainment air contaminants, this regulation also limits emission increases of ammonia and ozone depleting compounds from new, modified or relocated facilities by requiring the use of BACT on each permit unit.

For facilities subject to Regulation XX - RECLAIM, Regulation XIII only applies to pollutants not specifically regulated by Regulation XX. The facility is part of the RECLAIM NOx program, therefore New Source Review Analysis for NOx will be discussed in this section under the provisions of Rule 2005-New Source Review for RECLAIM.

Rule 1306/Rule 2005(d):
These regulations apply to new or modified sources that have increased emissions discharges. In accordance with Rule 1306, emission increases are calculated on a 30-day average basis for determination of offsets, and on a maximum daily basis for determination of BACT and modeling requirements. In accordance with Rule 2005 an emission increase exists if the maximum hourly emissions prior to a modification are less than the maximum hourly emissions post modification of the equipment.

Rule 1303(a)/Rule 2005(c)(1)(A)-BACT:
This regulation applies to new or modified sources that have increased emissions discharges. BACT is triggered if there is a increase in daily maximum emissions of 1.0lb/day or greater for all pollutants other than NOx. The gas turbines existing daily maximum emissions are calculated based on 2 startups and 2 shutdowns per day, and 20 hours of normal operation. The facility is proposing to increase its maximum heat input rate from 2,096 MMBtu/hr to 2,250 MMBtu/hr for each turbine. The facility is also electing to limit its total daily fuel usage to 51,130 MMBtu per day per turbine. Therefore, the gas turbines post-modification daily maximum emission will be calculated based on 2 startups and 2 shutdowns per day, and normal operation hours as allowed by the daily fuel usage cap. NOx is evaluated on hourly basis per Rule 2005. The result of these operating modifications is that there is an increase of hourly emissions for NOx and there is an increase of over 1 lb/day for PM10 and ammonia. Therefore, further BACT analysis is only required NOx, PM10 and ammonia as BACT is not triggered for the other pollutants. The BACT applicability determination is summarized below.

Maximum Daily Emissions per Turbine

Pollutant	Pre-Modification Emissions (lbs/day)*	Post Modification Emissions (lbs/day)*	Change in Emissions (lbs/day)*
NOx (lbs/hr)*	15.44	16.58	+1.14
CO	1,465.18	1,466.13	+0.95
VOC	161.50	162.04	+0.54
PM10	227.88	231.62	+3.74
SOx	35.23	35.81	+0.58
NH3	342.40	348.02	+5.62

*NOx is RECLAIM pollutant and will be evaluated based on hourly emissions not daily emissions per Rule 2005.

The latest BACT guidelines for a combined cycle turbine was recently amended on February 1, 2019. Therefore, the turbines would be subject to the newest BACT requirements for the three applicable pollutants which are summarized in the table below.

BACT Requirements for Simple Cycle Gas Turbines

NOx	PM10	NH_3
2.0 ppmv @ 15% O_2, averaged over 1-hour	Pipeline quality natural gas fuel usage	5.0 ppmv @ 15% O_2, averaged over 1-hour

The facility currently complies with all of the above BACT requirements as listed in the current permit. NOx and CO will be verified by CEMS while the other pollutants will be verified by regularly scheduled performance tests. Continued compliance is expected.

Rule 1303(b)(1)/Rule 2005(c)(1)(B)-Modeling

Modeling analysis is required, the same way as BACT is triggered, if the daily maximum emission increase is 1 lb/day or greater for all pollutants other than NOx. The emission increases of CO, VOC, and SOx are all less than 1 lb/day, as shown in the previous table. Only PM10 emission increases are greater than 1.0 lb/day. Therefore, modeling analysis is required for PM10, and for NOx because of its increase in the hourly emission rate.

The following National and California Ambient Air Quality Standards (NAAQS and CAAQS) are applicable to the modeling analysis of this project.

	NAAQS	CAAQS	Attainment Status
NO_2, 1-hour	100 ppb, 188 $\mu g/m^3$	180 ppb	Yes
NO_2, Annual	53 ppb, 100 $\mu g/m^3$		Yes
PM10, 24-hour		50 $\mu g/m^3$	No
PM2.5, 24-hour	35 $\mu g/m^3$		No

The facility shall demonstrate through modeling analysis that proposed modification will not cause a violation of the ambient quality standards for attainment pollutants, and not cause a signification increase of the ambient quality standards for non-attainment pollutants.

The applicant has performed a detailed modeling analysis using the AERSCREEN software with the background concentrations from the South Coast AQMD database. The applicant modeled the impact from the increased emissions, of each turbine and of the two turbines. For attainment pollutants the impact caused by the emission increases from each permitted unit is compared with the significant impact level (SIL). Additional modeling analysis would be required if there is an exceedance of the SIL.

For the non-attainment pollutants PM10 and PM2.5 the modeling analysis shall demonstrate that the modification will not cause a significant increase. The applicant has performed a modeling analysis for PM10, and used PM10 modeling analysis as a surrogate for PM2.5. The modeling results are shown in the next table.

	Impact per turbine	NAAQS or CAAQS	Significant Increase	Exceedance
PM10, 24-hour	No impact	50 $\mu g/m^3$	2.5 $\mu g/m^3$	No
PM2.5, 24-hour	No impact	35 $\mu g/m^3$	1.8 $\mu g/m^{3*}$	No

* The PM2.5 significant increase level is assumed to be 5% of the NAAQS.

The above modeling analysis demonstrates compliance with this regulation.

Rule 1303(b)(2)/Rule 2005(c)(2)-Offsets/RTCs

The subsection of Rule 1303(b)(2) requires that any emission increases, as defined in Rule 1306 for subject pollutants not exempted by Rule 1304, be offset through Emission Reduction Credits. Emissions increases are determined by the comparison of 30-Day Average emissions prior to and post modification. The facility permit currently includes an indirect fuel usage limit in any one month through permit condition A63.2. This condition sets a fuel limitation limit based on fuel usage and VOC, PM10 and SOx emissions. The facility will continue to comply with A63.2 and therefore limit their total monthly fuel usage. Because, the facility is maintaining their monthly emission limits per turbine; this will continue to limit their overall monthly fuel usage of the turbines to the same amount. As such, there are no increases in 30-Day Average emissions as summarized below. Therefore, offsets per Rule 1303(b)(2) will not be required by the project.

Criteria Pollutants 30-Day Average Emissions for Facility

Pollutant	Change in Avg. Emissions for Project (lbs/day)
CO	0
VOC	0
PM10	0
SOx	0

The subsection of Rule 2005(c)(2) requires that a modified source at a subject facility which results in an emission increase demonstrates that it holds sufficient RECLAIM Trading Credits to offset the annual emission increase. The facility has proposed to maintain their current annual fuel usage. Permit currently limits annual usage through facility wide condition which does not account for individual usage of the turbines. Therefore it is recommended that a new condition

be added to the permit to assure that annual fuel usage be limited based on the original proposal for total fuel usage evaluated in the original evaluation (See Original Evaluation A/N 470652 Appendix F). This will clarify what the total amount of fuel usage per turbine should be and limit annual emissions to no more than what was previously evaluated. The turbines will continue to be subject to the NOx BACT requirement of 2.0 ppmv @ 15 O_2. As such there are no increase in annual NOx emissions for any of the subject turbines, as summarized below. Therefore, they will not need any additional RTCs be held prior to operation due to the modification.

Maximum NOx Annual Emissions per Turbine-RTC Requirements

Pollutant	Pre-Modification Emissions (lbs/year)	Post Modification Emissions (lbs/year)	Change in Emissions (lbs/year)
NOx	96,370.64	96,370.64	0

Rule1303(b)(4)
The facility is currently in compliance, and continued compliance is expected of all applicable rules and regulations.

Rule 1303(b)(5)
This section of the rule applies to any new major polluting facilities or any major modification at an existing major polluting facility as defined by Rule 1302. Although El Segundo Energy Center, LLC is considered a major polluting facility, the modification does not constitute a major modification based on the potential to emit increase as shown in analysis for Rule 1303(b)(2), therefore this section does not apply.

Rule 1325/40 CFR 51 Appendix S-Federal PM2.5 New Source Review (January 4, 2019)
This rule applies to major polluting facilities, major modifications to a major polluting facility, or any modifications to an existing facility that would constitute a major polluting facility in and of itself. A major polluting facility is defined as a facility located in a federal non-attainment area, which has actual emissions, or a potential to emit of greater than 70 tons per year of PM2.5 or its precursors.

Since South Coast AQMD Rule 1325 is not currently SIP approved, the Federally enforceable rule in this case is 40 CFR 51 Appendix S. The applicability standards for Rule 1325 and 40 CFR 51 Appendix S are identical.

The existing facility is a major source (PTE of 96 tons per year for NOx which is a precursor), but the changes proposed under this application will not result in an emission increase that constitutes a major modification. Therefore, the modification is not subject to the requirements of either Rule 1325 or 40 CFR 51 Appendix S.

Rule 1401-New Source Review of Toxic Air Contaminants (September 1, 2017)

This rule specifies limits for maximum individual cancer risk (MICR), acute hazard index (HIA), chronic hazard index (HIC) and cancer burden (CB) from new permit units, relocations, or modifications to existing permits which constitute an increase in emissions of toxic air contaminants.

For the purposes of determining the increase in MICR, CB and HIC due to a modified permit unit, Rule 1401(f)(3) states the increase in emissions from the modified unit shall be calculated based on the difference between the total annual permitted emissions after the modification compared to the total annual permitted emissions prior to the modification. The facility is maintaining its annual fuel use limit as it is currently permitted, and thus there will be no increase in annual emissions of toxic air contaminants. Therefore, there is no increase that would constitute another determination of MICR, CB and HIC (Reference A/N-470652).

For the purpose of determining the HIA due to a modified permit unit the total emissions from a permit unit, Rule 1401(f)(4) states the total emissions from the permit unit shall be calculated on a maximum hourly basis from the maximum permitted operating conditions. Since there will be an increase in hourly TAC emissions (see emissions summary below) a reassessment of HIA is required. Based on the maximum hourly emissions and Tier 2 Screening Risk Assessment which was conducted the turbines are below the HIA threshold of 1.0 for the highest target organ system as summarized below. Therefore, project complies with Rule 1401.

Highest HIA Risk Summary

	Highest Result (Target Organ)	Rule 1401 Threshold
HIA-Residential	1.20E-01 (Eye)	1.0
HIA-Commercial	4.42E-01 (Eye)	1.0

Regulation XVII-Prevention of Significant Deterioration (PSD)

The South Coast Basin where El Segundo Energy Center, LLC is located is in attainment for NO2, SO2, CO, and PM10 emissions. Additionally, beginning on January 2, 2011, Greenhouse Gases (GHGs) are a regulated criteria pollutant under the PSD major source permitting program. Therefore, each of these pollutants must be evaluated under PSD for this project.

PSD applies on a pollutant-specific basis to a new major source, a significant increase in emissions from an existing major stationary source, or a modification at a non-major source, if the modification is considered major in and of itself. For any of the 28 listed source categories, the major source threshold is 100 tons per year based on actual emissions or potential to emit. The major source threshold is 250 tons/yr for source categories that are not listed. As a natural gas fired combined cycle gas turbine power plant, the El Segundo Energy Center, LLC facility falls within the 28 source category definitions, and therefore the applicable threshold is 100 tpy.

If the facility is deemed to be major, Rule 1702 further defines a major modification as a significant emission increase of 40 tpy or more of NO2 or SO2, 15 tpy of PM10, or 100 tons per year or more of CO (determined on a new PTE vs. existing actual basis).

El Segundo Energy Center, LLC is as a major source, because its PTE for CO is above 100 tpy. Because the proposed changes under this application do not result in emission increases that meet the definition threshold, this application does not constitute a major modification in and of itself, and the requirements of PSD do not apply.

Rule 1714- PSD for Greenhouse Gases

As of January 2, 2011 Greenhouse gases (GHGs) are a regulated New Source Review pollutant under the PSD permitting program when they are emitted by new sources or modifications to existing sources at amounts equal to or greater than the applicability thresholds of the GHG tailoring rule.

According to a Supreme Court decision a project would not trigger GHG PSD review unless other criteria pollutants triggers a PSD review. The GHG by itself does not trigger PSD review regardless of the GHG emissions. As explained above, this project does not trigger PSD review of criteria pollutants. It therefore does not trigger the GHG PSD review requirement of this rule.

Regulation XX-Regional Clean Air Incentives Market (RECLAIM)

RECLAIM is a market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NOx and SOx under the Air Quality Management Plan using methods which include, but are not limited to: add-on controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions.

Reg. XX Rule 2001-Applicability (July 12, 2019)

The purpose of this rule is to specify criteria for inclusion in RECLAIM for new and existing facilities, to specify requirements for sources electing to opt-out of RECLAIM, and to identify provisions in current South Coast AQMD rules and regulations that do not apply to RECLAIM sources. As stated above, this rule was last amended on October 5, 2018, as part of an effort to transition out of RECLAIM program by the South Coast AQMD. El Segundo Energy Center, LLC is currently under the RECLAIM program for NOx. Discussion regarding applicability and compliance of Rule 2005-New Source Review for RECLAIM is included in the above section under New Source Review.

Reg. XX Rule 2012-Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions (February 5, 2016)

Subdivision (c) defines major NOx sources (paragraph (c)(1)) and lists requirements for equipment designated as major NOx sources (paragraphs (c)(2) and (c)(3)).

The turbines are classified as a major NOx source per (c)(1)(A)(ii). Paragraph (c)(2) requires operators of major NOx sources to install and operate a direct monitoring device for each source. The facility is currently operating CEMS and conditions are in place to operate NOx CEMS.

Paragraph (c)(3) lists reporting requirements for major NOx sources. Reporting requirements are in place in the permit. Continued compliance with the rule is expected.

Regulation XXX-Title V Permits
This facility is in the Title V Program.

Reg. XXX Rule 3000-General (November 5, 2010)

Paragraph (b)(7) defines a de minimis significant permit revision as any Title V permit revision where the cumulative emission increases of non-RECLAIM pollutants or hazardous air pollutants from the permit revisions during the term of the Title V permit are not greater than shown as follows:

De Minimis Emission Threshold Level

Air Contaminant	Daily Increase Max. Threshold (lbs/day)	Project Increase Daily Max (lbs/day)
HAP	30	1.03
VOC	30	1.08
PM10	30	7.48
SOx	60	1.16
CO	220	1.90

In addition, a de minimis significant revision must meet all the other requirements of a Title V minor permit revision, including that an emission increase of RECLAIM pollutants not exceed the facility's starting Allocation plus non-tradeable Allocations. As discussed in New Source Review section of the evaluation, the modification will not require an increase in allocation of RECLAIM RTCs.

Therefore, the modification is considered a de minimis permit revision.

Reg. XXX Rule 3003-Applications (November 5, 2010)

Pursuant to Rule 3003(j), a proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review. Pursuant to Rule 3003(m), the Public notice will be sent to the affected states (Pechanga and Pala Band of Indians).

40 CFR Part 60 Subpart KKKK- Standards of Performance for Stationary Combustion Turbines (March 20, 2009)

Subpart KKKK establishes emission standards and compliance schedules for the control of emissions from stationary combustion turbines with a heat input greater than 10 MMBTU/hr (10.7 gigajoules per hour), based on higher heating value, which commenced construction, modification or reconstruction after February 18, 2005. The turbines are natural gas-fired and will have a maximum heat input of 2,250 MMBTU/hr.

Under subpart KKKK, the NOx is limited to 15 ppmv @ 15 percent O_2, and the SO_2 is limited to 0.9 lbs/MWh discharge, or not burn any fuel which contains total potential sulfur emissions in excess of 0.060 lbs SO_2/mmbtu heat input. There is a requirement to measure the water to fuel ratio and the fuel consumption rate, or alternatively, the unit can use a NOx and O_2 CEMS. Also, monitoring of the sulfur content of the fuel is required unless the operator can provide fuel supplier data showing the sulfur content of the fuel is less than 20 grains/100cf (for natural gas) or has potential sulfur emissions of less than less than 0.060 lb SO_2/mmBtu heat input.

The equipment currently complies with a NOx limit for BACT of 2.0 ppmv which is lower than the subpart requirement. With the use of pipeline natural gas fuel exclusively, the equipment complies with the SO_2 limit. The equipment also uses CEMS for NOx and CO. Therefore, the equipment complies with the requirements of Subpart KKKK.

40 CFR Part 63 Subpart YYYY- National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines (January 30, 2013)

This regulation applies to gas turbines located at major sources of hazardous air pollutants (HAP) emissions. A major source is defined as a facility with emissions of 10 tons per year or more of a single HAP or 25 tons per year or more of a combination of HAPs. The largest single HAP emission from the facility is formaldehyde which emits from the turbines at a potential to emit of 8 tons per year. The total combined HAPs from the facility is less than 13 tons per year which is well below the 25 tons per year threshold. Therefore, the facility is not a major source, and the requirements of this regulation do not apply.

40 CFR Part 64- Compliance Assurance Monitoring (October 22, 1997)

The Compliance Assurance Monitoring (CAM) regulation applies to emission units at major stationary sources, required to obtain a Title V Permit, which use control equipment to achieve a specified emission limit. The regulation is intended to provide reasonable assurance that the control systems are operating properly to maintain compliance with the emission limits. Since the facility is a major source, then the CAM regulations apply to this facility. The facility uses continuous emissions monitoring system (CEMS) to monitor, report and record both NOx and CO emissions continuously downstream of the control equipment, therefore per §64.2 (b)(1)(vi) the equipment is exempt from requirements from this regulation. VOC emissions are also subject an emission limit and are partially controlled by the oxidation catalyst. VOC emission limit is verified through a triennial source test and the oxidation catalyst is continuously monitored by the CO CEMS which can be used as a surrogate monitor for the reliable operation of the oxidation catalyst for VOC control.

CAM applicability analysis of the permitted emissions sources at the facility are summarized in the table below:

Table 6: CAM Analysis

Application no.	Subject to emissions limit	Use of external control	CAM applicability	Comment
Gas Turbines 470652, 470656	NOx, CO	Oxidation Catalyst for CO, VOC and SCR for NOx	Yes	CEMS used to monitor NOx and monitor function of Oxidation Catalyst for CO and VOC

40 CFR Part 72- Acid Rain Provisions (January 11, 1993)

The facility is subject to the requirements of the Acid Rain Provisions because the electricity generated will be rated at greater than 25 MW. Under the Acid Rain Provisions, SO2 emissions from the unit are required to be offset with SO2 allowances. SO2 allowances are, however, not required in any year when the unit emits less than 1,000 lbs of SO2. In order to determine the amount of SO2 emitted from the turbine, the SO2 emissions are required to be monitored through use of fuel gas meters and gas constituent analyses, or, if fired with pipeline quality natural gas, as in the case of this facility, a default emission factor of 0.0006 lbs/MMBTU is allowed. SO2 mass emissions are to be recorded every hour. NOx and O2 must be monitored with CEMS in accordance with the specifications of Part 75. Under this program, NOx and SOx emissions will be reported directly to the U.S. EPA.

7. MONITORING AND OPERATIONAL REQUIREMENTS

Applicable monitoring and operational requirements for which the facility is required to comply are identified in the Title V permit (for example, Section D, E, H, F, and J and Appendix B of the Title V permit). Discussion of any applicable operational requirements can be found in the Engineering Evaluations. All periodic monitoring requirements were developed using strict adherence to the following applicable guidance documents: South Coast AQMD Periodic Monitoring Guidelines for Title V Facilities (November 1997); CAPCOA/CARB/EPA Region IX Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP (June 1999); and CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources (July 2001).

The facility will be using CEMS to monitor, report and record both NOx and CO emissions continuously downstream of the control equipment for the gas turbines. Under South Coast AQMD BACT requirements, the turbines are required to maintain a NOx and CO CEMS for determination of compliance with the BACT concentrations and mass emission limits for these pollutants.

Under the Acid Rain program, the turbines are required to maintain a CEMS for NOx emissions, measure the exhaust for O_2, and report mass emissions directly to EPA. Also under Acid Rain (and Subpart KKKK), the facility is allowed to report SOx emissions based on an emission factor since natural gas is used exclusively.

The facility is required by permit condition to periodically test the turbine stack for VOC, PM10, and SOx emissions every 3 years. An ammonia slip test is required every year.

Monitoring and Operating Requirements

Equipment	Summary of Monitoring and Operational Requirements
Gas Turbines	NOx and CO CEMS
	Three year stack test of VOC, PM10, and SOx
	Annual stack test of ammonia
	Fuel meter
SCRs	Hourly monitoring of ammonia flow
	Hourly monitoring of exhaust temperature into the catalyst
	Monthly monitoring of the differential pressure across the catalyst

8. PERMIT FEATURES

Permit Shield

A permit shield is an optional part of a Title V permit that gives the facility an explicit protection from requirements that do not apply to the facility. A permit shield is a provision in a permit that states that compliance with the conditions of the permit shall be deemed compliance with all identified regulatory requirements. To incorporate a permit shield into the Title V permit involves submission of applications for change of conditions for each of the equipment affected by the permit shield. Permit shields are addressed in Rule 3004 (c). This facility has not applied for a permit shield.

Streamlining Requirements

Some emission units may be subject to multiple requirements which are closely related or redundant. The conditions may be streamlined to simplify the permit conditions and compliance. Emission limits, work practice standards, and monitoring, recordkeeping, and reporting requirements may be streamlined. Compliance with a streamlined condition will be deemed compliance with the underlying requirements whether or not the emission unit is actually in compliance with the specific underlying requirement. This facility has not applied for any streamlined conditions.

9. EMISSIONS AND HEALTH RISKS

The primary purpose of the proposed modification would be to increase the heat rate input for each CGT from 2,096 MMBtu/hr to 2,250 MMbtu/hr. Along with this modification the facility is requesting other adjustments to be able to operate at the higher maximum heat input. The request which may affect the emissions are as follows:

- Increase of maximum heat input value for each turbine to 2,250 MMBtu/hr.
- Limit fuel usage based on heat input to a maximum of 51,130 MMBtu per day.

The following summary analysis is a comparison of the expected emissions from the units prior to the modification as well as post modification to evaluate the emissions changes based on the requested permit modifications (See Appendix A for Detailed Analysis Emissions Calculations).

Hourly Emissions

Criteria Pollutants Maximum Hourly Emissions, Start-Up Operations per Turbine

Pollutant	Pre-Modification Emissions (lbs/hr)	Post Modification Emissions (lbs/hr)	Change in Emissions (lbs/hr)
NOx	56.00	56.00	0.00
CO	417.42	417.42	0.00
VOC	17.30	17.30	0.00
PM10	9.49	10.19	+0.70
SOx	1.47	1.58	+0.11

Criteria Pollutants Maximum Hourly Emissions, Shutdown Operations per Turbine

Pollutant	Pre-Modification Emissions (lbs/hr)	Post Modification Emissions (lbs/hr)	Change in Emissions (lbs/hr)
NOx	35.50	35.50	0.00
CO	221.18	221.18	0.00
VOC	9.74	9.74	0.00
PM10	9.49	10.19	+0.70
SOx	1.47	1.58	+0.11

Criteria Pollutants Maximum Hourly Emissions, Normal Operations per Turbine

Pollutant	Pre-Modification Emissions (lbs/hr)	Post Modification Emissions (lbs/hr)	Change in Emissions (lbs/hr)
NOx	15.44	16.58	+1.14
CO	9.40	10.09	+0.69
VOC	5.37	5.77	+0.40
PM10	9.49	10.19	+0.70
SOx	1.47	1.58	+0.11

Daily Emissions

Daily emissions post modification are calculated based on 1) fuel throughput of 51,130 MMBtu/day, 2) 2 startups and 2 shutdowns (which were also assumed in original application).

Criteria Pollutants Maximum Total Controlled Daily Emissions per Turbine

Pollutant	Pre-Modification Emissions (lbs/day)	Post Modification Emissions (lbs/day)	Change in Emissions (lbs/day)
NOx	491.83	493.38	+1.55
CO	1,465.18	1,466.13	+0.95
VOC	161.50	162.04	+0.54
PM10	227.88	231.62	+3.74
SOx	35.23	35.81	+0.58

Monthly Emissions

Permit currently includes an indirect monthly fuel usage limit in any one month through Permit Condition A63.2. This condition limits VOC, PM10 and SOx emissions per month through fuel use. Applicant proposes to keep this limit even though the turbines will be permitted at higher heat input. Likewise, the number of start-ups and shutdowns will be limited by two per day for the month as originally evaluated. Based on condition A63.2, PM10 emissions will limit total monthly fuel usage for the turbines to approximately 1,488 MMscf per month. Turbine emissions for NOx, CO and VOC are based on concentration limits and the total amount of fuel used; since there will be no changes to these concentration limits or monthly fuel usage, there are no expected changes in monthly emissions for those pollutants. Likewise, PM10 and SOx emissions are based on fuel type emission factors for the equipment and total fuel usage; and therefore, are also not expected to change on monthly basis.

Criteria Pollutants Maximum Total Controlled Monthly Emissions per Turbine

Pollutant	Pre-Modification Emissions (lbs/month)	Post Modification Emissions (lbs/month)	Change in Emissions (lbs/month)
NOx	15,029.64	15,029.64	0
CO	45,289.60	45,289.60	0
VOC	4,930.70	4,930.70	0
PM10*	6,935.00	6,935.00	0
SOx	1,065.80	1,065.80	0

* Facility is retaining 6,935 lb/month limit for PM10 as per permit condition A63.2, therefore limiting total monthly fuel usage.

Annual Emissions

The original application estimated annual emissions based on 5,456 hours total of annual usage including 200 start-ups and 200 shutdown within those hours. Proposal assumes no increase in annual usage of the turbines. Based on proposal fuel usage would remain the same for each turbine on an annual basis. Permit currently does not include any annual limit on the turbines use other than limitations on a monthly basis. Recommendation is to add a condition limiting annual fuel usage to 11,124 MMscf per year, which was used as basis for annual calculations in original evaluation (Reference A/N-470652 Appendix F). Adding this condition limits all criteria pollutant emissions on annual basis by fuel usage as compared to total usage in original evaluation. Turbine emissions for NOx, CO and VOC are based on concentration limits and the total amount of fuel used; since there will be no changes to these concentration limits or proposed changes to annual fuel usage, there are no expected changes in annual emissions for those pollutants. Likewise, PM10 and SOx emissions are based on fuel type emission factors for

the equipment and total fuel usage; and therefore, are also not expected to change on annual basis.

Criteria Pollutants Maximum Total Controlled Annual Emissions per Turbine

Pollutant	Pre-Modification Emissions (lbs/year)	Post Modification Emissions (lbs/year)	Change in Emissions (lbs/year)
NOx	96,370.64	96,370.64	0
CO	175,246.40	175,246.40	0
VOC	32,558.72	32,558.72	0
PM10	51,832.00	51,832.00	0
SOx	7,965.76	7,965.76	0

30-Day Averages

With no expected changes in monthly emissions there are no expected changes in 30-Day averages.

Criteria Pollutants 30-Day Average Emissions per Turbine

Pollutant	Pre-Modification Emissions (lbs/day)	Post Modification Emissions (lbs/day)	Change in Emissions (lbs/day)
NOx	501	501	0
CO	1,510	1,510	0
VOC	164	164	0
PM10*	231	231	0
SOx	36	36	0

Toxic Air Contaminants

Ammonia emissions are calculated based on 5 ppmv @ 15% O_2 concentration allowed by BACT for the respective turbines. The following summarizes the expected changes in ammonia emissions (See Appendix A for Detailed Analysis Emissions Calculations).

Ammonia Maximum Hourly Emissions

Pollutant	Pre-Modification Emissions (lbs/hr)	Post Modification Emissions (lbs/hr)	Change in Emissions (lbs/hr)
NH3	14.27	15.31	+1.04

Ammonia Maximum Daily Emissions

Pollutant	Pre-Modification Emissions (lbs/day)	Post Modification Emissions (lbs/day)	Change in Emissions (lbs/day)
NH3	342.40	348.02	+5.62

Ammonia Maximum Annual Emissions

Pollutant	Pre-Modification Emissions (lbs/year)	Post Modification Emissions (lbs/year)	Change in Emissions (lbs/year)
NH3	77,839	77,837	-2

The Toxic Air Contaminants (TAC) are expected to increase on an hourly basis due to the increase in maximum heat input. But because TAC emissions are based on fuel usage and the facility is opting to maintain current permit limitations on annual fuel usage. There is no expected increase in annual TAC emissions. TAC emissions are summarized below (See Appendix A for Detailed Analysis Emissions Calculations).

Maximum Hourly TAC Emissions

Pollutant	CAS No.	Pre-Project (lbs/hr)	Post-Project (lbs/hr)	Change in Emissions (lbs/hr)
Benzene	71432	0.00665	0.00714	+4.90E-04
1,3-Butadiene	106990	8.76E-04	9.41E-04	+6.50E-05
Formaldehyde	50000	0.732	0.786	+0.054
Naphthalene	91203	0.00265	0.00285	+2.00E-04
PAHs (excluding Naphthalene)	1151	0.00183	0.00197	+1.40E-04
Acetaldehyde	75070	0.0814	0.0874	+6.00E-03
Acrolein	107028	0.00737	0.00791	+5.40E-04
Ethylbenzene	100414	0.0651	0.0699	+4.80E-03
Propylene Oxide	75569	0.0591	0.0634	+4.30E-03
Toluene	108883	0.265	0.285	+0.020

Xylene	1330207	0.130	0.140	+0.010

Maximum Daily TAC Emissions

Pollutant	CAS No.	Pre-Project (lbs/day)	Post-Project (lbs/day)	Change in Emissions (lbs/day)
Benzene	71432	0.160	0.162	+0.002
1,3-Butadiene	106990	0.0210	0.0214	+0.004
Formaldehyde	50000	17.58	17.87	+0.29
Naphthalene	91203	0.0637	0.0648	+0.0011
PAHs (excluding Naphthalene)	1151	0.0440	0.0447	+0.0007
Acetaldehyde	75070	1.95	1.99	+0.004
Acrolein	107028	0.177	0.180	+0.003
Ethylbenzene	100414	1.56	1.59	+0.03
Propylene Oxide	75569	1.42	1.44	+0.02
Toluene	108883	6.37	6.48	+0.11
Xylene	1330207	3.13	3.18	+0.05

Maximum Annual TAC Emissions

Pollutant	CAS No.	TAC Emissions (lbs/year)
Benzene	71432	37.04
1,3-Butadiene	106990	4.88
Formaldehyde	50000	4,083
Naphthalene	91203	14.79
PAHs (excluding Naphthalene)	1151	10.21
Acetaldehyde	75070	454
Acrolein	107028	41.05
Ethylbenzene	100414	363
Propylene Oxide	75569	329
Toluene	108883	1,479
Xylene	1330207	726

Health Risk Assessment from Toxic Air Contaminants

HIA-Residential Results

	Target Organ						
Pollutant	Developmental	Eye	Hematopoietic	Immune System	Nervous System	Reproductive	Respiratory
Benzene	1.41E-03		1.41E-03	1.41E-03		1.41E-03	
1,3-Butadiene	7.59E-06					7.59E-06	
Formaldehyde		7.61E-02					
Naphthalene							
PAHs (excluding Naphthalene)							
Acetaldehyde		9.90E-04					9.90E-04
Acrolein		1.68E-02					1.68E-02
Ethylbenzene							
Propylene Oxide	1.09E-04	1.09E-04				1.09E-04	1.09E-04
Toluene	4.10E-05	4.10E-05			4.10E-05	4.10E-05	4.10E-05
Xylene		3.39E-05			3.39E-05		3.39E-05
Ammonia		2.55E-02					2.55E-02
Totals	1.57E-03	1.20E-01	1.41E-03	1.41E-03	7.49E-05	1.57E-03	4.35E-02

HIA-Commercial Results

	Target Organ						
Pollutant	Developmental	Eye	Hematopoietic	Immune System	Nervous System	Reproductive	Respiratory
Benzene	5.20E-03		5.20E-03	5.20E-03		5.20E-03	
1,3-Butadiene	2.80E-05					2.80E-05	
Formaldehyde		2.18E-01					
Naphthalene							
PAHs (excluding Naphthalene)							
Acetaldehyde		3.66E-03					3.66E-03
Acrolein		6.22E-02					6.22E-02
Ethylbenzene							
Propylene Oxide	4.02E-04	4.02E-04				4.02E-04	4.02E-04
Toluene	1.51E-04	1.51E-04			1.51E-04	1.51E-04	1.51E-04
Xylene		1.25E-04			1.25E-04		1.25E-04
Ammonia		9.41E-02					9.41E-02
Totals	5.78E-03	4.42E-01	5.20E-03	5.20E-03	2.77E-04	5.78E-03	1.61E-01

10. **COMPLIANCE HISTORY**

The facility is regularly inspected and audited for compliance by the District. Review of the facility's compliance records, since issuance of the previous Title V Renewal, show no Notice of Violations (NOV) have been issued to the facility during this time period.

The facility is currently in compliance.

11. **COMPLIANCE CERTIFICATION**

By virtue of the Title V permit application and issuance of this permit, the reporting frequency for compliance certification for the facility shall be annual.

12. **COMMENTS**

The following are the proposed changes to the Title V permit conditions as part of the de minimis significant revision.

Proposed Title V Permit Revisions

A63.2 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSION LIMIT
PM10	Less than or equal to 6935 LBS IN ANY MONTH
SOX	Less than or equal to 1065 LBS IN ANY MONTH
VOC	Less than or equal to 4930 LBS IN ANY MONTH

The operator shall calculate the monthly emissions for VOC, PM10, and SOx using the equation below and the following emission factors: VOC: 2.93 lb/mmscf; PM10: 4.66 lb/mmscf; and SOx: 0.71 lb/mmscf

Monthly Emissions, lb/month = x (EF)

Where x = monthly fuel usage, mmscf/month and EF = emission factor indicated above

For the purpose of this condition, the limits shall be based on the emissions from a single turbine.

[RULE 1303(b)(2)-Offset]

[Devices subject to this condition: D67, D68]

A99.7 The 2.0 PPM NOx emission limit(s) shall not apply during turbine start-up and shutdown periods. Start-up time shall not exceed 60 minutes for each start-up. Shutdown periods shall not exceed 60 minutes for each shutdown. The turbine shall be limited to a maximum of 2 start-ups per day. The turbine shall be limited to a maximum of 200 start-ups per year. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

[RULE 2005, 5-6-2005]

[Devices subject to this condition: D67, D68]

A99.8 The 2.0 PPM CO emission limit(s) shall not apply during turbine start-up and shutdown periods. Start-up time shall not exceed 60 minutes for each start-up. Shutdown periods shall not exceed 60 minutes for each shutdown. The turbine shall be limited to a maximum of 2 start-ups per day. The turbine shall be limited to a maximum of 600 start-ups per year. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

[RULE 1303(a)(1)-BACT]

[Devices subject to this condition: D67, D68]

A99.9 The 2.0 PPM ROG emission limit(s) shall not apply during turbine start-up and shutdown periods. Start-up time shall not exceed 60 minutes for each start-up. Shutdown periods shall not exceed 60 minutes for each shutdown. The turbine shall be limited to a maximum of 2 start-ups per day. The turbine shall be limited to a maximum of 200 start-ups per year. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

[RULE 1303(a)(1)-BACT]

[Devices subject to this condition: D67, D68]

A195.8 The 2.0 PPMV CO emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.

[RULE 1703(a)(2)-PSD-BACT]

[Devices subject to this condition: D67, D68]

A195.9 The 2.0 PPMV NOX emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.

[RULE 2005]

[Devices subject to this condition: D67, D68]

A195.10 The 2.0 PPMV VOC emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.

[RULE 1303 – BACT]

[Devices subject to this condition: D67, D68]

A327.1 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

[RULE 475]

[Devices subject to this condition: D67, D68]

A433.1 The operator shall comply at all times with the 2.0 ppm 1-hour BACT limit for NOx, except as defined in condition A99.7 and for the following scenario:

Operating Scenario	Maximum Hourly Emission Limit	Operational Limit
Start-up	~~112~~ 56 lb/hr	NOx emissions not to exceed ~~112~~ 56 lbs total per start-up per turbine. Each turbine shall be limited to 200 start-ups per year, with each start-up not to exceed 60 minutes

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

[RULE 2005]

[Devices subject to this condition: D67, D68]

B61.2 The operator shall not use natural gas containing the following specified compounds:

Compound	Range	Grain per 100 scf
H2S	Greater than	0.25

This concentration limit is an annual average based on monthly samples of natural gas composition or gas supplier documentation. The gaseous fuel sample shall be tested using District Method 307-91 for total sulfur calculated as H2S

[RULE 1303(b) – Offset]

[Devices subject to this condition: D67, D68]

C1.10 The operator shall limit the heat input to no more than 51,130 MMBtu in any one day.

For the purpose of this condition, heat input shall be defined as the total heat input to a single turbine.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

[RULE 1303(a) – BACT]

[Devices subject to this condition: D67, D68]

C1.11 The operator shall limit the fuel usage to no more than 11,124 MM cubic feet in any one calendar year.

For the purpose of this condition, fuel usage shall be defined as the total natural gas usage of a single turbine.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

[RULE 1401; RULE 2005]

[Devices subject to this condition: D67, D68]

D12.10 The operator shall install and maintain a(n) flow meter to accurately indicate the fuel usage of the turbine:

The operator shall also install and maintain a device to continuously record the parameter being measured.

[RULE 1303(b) – Offset, Rule 2012, 40 CFR 60 Subpart KKKK]

[Devices subject to this condition: D67, D68]

D29.8 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

A test shall be conducted within 180 days of the date of issuance of this permit.

The test shall be conducted, and the results submitted to the District within 45 days after the test date. The AQMD shall be notified of the date and time of the test at least 7 days prior to the test.

The test shall be conducted at least annually thereafter. If an annual source test is failed, four consecutive quarterly source tests must demonstrate compliance with ammonia emission limits prior to resuming annual source tests. The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted to demonstrate compliance with the Rule 1303 BACT concentration limits.

If the equipment is not operated in any given quarter, the operator may defer the required testing to a quarter in which the equipment is operated.

[RULE 1303(a) – BACT]

[Devices subject to this condition: D67, D68]

D29.9 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
SOX emissions	Approved District method	District-approved averaging time	Fuel sample
VOC emissions	Approved District method	1 hour	Outlet of the SCR serving this equipment
PM10 emissions	District Method 5	4 hours	Outlet of the SCR serving this equipment
PM2.5 emissions	EPA Methods 201A and 202	District-approved averaging time	Outlet of the SCR serving this equipment

A test shall be conducted within 180 days of the date of issuance of this permit.

The test(s) shall be conducted at least once every three years thereafter.

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, and the turbine generating output in MW.

The test shall be conducted in accordance with AQMD approved test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before the test commences. The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The test shall be conducted when this equipment is operating at 100 percent load.

The test shall be conducted for compliance verification of the BACT VOC 2.0 ppmv limit.

For natural gas fired turbines only, VOC compliance shall be demonstrated as follows: a) Stack gas samples are extracted into Summa canisters maintaining a final canister pressure between 400-500 mm Hg absolute. b) Pressurization of canisters are done with zero gas analyzed/certified to contain less than 0.05 ppmv total hydrocarbon as carbon, and c) Analysis of canisters are per EPA Method TO-12 (with pre concentration) and temperature of canisters when extracting samples for analysis is not below 70 deg F.

The use of this alternative method for VOC compliance determination does not mean that it is more accurate than AQMD Method 25.3, nor does it mean that it may be used in lieu of AQMD Method 25.3 without prior approval except for the determination of compliance with the VOC BACT level of 2.0 ppmv calculated as carbon for natural gas fired turbines. The test results shall be reported with two significant digits.

For the purpose of this condition, alternative test methods may be allowed for each of the above pollutants upon concurrence of SCAQMD and EPA.

[RULE 1303(a)(1)-BACT; RULE 1303(b)(2)-Offset]

[Devices subject to this condition: D67, D68]

D82.4 The operator shall install and maintain a CEMS to measure the following parameters

CO concentration in ppmv

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

The CEMS shall be installed and operated to measure CO concentrations over a 15 minute averaging time period.

The CEMS would convert the actual CO concentrations to mass emission rates (lbs/hr) using the equation below and record the hourly emission rates on a continuous basis.

CO Emission Rate, lbs/hr = K*Cco*Fd[20.9/(20.9% - $\%O_2$ d)][(Qg * HHV)/10^6], where

K = 7.267 *10^{-8} (lb/scf)/ppm

Cco = Average of four consecutive 15 min. average CO concentration, ppm

Fd = 8710 dscf/MMBTU natural gas

$\%O_2$ d = Hourly average % by vol. O_2 dry, corresponding to Cco

Qg = Fuel gas usage during the hour, scf/hr

HHV = Gross high heating value of fuel gas, BTU/scf

[RULE 1703(a)(1)-BACT; Rule 218]

[Devices subject to this condition: D67, D68]

D82.5 The operator shall install and maintain a CEMS to measure the following parameters

NOx concentration in ppmv

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

The CEMS shall be installed and shall comply with the requirements of Rule 2012

[RULE 1703(a)(1)-BACT; Rule 2005, Rule 2012]

[Devices subject to this condition: D67, D68]

E193.2 The operator shall upon completion of construction, operate and maintain this equipment according to the following specifications:

In accordance with all air quality mitigation measures stipulated in the final California Energy Commission decision for the 00-AFC-14C project.

[CEQA]

[Devices subject to this condition: D67, D68]

K40.4 The operator shall provide to the District a source test report in accordance with the following specifications:

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 percent oxygen (dry basis), mass rate (lbs/hr), and lbs/MM cubic feet. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

All exhaust flow rates shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, the fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

[Rule 1303 – Offsets, Rule 1303 – BACT, Rule 2005, Rule 1703]

[Devices subject to this condition: D67, D68]

K67.5 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Natural gas fuel use after CEMS certification

[Rule 2012]

[Devices subject to this condition: D67, D68]