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PERMIT TO CONSTRUCT EVALUATION
APPLICANT:

Southern California Edison
 2244 Walnut Grove Ave
 Rosemead, CA 91770

EQUIPMENT LOCATION:

13568 Milliken Ave.
 Ontario, CA 91761

EQUIPMENT DESCRIPTION:

Section H of the Facility Permit, ID# 51003

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions and Requirements	Conditions
PROCESS 1: POWER GENERATION					
SYSTEM 1: GAS TURBINE					
GAS TURBINE, UNIT NO. 1, NATURAL GAS, GENERAL ELECTRIC MODEL LM6000PC SPRINT, SIMPLE CYCLE WITH WATER INJECTION, 429 MMBTU/HR, WITH A/N: 462003 415513 GENERATOR, 45 MW	D1	C3, C4, S5		CO: 6 PPM NATURAL GAS (4) [RULE 1303(a)(1)-BACT]; CO: 2000 PPM (5) [RULE 407]; NOX: 2.5 PPM NATURAL GAS (4) [RULE 1303(a)(1)-BACT]; NOX: 25 PPM NATURAL GAS (8) [40 CFR60 SUBPART KKKK]; VOC: 2 PPM NATURAL GAS (4) [RULE 1303(A)(1)-BACT]; PM: 0.1 GR/SCF (5) [RULE 409]; PM: 11 LBS/HR (5) [RULE 475]; PM: 0.01 GR/SCF (5A) [RULE 475]; SOX: 0.060 LBS/MMBTU (8) [40CFR 60 SUBPART KKKK] SO2: (9) [40CFR 72 – ACID RAIN]	A63.1, A63.2, A63.3, A63.4 , A99.1, A99.2, A99.3, A195.1, A195.2, A195.3, A195.5, A327.1, D12.1, C1.1, C1.2, C1.3 , D29.1, D29.2, D29.3, D82.1, E193.1, K40.1, K67.1

Section D of the Facility Permit ID# 515003.

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring	Emissions and Requirements	Conditions
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		Unit			
PROCESS 1: POWER GENERATION					
SYSTEM 2: EMERGENCY IC ENGINE					
INTERNAL COMBUSTION ENGINE, EMERGENCY POWER, DIESEL, TURBOCHARGED, DETROIT DIESEL, MODEL NO. 8063-7305 (6V-92T), 370 BHP, 230 KW A/N: 301867 470515	D7				C1.5 , D12.6, K67.3, C177.1, E193.3
INTERNAL COMBUSTION ENGINE, EMERGENCY POWER, DIESEL, TURBOCHARGED, AFTERCOOLED, CUMMINS, MODEL QST30-G5, 1490 BHP, 1000 KW A/N: 357338 470512	D8				C1.6 , D12.6, K67.4, E193.3

FACILITY DESCRIPTION

The site is located at 13568 Milliken Ave, in Ontario, CA 91761, adjacent to an existing SCE substation. To the south of the site is property currently being developed as a commercial/industrial project. To the east is Milliken Avenue, and to the north and west is the existing SCE substation.

The facility consists of a natural gas fired GE LM6000 combustion turbine generator rated at 45 net MW, associated air pollution control equipment in the form of in-duct oxidation and reduction catalysts, a 10,000 gallon aqueous ammonia storage tank, an 845 hp natural gas fired emergency internal combustion engine, a 370 hp diesel fired emergency engine, and a 1490 hp diesel fired emergency engine.

SCE received a permit for the gas turbine in April 2007, and has recently begun commercial operation. They have submitted this set of applications to modify the conditions on the turbine and the 2 diesel fired IC engines pertaining to the allowed usage of the equipment. Specifically, SCE is requesting to take a 100 hour operational limit on the diesel engines revised from the current 200 hour limits, in order to allow the gas turbine more operating time under the Regulation XIII 4 ton per year facility exemption limit.

The current operating limitations for the turbine as follows:

Current Annual Operating Schedule

	1st Year	Subsequent Years
Normal Operations ⁽¹⁾	180 mmcf/yr	275 mmcf/yr
Start-up	60 starts	120 starts
Shutdown	60 shutdowns	120 shutdowns
Commissioning ⁽²⁾	25 hours	0 hours

(1) 180 mmcf/yr corresponds to about 295 hours of operation, 275 mmcf/yr is about 432 hours.

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(2) Commissioning of the turbine will occur during the first year of operation only.

The new proposed operating schedule is as follows:

New Proposed Annual Operating Schedule

	1st Year	Subsequent Years
Normal Operations	400 mmcf/hr	490 mmcf/yr
Start-up	60 starts	120 starts
Shutdown	60 shutdowns	120 shutdowns
Commissioning*	25 hours	0 hours

(1) 400 mmcf/yr corresponds to about 833 hours, 490 mmcf/yr is about 958 hours

(2) Commissioning of the turbine will occur during the first year of operation only.

The permit conditions limiting the operation of the equipment will be modified as follows:

Permitted Operating Limits

	Current Limit	Proposed Limit
Daily Fuel Use	4.50 mmcf/day	4.50 mmcf/day
Annual Fuel Use	180 mmcf/year for the 1st year of operation, and 275 mmcf/yr for each year thereafter	400 mmcf/year for the 1st year of operation, and 490 mmcf/yr for each year thereafter
NOx emissions	3447 lbs 1 st year, 3508 lbs thereafter	5707 lbs 1 st year, 5716 lbs thereafter
Number of starts	60 for the 1 st year, 120 thereafter	60 for the 1 st year, 120 thereafter
Start up duration	15 minutes	15 minutes

There will be additional conditions limiting the monthly emissions of all criteria pollutants as required by Rule 1313. See discussion under Regulation XIII. [The monthly limits will not change.](#)

BACKGROUND:

When SCE applied to permit the new gas turbine, they proposed operational limits which would keep the emissions below the Rule 1304 facility exemptions. The purpose for this was twofold, first to avoid providing offsets, and secondly, due to the NOX emissions being below 4 tons/yr, they would avoid being subject to Reclaim. However, SCE did not initially account for the 2 existing diesel fired emergency engines at the site when estimating the number of hours the turbine would be allowed to operate. During the permitting process, AQMD informed SCE that the allowable operation of the turbine would have to be less than they originally proposed to account for the emissions of the diesel engines at their permitted levels of 200 hours, even though the engines are exempt from offsets under NSR (emergency equipment less than 200 hours per year). SCE initially challenged that decision, but in the end opted to adjust the turbine limits as required.

SCE felt that the reduced hours of operation for the turbine would not give them the operational flexibility that they needed for the equipment. Therefore, after consideration of all their options, including opting into Reclaim, SCE has applied for a change of conditions which will maintain

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their 4 ton per year offset threshold while allowing more operating time for the turbine, by reducing the allowable operating time for the diesel emergency engines.

The following applications were submitted for this project:

Table A-1 – Project Application Numbers

A/N	Submittal Date	Equipment
470513	6/12/07	Gas turbine
470515	6/12/07	Emergency IC engine D8
470512	6/12/07	Emergency IC engine D7
470511	6/12/07	Title V De-minimis Revision

PROCESS DESCRIPTION:

The gas turbine provides peaking power to the grid mainly during hot summer months. Refer to A/N 462003 for a complete evaluation of the gas turbine operation.

The diesel emergency power engines are only used in case of state declared power emergencies or black out situations. The approximate hours of operation for the last 3 years are shown in the table below:

Engine	Hours of Operation 2005	Hours of Operation 2006	Hours of Operation 2007
D7	11.0	16.2	13.2
D8	5.0	13.9	3.1

Each engine is allowed to operate up to 20 hours per year (inclusive of their total allowable operating time) for maintenance and testing per Rule 1470.

The proposal under this set of applications is to limit the hours of operation of the diesel emergency engines D7 and D8 to increase in the allowable hours of operation for the new gas turbine. Currently the engines are limited to 200 hours/yr. That will be reduced to 100 hours per year. The turbine is limited to no more than 180 mmcf/yr for the 1st year of operation, and no more than 275 mmcf/yr for each year thereafter. Those limits will be increased to 400 mmcf/yr for the first year, and 490 mmcf/yr for each year thereafter.

EMISSIONS:

As a result of the proposed change of conditions, the annual PTE of the engines will decrease, while the annual PTE of the turbine will increase. Hourly, daily and monthly limits will NOT change as a result of these applications.

Reference A/N 462003 and Appendix A for the turbine emission calculations.

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Following is the pre-modification and post-modification emission summary for the turbine and engines, with a total facility summary for criteria pollutants shown in Table C-16, and a total facility summary of TAC emissions shown in Table C-19:

Table C-1
Maximum Hourly Emissions, Normal Operations

Pollutant	Uncontrolled Hourly Emissions	CURRENT Controlled Hourly Emissions	NEW Controlled Hourly Emissions
NOx	105.00	4.20	4.20
CO	41.33	6.20	6.20
VOC	1.91	1.28	1.28
PM10	4.51	4.51	4.51
SOx	0.26	0.26	0.26
NH3	3.10	3.10	3.10

Table C-2
Maximum Hourly Emissions, Startup and Shutdown

Pollutant	CURRENT Startup Hourly Emissions	NEW Startup Hourly Emissions	CURRENT Shutdown Hourly Emissions	NEW Shutdown Hourly Emissions
NOx	7.66	7.66	6.44	6.44
CO	8.66	8.66	7.77	7.77
VOC	1.56	1.56	1.52	1.52
PM10	4.51	4.51	4.51	4.51
SOx	0.26	0.26	0.26	0.26

Table C-3
Maximum Daily Emissions

Pollutant	Uncontrolled Daily Emissions	CURRENT Controlled Daily Emissions*	NEW Controlled Daily Emissions*
NOx	1155.26	51.91	51.91
CO	454.77	72.25	72.25
VOC	21.02	14.60	14.60
PM10	49.62	49.62	49.62
SOx	2.86	2.86	2.86
NH3	34.11	34.11	34.11

* includes 1 start up and shutdown

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Table C-4 Commissioning Emissions*

Pollutant	CURRENT Total Emissions, Lbs	NEW Total Emissions, Lbs
NOx	1362.05	1362.05
CO	1577.50	1577.50
VOC	96.00	96.00
PM10	112.75	112.75
SOx	6.50	6.50

* note that commissioning has already been completed for the turbine

Table C-5 CURRENT Turbine Annual Emissions, Commissioning Year

Pollutant	Controlled Emissions*	Commissioning Emissions	Total Annual Emissions	
	lbs/yr		Lbs	Lbs/yr
NOx	6429.18	1362.05	2085.41	1.72
CO	9227.63	1577.50	2815.41	2.20
VOC	1886.34	96.00	562.53	0.33
PM10	6536.47	112.75	1872.09	0.99
SOx	376.83	6.50	107.93	0.06

*Assumes 60 starts and 60 shutdowns per year, 180 mmcf/yr total fuel use

Table C-6 NEW Turbine Annual Emissions, Commissioning Year

Pollutant	Controlled Emissions*	Commissioning Emissions	Total Annual Emissions	
	lbs/yr		Lbs	Lbs/yr
NOx	4344.58	1362.05	5706.63	2.85
CO	6150.37	1577.50	7727.87	3.86
VOC	1251.03	96.00	1347.03	0.67
PM10	4298.01	112.75	4410.76	2.21
SOx	247.78	6.50	254.28	0.13

*Assumes 60 starts and 60 shutdowns per year, 400 mmcf/yr total fuel use

Table C-7 INCREASE in Turbine Annual Emissions, Commissioning Year

Pollutant	CURRENT Annual Emissions, lbs	NEW Annual Emissions, lbs	Annual Emissions Increase, lbs
NOx	2085.41	5706.63	3621.22
CO	2815.41	7727.87	4912.46
VOC	562.53	1347.03	784.5
PM10	1872.09	4410.76	2538.67
SOx	107.93	254.28	146.35

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Table C-8 CURRENT Turbine Annual Emissions, Non-commissioning year

Pollutant	Total Annual Emissions*	
	lbs/yr	Tpy
NOx	3507.96	1.75
CO	4652.30	2.33
VOC	923.04	0.46
PM10	3032.40	1.52
SOx	174.82	0.09
NH3	2084.35	1.04

*Assumes 120 starts and 120 shutdowns per year, 275 mmcf/yr total fuel use

Table C-8 NEW Turbine Annual Emissions, Non-commissioning year

Pollutant	Total Annual Emissions*	
	lbs/yr	Tpy
NOx	5715.78	2.86
CO	7911.47	3.96
VOC	1595.90	0.80
PM10	5403.18	2.70
SOx	311.49	0.16
NH3	4458.25	2.22

*Assumes 120 starts and 120 shutdowns per year, 490 mmcf/yr total fuel use

Table C-9 INCREASE in Turbine Annual Emissions, Non-commissioning year

Pollutant	CURRENT Annual Emissions, lbs	NEW Annual Emissions, lbs	Annual Emissions Increase, lbs
NOx	3507.96	5715.78	2207.82
CO	4652.30	7911.47	3259.17
VOC	923.04	1595.90	672.86
PM10	3032.40	5403.18	2370.78
SOx	174.82	311.49	136.67
NH3	2084.35	4458.25	2373.9

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Table C-10 Monthly Turbine Emissions Non-Commissioning

Pollutant	CURRENT Controlled Emissions 30 SU/SD lbs/month	NEW Controlled Emissions 30 SU/SD lbs/month
NOx	1557.31	1557.31
CO	2167.35	2167.35
VOC	438.09	438.09
PM10	1488.63	1488.63
SOx	85.82	85.82

Monthly emissions for a non-commissioning month are calculated assuming daily fuel use of 4.50 mmcf/day and 1 start/shutdown per day, for 30 days.

Table C-11 Monthly Turbine Emissions Commissioning

Pollutant	CURRENT Controlled Emissions 30 SU/SD lbs/month	NEW Controlled Emissions 30 SU/SD lbs/month
NOx	2930.12	2930.12
CO	3778.27	3778.27
VOC	542.24	542.24
PM10	1637.42	1637.42
SOx	94.40	94.40

Monthly emissions for a commissioning month are calculated assuming 25 hours of commissioning over 4 days, and 4.5 mmcf/day with 1 start up and shutdown for the remaining 26 days.

Engine Emissions

Table C-12 Engine D7 Emissions

Pollutant	CURRENT Emissions		NEW Emissions	
	Lbs/hr	Lbs/yr ⁽¹⁾	Lbs/hr	Lbs/yr ⁽²⁾
NOx	7.91	1573.15	7.91	790.53
CO	3.03	602.01	3.03	302.52
VOC	0.15	30.17	0.15	15.16
PM10	0.12	24.33	0.12	12.22
SOx	0.15	29.84	0.15	15.00

(1) based on current permit limit of 199 hours/yr

(2) based on new permit limit of 100 hours/yr

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Table C-13 Engine D8 Emissions

Pollutant	CURRENT Emissions		NEW Emissions	
	Lbs/hr	Lbs/yr ⁽¹⁾	Lbs/yr	Lbs/yr ⁽²⁾
NOx	3.59	2888.11	3.59	1444.05
CO	0.42	341.32	0.42	170.66
VOC	0.18	144.41	0.18	72.20
PM10	0.07	52.51	0.07	26.26
SOx	0.15	120.78	0.15	60.39

(1) based on current permit limit of 200 hours/yr

(2) based on new permit limit of 100 hours/yr

Table C-14 CURRENT Total Facility Annual Emissions

Pollutant	Turbine Emissions, lbs/yr		Nat. Gas Engine Emissions, lbs/yr	370 HP Diesel Engine Emissions, lbs/yr	1490 HP Diesel Engine Emissions, lbs/yr	Fuel Dispensing Equipment Emissions, lbs/yr	Max Annual Emissions, lbs/yr
	Year 1	Subsequent Yrs					
NOx	3447.46	3507.96	16.671	1573.15	2888.11	0	7985.89
CO	4392.91	4652.30	23.340	602.01	341.32	0	5618.97
VOC	658.53	923.04	6.002	30.17	144.41	1039	2142.62
PM10	1984.84	3032.40	0.446	24.33	52.51	0	3109.69
SOx	114.43	174.82	0.026	29.84	120.78	0	325.47

Table C-15 NEW Total Facility Annual Emissions

Pollutant	Turbine Emissions, lbs/yr		Nat. Gas Engine Emissions, lbs/yr	370 HP Diesel Engine Emissions, lbs/yr	1490 HP Diesel Engine Emissions, lbs/yr	Fuel Dispensing Equipment Emissions, lbs/yr	Max Annual Emissions, lbs/yr
	Year 1	Subsequent Yrs					
NOx	5706.63	5715.78	16.671	790.53	1444.05	0	7967.04
CO	7727.87	7911.47	23.340	302.52	170.66	0	8407.99
VOC	1347.03	1595.90	6.002	15.16	72.20	1039	2728.26
PM10	4410.76	5403.18	0.446	12.22	26.26	0	5442.10
SOx	254.28	311.49	0.026	15.00	60.39	0	386.90

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Table C-16 INCREASE/DECREASE in Total Facility Emissions

Pollutant	CURRENT Annual Emissions, lbs	NEW Annual Emissions, lbs	Annual Emissions Increase, lbs
NOx	7985.89	7967.04	-18.85
CO	5618.97	8407.99	2789.02
VOC	2142.62	2728.26	585.64
PM10	3109.69	5442.10	2332.41
SOx	325.47	386.90	61.43

The following tables summarize the toxic air emissions from the turbines and engines. Reference Appendix B for the calculations. Also note that the original application based toxic emissions from the turbine on 1690 hours/yr operation. The new limit will be about 490 lbs/mmcf fuel use which corresponds to about 958 hours/yr. Since the original 1401 analysis was based on 1690 hours of operation (and hence higher emissions), there is no need for a new HRA under these applications. The current emissions for the turbine shown in Table C-17 are based on 432 hours of operation, corresponding the current permit limit of 275 mmcf/yr, and not 1690 hours.

Table C-17 CURRENT Total TAC Facility Emissions*

Turbine		Black Start Engine		370 HP Diesel		1490 HP Diesel		Total
Lbs/yr	tpy	Lbs/yr	Tpy	Lbs/yr	tpy	Lbs/yr	Tpy	Tpy
191	0.0957	50.1	0.025	12.3	0.006	49.4	0.025	0.15

* does not include ammonia

Table C-17 NEW Total TAC Facility Emissions*

Turbine		Black Start Engine		370 HP Diesel		1490 HP Diesel		Total
Lbs/yr	Tpy	Lbs/yr	Tpy	Lbs/yr	tpy	Lbs/yr	Tpy	Tpy
424	0.374	50.1	0.025	6.14	0.003	24.7	0.0124	0.41

* does not include ammonia

Table C-18 INCREASE in Total TAC Facility Emissions

CURRENT Facility TAC, tpy	NEW Facility TAC, tpy	INCREASE in TAC, tpy
0.15	0.41	0.26

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EVALUATION:

RULE 212-Standards for Approving Permits

This project is not subject to Rule 212 public notice requirements because there is no increase in daily emissions from the project and the facility is not located within 1000 feet of a school (the closest school is Colony High School located approximately 0.9 miles NW of the site).

RULE 401 – Visible Emissions

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines for a period of 3 minutes. Visible emission violations are not expected under normal operation from either the turbine or engines.

RULE 402 - Nuisance

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. Neither the turbine nor engines are not expected to create nuisance problems.

RULE 407 – Liquid and Gaseous Air Contaminants

This rule limits CO emissions to 2000 ppmv. The SO2 portion of the rule does not apply as the natural gas fired in the turbine will be subject to the sulfur limit in Rule 431.1. The CO emissions from the turbine will be controlled by an oxidation catalyst to 6 ppmvd at 15% O2. Therefore, compliance with this rule is expected. The emergency engines are not subject to this rule.

RULE 409 – Combustion Contaminants

This rule restricts the discharge of contaminants from the combustion of fuel to 0.23 grams per cubic meter (0.1 grain per cubic foot) of gas, calculated to 12% CO2, averaged over 15 minutes. The turbine is expected to meet this limit at the maximum firing load based on the calculations shown below. Compliance will be verified through the initial performance test.

$$\text{Grain Loading} = [(A \times B)/(C \times D)] \times 7000 \text{ gr/lb}$$

where:

A = PM10 emission rate during normal operation, 4.0 lb/hr

B = Rule specified percent of CO2 in the exhaust (12%)

C = Percent of CO2 in the exhaust (approx. 4.29% for natural gas)

D = Stack exhaust flow rate, 4.61 scf/hr

$$\text{Grain Loading} = \frac{4.0 \text{ lbs/hr} \times [(7000 \text{ grains/lb}) \times (12/4.29)]}{4.61 \text{ E}+06 \text{ scf/hr}}$$

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$$= \boxed{0.017 \text{ grains/scf}}$$

Internal combustions engines are not subject to this rule.

RULE 431.1 – Sulfur Content of Gaseous Fuels

The natural gas supplied to the turbine is expected to comply with the 16 ppmv sulfur limit (calculated as H2S) specified in this rule. Commercial grade natural gas has an average sulfur content of 4ppm. The applicant will comply with reporting and record keeping requirements as outlined in subdivision (e) of this rule.

Rule 431.2 – Sulfur Content of Liquid Fuels

The emergency engines are required to use diesel fuel which complies with the limits of this rule, currently 15 ppm. Most diesel available in the basin meets this limit, therefore, compliance is expected.

RULE 475 – Electric Power Generating Equipment

This rule applies to power generating equipment greater than 10 MW installed after May 7, 1976. Requirements are that the equipment meet a limit for combustion contaminants of 11 lbs/hr or 0.01 gr/scf. Compliance is achieved if either the mass limit or the concentration limit is met. Mass PM10 emissions from the turbine are estimated at 4.0 lbs/hr, and 0.0061 gr/scf during natural gas firing at maximum firing load (see calculations below). Therefore, compliance is expected. Compliance will be verified through the initial performance test.

$$\text{Stack Exhaust Flow} \left(\frac{\text{scf}}{\text{hr}} \right) = F_d \times \frac{20.9}{(20.9 - \%O_2)} \times TFD$$

where:

Fd: Dry F factor for fuel type, 8710 dscf/MMBtu

O2: Rule specific dry oxygen content in the effluent stream, 3%

TFD: Total fired duty measured at HHV, 421 MMBtu/hr

$$\text{Combustion Particulate} \left(\frac{\text{grain}}{\text{scf}} \right) = \frac{PM_{10}, \text{ lb/hr}}{\text{Stack Exhaust Flow, scf/hr}} \times 7000 \frac{\text{gr}}{\text{lb}}$$

$$\text{Stack flow} = 8710(20.9/17.9)*421 = 4.28 \text{ mmscf/hr}$$

$$\text{Combustion particulate} = (4.0/4.28E+06)*7000 = \boxed{0.0065 \text{ gr/scf}}$$

REGULATION XIII – New Source Review

The proposed modification at the Mira Loma facility will result in an increase in the annual PTE for the turbine (Tables C-7 and C-9), and a decrease in the annual PTE for the emergency engines (Tables C-12 and C-13). Therefore, the turbine is subject to New Source Review, however, the engines are not. Monthly and hourly emissions will not change as a result of this application.

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1. Turbine BACT

The turbine was constructed with BACT at the time the original permit was issued in July 2007. BACT for this type of equipment has not changed since then, therefore, there are no new requirements for BACT as a result of this application. The following emission levels apply to this equipment:

TABLE D-1– Control Levels for the Mira Loma Turbine

NOX	CO	VOC	PM10	SOX	NH3
2.5 ppmvd @ 15% O2, 1 hour average	6 ppmvd @ 15% O2, 1 hour average	2 ppmvd @ 15% O2, 1 hour average	Exclusive use of natural gas fuel, PM10 emissions of 4 lbs/hr	Exclusive use of natural gas fuel	5 ppmdv @ 15% O2, 1 hour average

**Natural gas provided by the Gas Company is limited to 16 ppm in the South Coast by Rule 431.1. Generally, the actual sulfur content is 4 ppm (4 ppm corresponds to 0.25 gr/100 scf)*

The NOx, CO, VOC, and PM10 emission rates are based on manufacturer guarantees.

2. Turbine Modeling

Although the turbines annual emission levels for all criteria pollutants are increasing as a result of this application, the applicant will not be required to perform any additional modeling beyond what was done for the original permit. This is because the original modeling was based on an annual fuel use of 603 mmcf/yr. This is greater than the new permit limit which will be 490 mmcf/yr. The impacts determined from the original modeling showed compliance with all air quality standards, and was reviewed and deemed acceptable by AQMD modeling staff. Refer to A/N 462003 for a complete discussion of the modeling. The results are shown here for reference.

Table D-2 Mira Loma Model Results – Normal Operation

Pollutant	Averaging Period	Maximum Predicted Impact (ug/m3)	Background Concentration (ug/m3)	Total Concentration (ug/m3)	Significant Change Limit (ug/m3)	AAQS (ug/m3)
NO2	1-hour	23.88	220.1	243.98	20	470
	Annual	0.02	58.3	58.32	1	100
CO	1-hour	30.40	5175	5205.40	1100	23,000
	8-hour	2.64	4255	4257.64	500	10,000
SO2	1-hour	0.17	23.6	23.76	n/a	655
	3-hour	0.12	15.7	15.82	25	1300
	24-hour	0.01	10.5	10.51	1	25
	Annual	0.001	5.2	5.201	1	80
PM10	24-hour	0.20	149	149.20	2.5	50
	Annual	0.02	48	48.02	1	20

Notes:

Background concentrations obtained from the Fontana Station, except CO which is from the Upland Station Since the South Coast basin is not in compliance with PM10, the maximum predicted impact of the project cannot exceed the significant change

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limit for these pollutants, for all other pollutants, the project plus background cannot exceed the AAQS. SO2 1-hour, 3-hour and annual standards are from 40CFR.

Table D-3 Mira Loma Model Results – Startup

Pollutant	Averaging Period	Maximum Predicted Impact (ug/m3)	Background Concentration (ug/m3)	Total Concentration (ug/m3)	Significant Change Limit (ug/m3)	AAQS (ug/m3)
NO2	1-hour	23.88	220.1	243.98	n/a	470
CO	1-hour	30.40	5175	5205.4	1100	23,000
	8-hour	2.64	4255	4257.64	500	10,000

Notes:

*background concentrations obtained from the Fontana Station, except CO which is from the Upland Station. For NO2 and CO, the project plus the background cannot exceed the AAQS.

Table D-4 Mira Loma Model Results - Commissioning

Pollutant	Averaging Period	Maximum Predicted Impact (ug/m3)	Background Concentration (ug/m3)	Total Concentration (ug/m3)	Significant Change Limit (ug/m3)	AAQS (ug/m3)
NO2	1-hour	110.81	220.1	330.91	n/a	470
CO	1-hour	67.74	5175	5242.74	1100	23,000
	8-hour	32.61	4255	4287.61	500	10,000

Notes:

* background concentrations obtained from the Fontana Station, except CO which is from the Upland Station. For NO2 and CO, the project plus the background cannot exceed the AAQS.

3. Turbine Emission Offsets

Although the annual PTE is increasing for the turbines, the facility emissions are still below the threshold of Rule 1304(d), which allows for an offset exemption for any facility that has the potential to emit less than 4 tons per year for NOx, VOC, SOx, and PM10, and less than 29 tons per year for CO. The Mira Loma facility qualifies for this exemption based on the following:

Table D-5 Annual PTE Mira Loma Facility

Equipment	NOx	CO	VOC	PM10	SOx
Turbine	5716	7911	1596	5403	311
Black Start Engine	17	23	6	0.45	0.03
370 HP Diesel ICE	791	303	15	12	15
1490 HP Diesel ICE	1444	171	72	26	60
Fuel Dispensing	0	0	1039	0	0
Total, lbs/yr	7968	8408	2728	5441	386
Total, tpy	3.98	4.20	1.36	2.72	0.19
Offset Threshold	4	29	4	4	4
Exempt	YES	YES	YES	YES	YES

* all turbine emissions come from post commissioning years, which result in the highest annual emissions

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Rule 1313(g) requires that a monthly emission limit be placed on the permit. The monthly emission limits will be reflected in condition A63.

RULE 1401 – New Source Review of Toxic Air Contaminants

Although the turbine’s new permit limits for annual fuel use is increasing, the applicant will not be required to perform a new health risk assessment beyond what was done for the original permit. This is because the original HRA was based on 1690 hours of operation (about 1,100 mmcf/yr) This is greater than the new permit limit which will be 490 mmcf/yr. The impacts determined from the original modeling showed compliance with Rule 1401 and was reviewed and deemed acceptable by AQMD modeling staff. Refer to A/N 462003 for a complete discussion of the modeling. The results are shown here for reference.

TABLE D-6 - Results of Health Risk Assessment

Receptor	Cancer Risk (per million)	Chronic Hazard Index	Acute Hazard Index
Residential	0.16	4.15E-04	3.44E-03
Off-site worker	0.02	9.05E-04	3.44E-03

Rule 1470 – Requirements for Diesel Engines

This rule applies to the 2 existing diesel emergency generators at the site, and sets the allowable hours of operation for maintenance purposes, based on the engine’s proximity to a school, and its PM10 emission rate. For existing engines not located within 100 meters of a school, and with a PM10 emission rate greater than 0.4 gr/bhp-hr, the allowable limit is 20 hrs/yr, with a PM10 rate less than or equal to 0.40 gr/bhp-hr, the allowable limit is 30 hours/yr, and with a PM10 emission rate of 0.15 gr/bhp-hr or less, the allowable limit is 50 hours/yr. Although both engines have PM10 emission rates at or below 0.15 g/bhp-hr (according to information in their respective files), SCE has opted to accept the 20 hours/yr limit for maintenance operation (according to the 1470 form, included in the file). Therefore, the permit will include a condition limiting the maintenance operation to 20 hours/yr.

REGULATION XXX – Title V

The SCE Mira Loma facility is subject to the Title V requirements because it will be an Acid Rain facility [Rule 3001(c)(3)]. SCE has been issued an initial Title V permit. This modification to the permit is classified as a de-minimis significant revision because there is no increase in maximum daily emissions, and the average daily emission increases are below the thresholds specified in Rule 3000. As a de-minimis revision, the proposed permit is subject to a 45 day EPA review.

Federal Regulations

NSPS for Stationary Gas Turbines - 40CFR Part 60 Subpart GG

This regulation has been superseded by 60 Subpart KKKK.

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NSPS for Stationary Gas Turbines - 40CFR Part 60 Subpart KKKK

The turbine is subject to Subpart KKKK because the heat input is greater than 10.7 gigajoules per hour (10.14 MMBtu per hour) at peak load, based on the higher heating value of the fuel fired. Actual unit rating is 467E+06 btu/hr (HHV) X 1055 joules/btu = 492.7 gigajoules/hr. The standards applicable for a turbine between 50 mmbtu/hr and 850 mmbtu/hr are as follows:

NO_x: 25 ppm at 15% O₂

SO_x: 0.90 lbs/MWh discharge, or 0.060 lbs/mmbtu potential SO₂ in the fuel

The NO_x limit is based on a 4 hour rolling average, and includes all operating time when fuel is combusted in the turbine.

Monitoring

The regulation requires that the fuel consumption and water to fuel ratio be monitored and recorded on a continuous basis, or alternatively, that a NO_x and O₂ CEMS be installed. For the SO_x requirement, either a fuel meter to measure input, or a watt-meter to measure output is required, depending on which limit is selected. Also, daily monitoring of the sulfur content of the fuel is required if the fuel limit is selected. However, if the operator can provide supplier data showing the sulfur content of the fuel is less than 20 grains/100cf (for natural gas), then daily fuel monitoring is not required.

Testing

An initial performance test is required for both NO_x and SO₂. For units with a NO_x CEMS, a minimum of 9 RATA reference method runs is required at an operating load of +/- 25 percent of 100 percent load. For SO₂, either a fuel sample methodology or a stack measurement can be used, depending on the chosen limit. Annual performance tests are also required for NO_x and SO₂.

Compliance with the requirements of this rule is expected.

NESHAPS for Stationary Gas Turbines - 40CFR Part 63 Subpart YYYY

This regulation applies to gas turbines located at major sources of HAP emissions. A major source is defined as a facility with emissions of 10 tpy or more of a single HAP or 25 tpy or more of a combination of HAPs. The largest single HAP emission from the turbine or engine is formaldehyde from the turbine at 438 lbs/yr, or 0.22 tpy. The total combined HAPs from all sources at Mira Loma are less than 25 tpy (reference Appendix E). Therefore, the Mira Loma facility is not a major source, and the requirements of this regulation do not apply.

40 CFR Part 64 – Compliance Assurance Monitoring

The 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 rule is intended to provide “reasonable assurance” that the control systems are operating properly to maintain compliance with the emission limits. The major source thresholds for the CAM rule, and the Mira Loma facility emissions are summarized as follows:

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Table D-7 EPA Major Source Thresholds

Pollutant	Threshold (tpy)	Mira Loma Emissions (tpy)
VOC	10	1.07
NOx	10	3.99
SOx	100	0.2
CO	50	2.81
PM10	70	1.55

Since the facility is not a major source, the CAM regulations don't apply.

40 CFR Part 72 - (Acid Rain Provisions)

The facility will be subject to the requirements of the federal acid rain program, because the turbine is a utility unit greater than 25 MW. The acid rain program is similar to RECLAIM in that facilities are required to cover SO2 emissions with "SO2 allowances" that are similar in concept to RTCs. New facilities such as Mira Loma, are required to purchase SO2 credits on the open market to cover their annual SO2 releases, since there are no initial allowance allocations. The applicant is also required to monitor SO2 emissions through use of fuel gas meters and gas constituent analyses, or, if fired with pipeline quality natural gas, as in the case of the Mira Loma 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. Part 75 requires that the CEMS be installed and certified within 90 days of initial startup. Compliance is expected. Note that Section K of the permit will include the Acid Rain rule references applicable to this facility, specifically Part 72 and Part 73.

RECOMMENDATION:

Based on the forgoing analysis, it is recommended that a Permit to Construct be issued to the turbine, and A Permit to Construct/Operate be issued to the 2 engines, subject to the following conditions. Note that for the turbines, conditions A63.3, A63.4, C1.2, and C1.3 will be modified, and for the engines, conditions C1.5 and C1.6 will be modified, all other conditions remain unchanged.

CONDITIONS:

GAS TURBINE

A63.1 The operator shall limit emission from this equipment as follows:

CONTAMINANT	EMISSION LIMIT
NOx	2930 LBS IN ANY ONE MONTH
PM10	1637 LBS IN ANY ONE MONTH
CO	3778 LBS IN ANY ONE MONTH
SOx	94 LBS IN ANY ONE MONTH
VOC	542 LBS IN ANY ONE MONTH

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THIS CONDITION APPLIES DURING THE COMMISSIONING MONTH ONLY.

The operator shall calculate the annual emission limit(s) by using fuel use data and the following emission factors: During commissioning with no control- NOx: 252.35 lb/mmcf; CO: 154.28 lbs/mmcf, VOC: 9.39 lb/mmcf; PM10: 11.03 lbs/mmcf, and SOx: 0.64 lb/mmcf . During commissioning with water injection- NOx: 103.42 lbs/mmcf, all other factors remain the same. During normal operation: VOC: 3.13 lbs/mmcf, PM10: 11.03 lbs/mmcf, and SOx: 0.64 lbs/mmcf.

Compliance with the NOx and CO emission limits shall be verified through CEMS data. If NOx and CO CEMS data is not available, NOx and CO emissions shall be calculated using fuel usage and the following factors- NOx: 10.27 lb/mmcf and CO: 15.16 lbs/mmcf during normal operations, and NOx: 7.66 lbs/start, 6.44 lbs/shutdown, CO: 8.58 lbs/start, 7.69 lbs/shutdown.

[Rule 1303 – Offsets]

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

CONTAMINANT	EMISSION LIMIT
NOx	1556 LBS IN ANY ONE MONTH
PM10	1487 LBS IN ANY ONE MONTH
CO	2134 LBS IN ANY ONE MONTH
SOx	82 LBS IN ANY ONE MONTH
VOC	423 LBS IN ANY ONE MONTH

THIS CONDITION APPLIES AFTER THE COMMISSIONING MONTH ONLY.

The operator shall calculate the annual emission limit(s) by using fuel use data and the following emission factors: VOC: 3.13 lbs/mmcf, PM10: 11.03 lbs/mmcf, and SOx: 0.64 lbs/mmcf.

Compliance with the NOx and CO emission limits shall be verified through CEMS data. If NOx and CO CEMS data is not available, NOx and CO emissions shall be calculated using fuel usage and the following factors- NOx: 10.27 lb/mmcf and CO: 15.16 lbs/mmcf during normal operations, and NOx: 7.66 lbs/start, 6.44 lbs/shutdown, CO: 8.58 lbs/start, 7.69 lbs/shutdown.

[Rule 1303 – Offsets]

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A63.3 The operator shall limit emission from this equipment as follows:

CONTAMINANT	EMISSION LIMIT
NO _x	3447 5707 LBS IN ANY ONE YEAR
PM10	4985 4411 LBS IN ANY ONE YEAR
CO	4393 7728 LBS IN ANY ONE YEAR
SO _x	444 254 LBS IN ANY ONE YEAR
VOC	659 1347 LBS IN ANY ONE YEAR

THIS CONDITION APPLIES DURING THE 1ST 12 MONTHS OF OPERATION ONLY.

The operator shall calculate the annual emission limit(s) by using fuel use data and the following emission factors: During commissioning with no control- NO_x: 252.35 lb/mmcf; CO: 154.28 lbs/mmcf, VOC: 9.39 lb/mmcf; PM10: 11.03 lbs/mmcf, and SO_x: 0.64 lb/mmcf . During commissioning with water injection- NO_x: 103.42 lbs/mmcf, all other factors remain the same. During normal operation- VOC: 3.13 lbs/mmcf, PM10: 11.03 lbs/mmcf, and SO_x: 0.64 lbs/mmcf.

Compliance with the NO_x and CO emission limits shall be verified through CEMS data. If NO_x and CO CEMS data is not available, NO_x and CO emissions shall be calculated using fuel usage and the following factors- NO_x: 10.27 lb/mmcf and CO: 15.16 lbs/mmcf during normal operations, and NO_x: 7.66 lbs/start, 6.44 lbs/shutdown, CO: 8.58 lbs/start, 7.69 lbs/shutdown.

For the purpose of this condition, the yearly emission limit shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month.

[Rule 1303 – Offsets]

A63.4 The operator shall limit emission from this equipment as follows:

CONTAMINANT	EMISSION LIMIT
NO _x	3508 5716 LBS IN ANY ONE YEAR
PM10	3032 5403 LBS IN ANY ONE YEAR
CO	4652 7911 LBS IN ANY ONE YEAR
SO _x	475 311 LBS IN ANY ONE YEAR
VOC	923 1596 LBS IN ANY ONE YEAR

THIS CONDITION APPLIES AFTER THE 1ST 12 MONTHS OF OPERATION.

The operator shall calculate the annual emission limit(s) by using fuel use data and the following emission factors: VOC: 3.13 lbs/mmcf, PM10: 11.03 lbs/mmcf, and SO_x: 0.64 lbs/mmcf.

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The operator shall calculate the emission limit(s) and compliance with the NOx and CO emission limits shall be verified through CEMS data. If NOx and CO CEMS data is not available, NOx and CO emissions shall be calculated using fuel usage and the following factors- NOx: 10.27 lb/mmcf and CO: 15.16 lbs/mmcf during normal operations, and NOx: 7.66 lbs/start, 6.44 lbs/shutdown, CO: 8.58 lbs/start, 7.69 lbs/shutdown.

For the purpose of this condition, the yearly emission limit shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month.

[Rule 1303 – Offsets]

A99.1 The 2.5 PPM NOx emission limits shall not apply during commissioning, start-up, and shutdown periods. Commissioning shall not exceed 25 hours total, with no more than 5 hrs uncontrolled and no more than 20 hrs with water injection. Each start-up shall not exceed 15 min. Each shutdown shall not exceed 10 min. There shall be no more than 60 start ups per year in the first year of operation, and 120 start-ups per year thereafter. NOx emissions for the hour which includes a start shall not exceed 7.66 lbs, and for the hour which includes a shutdown 6.44 lbs.

[Rule 1303(a) – BACT, Rule 1303(b)(1) – Modeling, Rule 1303(b)(2) - Offsets]

A99.2 The 6.0 PPM CO emission limits shall not apply during commissioning, start-up, and shutdown periods. Commissioning shall not exceed 25 hours total, with no more than 5 hrs uncontrolled and no more than 20 hrs with water injection. Each start-up shall not exceed 15 min. Each shutdown shall not exceed 10 min. There shall be no more than 60 start ups per year in the first year of operation, and 120 start-ups per year thereafter. CO emissions for the hour which includes a start shall not exceed 8.58 lbs, and for the hour which includes a shutdown 7.69 lbs.

[Rule 1303(a) – BACT, Rule 1303(b)(1) – Modeling, Rule 1303(b)(2) - Offsets]

A195.1 The 2.5 PPMV NOX emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.
[Rule 1303(a) – BACT, Rule 1303(b)(1) – Modeling, Rule 1303(b)(2) - Offsets]

A195.2 The 6.0 PPMV CO emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.
[Rule 1303(a) – BACT, Rule 1303(b)(1) – Modeling, Rule 1303(b)(2) - Offsets]

A195.3 The 2.0 PPMV VOC emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.
[Rule 1303(a) – BACT, Rule 1303(b)(1) – Modeling, Rule 1303(b)(2) - Offsets]

A195.5 The 25 PPMV NOX emission limit(s) is averaged over 4 hours rolling at 15 percent O2, dry.
[40 CFR60 Subpart KKKK]

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

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[Rule 475]

D12.1 The operator shall install and maintain a(n) flow meter to accurately indicate the fuel usage being supplied to the turbine.

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

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every twelve months.

[Rule 1303(b)(2) – Offset]

C1.1 The operator shall limit the fuel usage to no more than 4.50 mmcf in any one day.

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

[Rule 1303(b)(2) – Offset]

C1.2 The operator shall limit the fuel usage to no more than ~~180~~ **400** mmcf in any one year.

The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition and the records shall be made available upon AQMD request.

For the purpose of this condition, the yearly fuel use limit shall apply only during the 1st 12 months of operation.

[Rule 1303(b)(2) – Offset]

C1.3 The operator shall limit the fuel usage to no more than ~~275~~ **490** mmcf in any one year.

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

For the purpose of this condition, the yearly fuel use limit shall apply after the 1st 12 months of operation. The yearly emission limit shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month.

[Rule 1303(b)(2) – Offset]

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D29.1 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant to be tested	Required Test Method(s)	Averaging Time	Test Location
NOX emissions	District Method 100.1	1 hour	Outlet of the SCR
CO emissions	District Method 100.1	1 hour	Outlet of the SCR
SOX emissions	Approved District method	District approved averaging time	Fuel Sample
VOC emissions	Approved District method	1 hour	Outlet of the SCR
PM10 emissions	Approved District method	District approved averaging time	Outlet of the SCR
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR

The test shall be conducted after AQMD approval of the source test protocol, but no later than 180 days after initial start-up. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test.

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 loads of 100, 75, and 50 percent.

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.

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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.

Because the VOC BACT level was set using data derived from various source test results, this alternate VOC compliance method provides a fair comparison and represents the best sampling and analysis technique for this purpose at this time. The test results shall be reported with two significant digits.

[Rule 1303(a)(1) – BACT, Rule 1303(b)(2) – Offset]

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR

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 quarterly during the first twelve months of operation and at least annually thereafter. 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 concentration limit

[Rule 1303(a)(1) – BACT]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant 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
PM10 emissions	Approved District method	District approved averaging time	Outlet of the SCR

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The test shall be conducted at least once every three years.

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.

Because the VOC BACT level was set using data derived from various source test results, this alternate VOC compliance method provides a fair comparison and represents the best sampling and analysis technique for this purpose at this time. The test results shall be reported with two significant digits.

[Rule 1303(a)(1) – BACT, Rule 1303(b)(2) – Offset]

D82.1 The operator shall install and maintain a CEMS to measure the following parameters:

NOx and CO concentration in ppmv

Concentrations shall be corrected to 15 percent oxygen on a dry basis. The CEMS shall be installed and operating no later than 90 days after initial startup of the turbine,

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in accordance with an approved AQMD Rule 218 CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from AQMD.

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

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

The CEMS shall 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 = $K * C_{co} * F_d [20.9 / (20.9\% - \%O_2 d)] [(Q_g * HHV) / 10E6]$,
where

- K = $7.267 * 10^{-8}$ (lbs/scf)/ppm
- C_{co} = Average of 4 consecutive 15 min. average CO concentrations, ppm
- F_d = 8710 dscf/MMBTU natural gas
- %O₂, d = Hourly average % by volume O₂ dry, corresponding to C_{co}
- Q_g = Fuel gas usage during the hour, scf/hr
- HHV = Gross high heating value of the fuel gas, BTU/scf

[Rule 1303(a)(1) – BACT, Rule 1303(b)(2) – Offset]

E193.1 The operator shall upon completion of construction, operate and maintain this equipment according to the following specifications:

In accordance with all mitigation measures stipulated in the Negative Declaration prepared for this project (CEQA State Clearinghouse No. 2006121112).

[CEQA]

K40.1 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 (lb/hr), and lb/MMCF. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains/DSCF. All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute. 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, fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

[Rule 1303(a)(1) – BACT, Rule 1303(b)(2) – Offset]

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K67.1 The operator shall keep records in a manner approved by the District, for the following parameter(s) or item(s):

- Commissioning hours and type of control and fuel use
- Date and time of each start-up and shutdown
- Natural gas fuel use after the commissioning period and prior to CEMS certification

[Rule 1303(b)(2) - Offsets]

D7 370 HP EMERGENCY POWER ENGINE

C1.5 The operator shall limit the operating time to no more than ~~499~~ **100** hours per year.

The ~~499~~ **100** hours per year limit may include up to 20 hour per year operating time to maintain engine readiness.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401, Rule 1470]

D12.6 The operator shall install and maintain a non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401]

K67.3 The operator shall keep records, in a manner approved by the District, for the following parameters or items:

Date of operation, the elapsed time, in hours, and the reason for operation. Records shall be kept and maintained on file for a minimum of five years and made available to district personnel upon request

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401]

C177.1 The operator shall set and maintain the fuel injection timing of the engine at 3 degrees retarded relative to production timing.

Retarded timing shall be as established by Detroit Diesel in product announcement 'Injection Timing Retard Instructions for Conformance with the SCAQMD's General Permit Registration Program, 6V-92T Generator Set Engine Model 9063-7305.

[Rule 1303 – BACT]

E193.3 The operator shall restrict the operation of this equipment according to the following specifications:

Operation beyond the 20 hours per year allotted for engine maintenance and testing shall be allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage, provided that (a) the utility distribution company has ordered rotating

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outages in the control area where the engine is located or it has indicated that it expects to issue such an order at a given time, and

(b) the engine is located in a utility service block that is subject to the rotating outage. Engine operation shall be terminated immediately after the utility distribution company advises that a rotating outage is no longer imminent or in effect.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401, Rule 1470]

D8 1490 HP EMERGENCY POWER ENGINE

C1.6 The operator shall limit the operating time to no more than ~~200~~ **100** hours per year.

The ~~200~~ **100** hours per year limit may include up to 20 hours per year operating time to maintain engine readiness.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401, Rule 1470]

D12.6 The operator shall install and maintain a non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401]

K67.4 The operator shall keep records, in a manner approved by the District, for the following parameters or items:

Date of operation, the timer reading in hours at the beginning and end of operation, and the reason for operation. Records shall be kept and maintained on file for a minimum of five years and made available to district personnel upon request. The total hours of operation including hours for manual and automatic operation shall be recorded sometime during the first 15 days of January of each year.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401]

E193.3 The operator shall restrict the operation of this equipment according to the following specifications:

Operation beyond the 20 hours per year allotted for engine maintenance and testing shall be allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage, provided that (a) the utility distribution company has ordered rotating outages in the control area where the engine is located or it has indicated that it expects to issue such an order at a given time, and

(b) the engine is located in a utility service block that is subject to the rotating outage. Engine operation shall be terminated immediately after the utility distribution company advises that a rotating outage is no longer imminent or in effect.

[Rule 1110.2, Rule 1304-Exemptions, Rule 1401, Rule 1470]

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Appendix A

Turbine Emission Calculations

When the turbine is first installed, it must go through several hours of testing to optimize the combustors. For the Mira Loma turbine, SCE has indicated that the commissioning will last 25 hours total. The first 5 hours will be completely uncontrolled, the remaining 20 hours will be controlled with water injection only. After commissioning is over the SCR/CO catalyst will have been installed and operating properly. The 1st year will include the higher emissions during commissioning, and therefore, the remaining operation is limited to fewer start ups and less natural gas use to maintain the total emissions below the offset thresholds. The first year of operation will be limited to 60 starts and shutdowns, and a total fuel use for the year of 180 mmcf. All years after commissioning will be limited to 120 starts and shutdowns, and 275 mmcf total annual fuel use. These limitations are reflected in the following calculations.

Data:

Fuel Use Rate	0.409	mmcf/hr
Fuel Use Daily Limit	4.50	mmcf/yr

Pollutant	Controlled Emission Rates	Source
CO	6.20 lbs/hr	Vendor Guarantee
NOx	4.20 lbs/hr	Vendor Guarantee
PM10	4.51 lbs/hr	Vendor Guarantee
VOC	1.28 lbs/hr	Vendor Guarantee
SOx	0.0006 mmbtu/hr	AP-42
NH3	5 ppm	Vendor Guarantee

Start Up Emissions

Pollutant	Emission Rate (lbs/hr)
NOx	7.66
CO	8.66
VOC	1.56
PM10	4.51
SOx	0.26

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Shutdown Emissions

Pollutant	Emission Rate (lbs/hr)
NO _x	6.44
CO	7.77
VOC	1.52
PM10	4.51
SO _x	0.26

Normal Operation Emissions

Pollutant	Fuel Consumption (mmcf/hr)	Pollutant Conc.		Emission Rate		Emission Factor	
		Uncontrolled (ppmdv)	Controlled (ppmdv)	Uncontrolled (lbs/hr)	Controlled (lbs/hr)	Uncontrolled (lbs/mmcf)	Controlled (lbs/mmcf)
NO _x	0.409	63	2.5	105.00	4.20	256.72	10.27
CO	0.409	40	6.0	41.33	6.20	101.06	15.16
VOC	0.409	3.0	2.0	1.91	1.28	4.67	3.13
PM10	0.409			4.51	4.51	11.03	11.03
SO _x	0.409			0.26	0.26	0.64	0.64
NH ₃	0.409	5.0	5.0	3.10	3.10	7.58	7.58

Daily Emissions

Pollutant	Uncontrolled Emissions Lbs/day	Controlled Emissions lbs/day
NO _x	1155.26	51.91
CO	454.77	72.25
VOC	21.02	14.60
PM10	49.62	49.62
SO _x	2.86	2.86
NH ₃	34.11	34.11

Daily emissions are calculated assuming 1 start up and 1 shutdown per day, with the remaining operation at full load. Total fuel use is 4.50 mmcf/day.

Sample Calculations:

Uncontrolled NO_x: $4.50 \text{ mmcf/day} \times 256.72 \text{ lbs/mmcf} = 1155.26 \text{ lbs}$
 Controlled NO_x: $7.66 \text{ lbs} + 6.44 \text{ lbs} + (4.50 - 0.409 \times 2) \times 10.27 \text{ lbs/mmcf} = 51.91 \text{ lbs}$
 Controlled PM10: $4.51 \text{ lbs} + 4.51 \text{ lbs} + (4.50 - 0.409 \times 2) \times 11.03 \text{ lbs/mmcf} = 49.62 \text{ lbs}$

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Monthly Emissions Commissioning

Pollutant	Controlled Emissions 26 SU/SD Lbs/month
NOx	2930.12
CO	3778.27
VOC	542.24
PM10	1637.42
SOx	94.40

Monthly emissions for a commissioning month are calculated assuming 25 hours of commissioning over 4 days, 1 start up and 1 shutdown per day for 26 days, with the remaining operation at full load. Total fuel use is 4.50 mmcf/day*26 days.

Sample Calculations:

NOx: $516.05 + 846.0 + 26*(7.66 \text{ lbs}) + 26*(6.44 \text{ lbs}) + 26*4.50(10.27 \text{ lbs/mmcf}) = 2930.12 \text{ lbs/month}$

VOC: $19.2 + 76.8 + 26*(1.56 \text{ lbs}) + 26*(1.52 \text{ lbs}) + 26*4.50(3.13 \text{ lbs/mmcf}) = 438.09 \text{ lbs/month}$

Monthly Emissions Non-Commissioning

Pollutant	Controlled Emissions 30 SU/SD lbs/month
NOx	1557.31
CO	2167.35
VOC	438.09
PM10	1488.63
SOx	85.82

Monthly emissions for a non-commissioning month are calculated assuming 1 start up and 1 shutdown per day for 30 days, with the remaining operation at full load. Total fuel use is 4.50 mmcf/day*30 days.

Sample Calculations:

NOx: $30*(7.66 \text{ lbs}) + 30*(6.44 \text{ lbs}) + 30*(4.50-.409*2)10.27 \text{ lbs/mmcf} = 1557.31 \text{ lbs/month}$

VOC: $30*(1.56 \text{ lbs}) + 30*(1.52 \text{ lbs}) + 30(4.50-.409*2)3.13 \text{ lbs/mmcf} = 438.09 \text{ lbs/month}$

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Annual Emissions

Commissioning Year

Fuel Use Rate	0.409	mmcf/hr
Fuel Use Annual Limit	400	mmcf/yr

Emission Rates

	Commissioning 1	Commissioning 2	SU	SD	Normal
Hours	5	20	60	60	833.00
Fuel	2.045	8.18	24.54	24.54	340.70
NOx, lbs/hr	103.21	42.3	7.66	6.44	4.20
CO, lbs/hr	63.1	63.1	8.66	7.77	6.20
VOC, lbs/hr	3.84	3.84	1.56	1.52	1.28
PM10, lbs/hr	4.51	4.51	4.51	4.51	4.51
SOx, lbs/hr	0.26	0.26	0.26	0.26	0.26

During commissioning the following assumptions were made:

Commissioning 1 NOx – assumed the water injection rate of 41.6 lbs/hr times ratio of 61/25, where 61 is the ppm spike on start up curve provided by GE (representing uncontrolled NOx), and 25 is the ppm during the water injection. Uncontrolled CO and water injection controlled NOx obtained from vendor guarantee spec sheet (Catalyst Design (C06-135-GE Rev 1.pdf). Uncontrolled VOC emissions back-calculated assuming 33.3% control from oxidation catalyst. 60 start ups and shutdowns per year, and 400 mmcf/yr total fuel use.

Annual Emissions

Pollutant	Commissioning 1	Commissioning 2	SU	SD	Normal	TOTAL
NOx	516.05	846.00	459.60	386.40	3498.58	5706.63
CO	315.50	1262.00	519.60	466.20	5164.57	7727.87
VOC	19.20	76.80	93.60	91.20	1066.23	1347.03
PM10	22.55	90.20	270.60	270.60	3756.81	4410.76
SOx	1.30	5.20	15.60	15.60	216.58	254.28

Sample Calculation:

NOx: $5*(103.21 \text{ lbs/hr}) + 20*(42.3 \text{ lbs/hr}) + 60*(7.66 \text{ lbs/hr}) + 60*(6.44 \text{ lbs/hr}) + 833*(4.2 \text{ lbs/hr}) = 5706.63 \text{ lbs/yr}$

Post Commissioning

Fuel Use Rate	0.409	mmcf/hr
Fuel Use Annual Limit	490	mmcf/yr

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Emission Rates

	SU	SD	Normal
Hours	120	120	958.04
Fuel	49.08	49.08	391.84
NOx, lbs/hr	7.66	6.44	4.20
CO, lbs/hr	8.66	7.77	6.20
VOC, lbs/hr	1.56	1.52	1.28
PM10, lbs/hr	4.51	4.51	4.51
SOx, lbs/hr	0.26	0.26	0.26

Annual Emissions

Pollutant	SU	SD	Normal	TOTAL
NOx	919.20	772.80	4023.78	5715.78
CO	1039.20	932.40	5939.87	7911.47
VOC	187.20	182.40	1226.30	1595.90
PM10	541.20	541.20	4320.78	5403.18
SOx	31.20	31.20	249.09	311.49

Annual emissions are calculated assuming 120 start ups and shutdowns per year and 490 mmcf/yr total fuel use.

Sample Calculation:

$$\text{NOx: } 120*(7.66 \text{ lbs}) + 120*(6.44 \text{ lbs}) + 958.04*(4.2 \text{ lbs/hr}) = 5715.78 \text{ lbs/yr}$$

Calculated Emission Factors, lbs/mmcf

Pollutant	Commissioning 1	Commissioning 2	SU	SD	Normal
NOx	252.35	103.42	18.73	15.75	10.27
CO	154.28	154.28	21.17	19.00	15.16
VOC	9.39	9.39	3.81	3.72	3.13
PM10	11.03	11.03	11.03	11.03	11.03
SOx	0.64	0.64	0.64	0.64	0.64

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Appendix B

Toxics Emissions

Emissions of toxics are calculated using the latest factors from EPA, except for ammonia which is calculated using the manufacturer guarantee of 5 ppm slip rate. Turbine maximum heat input is estimated at 429.1 mmbtu/hr using GE data for heat rate and net power for ambient conditions of 102 deg F, as follows:

$$9945 \text{ btu/kw-hr} \times 42534 \text{ kw} = 429.1 \text{ mmbtu/hr}$$

Annual emissions are based on hourly operation of 1690 hours/yr.

NOTE: SCE performed the original HRA modeling assuming 1690 hours/yr annual operation, which is lower than the new annual operating limit of 490 mmcf/yr, equivalent to about 958 hours/yr. SCE originally estimated the allowable turbine operating hours based on staying below the 4 tpy threshold. However, they did not account for the diesel engine emissions, therefore, in order to stay below 4 tpy for the ENTIRE facility (including the diesel engines), the allowable operating time for the turbine is limited 958 hours. Therefore, no new HRA modeling is required for the turbine increase in toxic emissions, because the new allowable emissions are still below the original modeled emissions.

The following emission calculations show the increase in toxic emissions from the change in annual operation from 432 hours/yr to 958 hours/yr operation. However, as noted above SCE showed the equipment complies with Rule 1401 based on 1690 hours/yr operation. The results of the 1401 modeling are presented under the Rule Evaluation section of this report.

Pollutant	AP-42 Emission Factor (lb/mmbtu)	Maximum Hourly Emission Rate (lb/hr)	CURRENT Annual Average Emission Rate (lb/yr)	NEW Annual Average Emission Rate (lb/yr)	INCREASE, (lbs/yr)
1,3 Butadiene	4.3E-07	1.85E-04	7.99E-02	1.77E-01	9.71E-02
Acetaldehyde	4.00E-05	1.72E-02	7.43E+00	1.65E+01	9.07E+00
Acrolein	6.4E-06	2.75E-03	1.19E+00	2.63E+00	1.44E+00
Benzene	1.50E-05	6.44E-03	2.78E+00	6.17E+00	3.39E+00
Ethylbenzene	3.20E-05	1.37E-02	5.92E+00	1.31E+01	7.18E+00
Formaldehyde	7.10E-04	3.05E-01	1.32E+02	2.92E+02	1.60E+02
Naphthalene	1.30E-06	5.58E-04	2.41E-01	5.35E-01	2.94E-01
PAH	2.20E-06	9.44E-04	4.08E-01	9.04E-01	4.96E-01
Propylene Oxide	2.90E-05	1.24E-02	5.36E+00	1.19E+01	6.54E+00
Toluene	1.30E-04	5.58E-02	2.41E+01	5.35E+01	2.94E+01
Xylene	6.4E-05	2.75E-02	1.19E+01	2.63E+01	1.44E+01
Ammonia	N/A	3.10E+00	1.34E+03	2.97E+03	1.63E+03

Current emissions based on 432 hour of operation (about 275 mmcf/yr). New emissions based on 958 hours of operation (about 490 mmcf/yr)

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370 HP Detroit Diesel Diesel Engine TACs

Pollutant	ARB CATEF Emission Factor, lbs/Mgal	Maximum Hourly Emission Rate (lb/hr)	CURRENT Annual Average Emission Rate (lb/yr)	NEW Annual Average Emission Rate (lb/yr)	DECREASE. Lbs/yr
Acetaldehyde	1.52E-01	2.99E-03	5.98E-01	2.99E-01	-2.99E-01
Acrolein	3.16E-02	6.23E-04	1.25E-01	6.23E-02	-6.27E-02
Benzene (including benzene from gasoline)	3.30E-01	6.50E-03	1.30E+00	6.50E-01	-6.50E-01
Butadiene, 1,3-	5.41E-03	1.07E-04	2.14E-02	1.07E-02	-1.07E-02
Ethyl benzene	8.03E-03	1.58E-04	3.16E-02	1.58E-02	-1.58E-02
Formaldehyde	2.23E+00	4.39E-02	8.78E+00	4.39E+00	-4.39E+00
PolyCyclic Aromatic Hydrocarbon (PAHs)	4.70E-02	9.26E-04	1.85E-01	9.26E-02	-9.24E-02
Napthalene	1.58E-01	3.11E-03	6.22E-01	3.11E-01	-3.11E-01
Toluene (methyl benzene)	1.11E-01	2.19E-03	4.38E-01	2.19E-01	-2.19E-01
Xylenes (isomers and mixtures)	4.44E-02	8.75E-04	1.75E-01	8.75E-02	-8.75E-02

Emissions based on 19.7 gal/hr maximum fuel use (refer to certification A/N 291539). Emission factors from CARB. CURRENT annual emissions based on 200 hours/yr operation, NEW annual emissions based on 100 hours/yr

1490 HP Cummins Diesel Engine TACs

Pollutant	ARB CATEF Emission Factor, lbs/Mgal	Maximum Hourly Emission Rate (lb/hr)	CURRENT Annual Average Emission Rate (lb/yr)	NEW Annual Average Emission Rate (lb/yr)	DECREASE, lbs/yr
Acetaldehyde	1.52E-01	1.21E-02	2.42E+00	1.21E+00	-1.21E+00
Acrolein	3.16E-02	2.51E-03	5.02E-01	2.51E-01	-2.51E-01
Benzene (including benzene from gasoline)	3.30E-01	2.62E-02	5.24E+00	2.62E+00	-2.62E+00
Butadiene, 1,3-	5.41E-03	4.29E-04	8.58E-02	4.29E-02	-4.29E-02
Ethyl benzene	8.03E-03	6.37E-04	1.27E-01	6.37E-02	-6.33E-02
Formaldehyde	2.23E+00	1.77E-01	3.54E+01	1.77E+01	-1.77E+01
PolyCyclic Aromatic Hydrocarbon (PAHs)	4.70E-02	3.73E-03	7.46E-01	3.73E-01	-3.73E-01
Napthalene	1.58E-01	1.25E-02	2.50E+00	1.25E+00	-1.25E+00
Toluene (methyl benzene)	1.11E-01	8.80E-03	1.76E+00	8.80E-01	-8.80E-01
Xylenes (isomers and mixtures)	4.44E-02	3.52E-03	7.04E-01	3.52E-01	-3.52E-01

Emissions based on 79.3 gal/hr maximum fuel use (refer to certification A/N 445112). Emission factors from CARB Annual emissions based on 100 hours/yr operation..

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Natural Gas Black Start Engine TACs (for NESHAPS Major Source Determination)

Pollutant	EPA Emission Factor (lb/mmcf)	Maximum Hourly Emission Rate (lb/hr)	Annual Average Emission Rate (lb/yr)
Benzene	4.40E-04	1.77E-04	3.01E-01
Formaldehyde	5.28E-02	2.13E-02	3.61E+01
Naphthalene	7.44E-05	3.00E-05	5.08E-02
Acetaldehyde	8.36E-03	3.37E-03	5.71E+00
Acrolein	5.14E-03	2.07E-03	3.51E+00
1,3 butadiene	2.67E-04	1.08E-04	1.82E-01
Chlorobenzene	3.04E-05	1.23E-05	2.08E-02
Hexane	1.11E-03	4.47E-04	7.58E-01
Toluene	4.08E-04	1.64E-04	2.79E-01
Xylenes	1.84E-04	7.42E-05	1.26E-01
Ethyl benzene	3.97E-05	1.60E-05	2.71E-02
Biphenyl	2.12E-04	8.54E-05	1.45E-01
1,1,2,2-tetrachloroethane	4.00E-05	1.61E-05	2.73E-02
1,1,2-trichloroethane	3.18E-05	1.28E-05	2.17E-02
1,3-butadiene	2.67E-04	1.08E-04	1.82E-01
1,3-dichloropropene	2.64E-05	1.06E-05	1.80E-02
2,2,4-trimethylpentane	2.50E-04	1.01E-04	1.71E-01
Carbon tetrachloride	3.67E-05	1.48E-05	2.51E-02
Chlorobenzene	3.04E-05	1.23E-05	2.08E-02
Chloroform	2.85E-05	1.15E-05	1.95E-02
Ethylbenzene	3.97E-05	1.60E-05	2.71E-02
Ethylene dibromide	4.43E-05	1.79E-05	3.03E-02
Methanol	2.50E-03	1.01E-03	1.71E+00
Naphthalene	7.44E-05	3.00E-05	5.08E-02
Phenol	2.40E-05	9.67E-06	1.64E-02
Styrene	2.36E-05	9.51E-06	1.61E-02
Tetrachloroethane	2.48E-04	9.99E-05	1.69E-01
Toluene	4.08E-04	1.64E-04	2.79E-01
Vinyl chloride	1.49E-05	6.00E-06	1.02E-02
Xylene	1.84E-04	7.42E-05	1.26E-01
Total		2.96E-02	5.01E+01

Emission factors from EPA AP-42 Table 3.2-2 Uncontrolled Emission Factors for 4-Stoke Lean Burn Engines. Only TACs listed on EPA's list of 188 TACs included.

CURRENT Total TAC Facility Emissions*

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Turbine		Black Start Engine		370 HP Diesel		1490 HP Diesel		Total
Lbs/yr	tpy	Lbs/yr	Tpy	Lbs/yr	tpy	Lbs/yr	Tpy	Tpy
191	0.0957	50.1	0.025	12.3	0.006	49.4	0.025	0.15

* does not include ammonia

NEW Total TAC Facility Emissions*

Turbine		Black Start Engine		370 HP Diesel		1490 HP Diesel		Total
Lbs/yr	Tpy	Lbs/yr	Tpy	Lbs/yr	tpy	Lbs/yr	Tpy	Tpy
424	0.374	50.1	0.025	6.14	0.003	24.7	0.0124	0.41

INCREASE in Total TAC Facility Emissions

CURRENT Facility TAC, tpy	NEW Facility TAC, tpy	INCREASE in TAC, tpy
0.15	0.41	0.26

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Appendix E

Total Facility Emissions for Major Source Threshold Determinations

Criteria Pollutants

Pollutant	Turbine Emissions, lbs/yr		Nat. Gas Engine Emissions, lbs/yr	370 HP Diesel Engine Emissions, lbs/yr	1490 HP Diesel Engine Emissions, lbs/yr	Fuel Dispensing Equipment Emissions, lbs/yr	Max Annual Emissions, lbs/yr
	Year 1	Subsequent Yrs					
NOx	5706.63	5715.78	16.671	790.53	1444.05	0	7967.04
CO	7727.87	7911.47	23.340	302.52	170.66	0	8407.99
VOC	1347.03	1595.90	6.002	15.16	72.20	1039	2728.26
PM10	4410.76	5403.18	0.446	12.22	26.26	0	5442.10
SOx	254.28	311.49	0.026	15.00	60.39	0	386.90

Emission rates for existing equipment taken from their respective files as follows:

Fueling Station – A/N 357338

370 HP Diesel Engine – A/N 301867 (certified engine file A/N 291539)

1490 HP Diesel Engine – A/N 434035 (certified engine file A/N 445112)

Equipment	NOx, g/bhp	CO, g/bhp	VOC, g/bhp	PM10, g/bhp	SOx, g/bhp
370 HP Engine	9.7	3.712	0.186	0.15	0.184
1490 HP Engine	4.4	0.52	0.22	0.08	0.184

Pollutant	370 HP Engine		1490 HP Engine	
	Lbs/hr	Lbs/yr ⁽¹⁾	Lbs/hr	Lbs/yr ⁽¹⁾
NOx	7.91	790.53	14.44	1444.05
CO	3.03	302.52	1.71	170.66
VOC	0.15	15.16	0.72	72.20
PM10	0.12	12.22	0.26	26.26
SOx	0.15	15.00	0.60	60.39

(1) 100 hours/yr each engine

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Appendix F

Estimation of lbs/hr emission rate based on BACT limit

Given:

Exhaust flow = 13.05 mmcf/hr
Mol Wt NO2 = 46
Mol Wt. CO = 28
Mol Wt VOC = 16

Pollutant	BACT Limit	Calculated Mass Emissions (lbs/hr)*	Emission Rates Used in Calculations
NOx	2.5	4.0	4.2
CO	6.0	5.8	6.2
VOC	2.0	1.1	1.28

* Mass Emissions = (ppm X exhaust flow X MW) / 379

The permit requires compliance with the BACT limits, but calculations were based on slightly higher lbs/hr emission rates, therefore conservative.

For PM10, typical AQMD emission factor is 0.0066 lbs/mmbtu. SCE used 4.51 lbs/hr, which is equivalent to:

(4.51 lbs/hr / 429 mmbtu/hr) = 0.0105 lbs/mmbtu

Again, conservative.

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Appendix G

Summary of Application and Processing Fees

The following table summarizes the application submittals and associated processing fees.

A/N	Submittal Date	Equip	Bcat	Fee Sch	Fee
470511	6/12/07	Title V Revision	555009		1394.73
470512	6/12/07	Emergency ICE D7	043901	B	839.83
470513	6/12/07	Gas Turbine	013008	D	2486.10
470515	6/12/07	Emergency ICE D8	043902	B	839.83
Expedited Permit Processing					2082.88
Total					7643.37