John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

4/4/2013

Certified Mail

Yes	TOXIC REVIEW
Yes	PSD
Yes	SYNTHETIC MINOR TO AVOID MAJOR NSR
Yes	CEMS
Yes	MACT/GACT
Yes	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
Yes	MODELING SUBMITTED
Yes	MAJOR GHG
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

William Martin
Oregon Clean Energy Center
20 Park Plaza, Suite 456
Boston, MA 02216

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0448020102
Permit Number: P0110840
Permit Type: Initial Installation
County: Lucas

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install for the referenced facility has been issued for the emissions unit(s) listed in the Authorization section of the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the permit. A public notice will appear in the Ohio Environmental Protection Agency (EPA) Weekly Review and the local newspaper, Toledo Blade. A copy of the public notice and the draft permit are enclosed. This permit can be accessed electronically on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab. Comments will be accepted as a marked-up copy of the draft permit or in narrative format. Any comments must be sent to the following:

Andrew Hall
Permit Review/Development Section
Ohio EPA, DAPC
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, Ohio 43216-1049

and

Toledo Department of Environmental Services
348 South Erie Street
Toledo, OH 43604

Comments and/or a request for a public hearing will be accepted within 30 days of the date the notice is published in the newspaper. You will be notified in writing if a public hearing is scheduled. A decision on issuing a final permit-to-install will be made after consideration of comments received and oral testimony if a public hearing is conducted. Any permit fee that will be due upon issuance of a final Permit-to-Install is indicated in the Authorization section. Please do not submit any payment now. If you have any questions, please contact Toledo Department of Environmental Services at (419)936-3015.

Sincerely,

Michael W. Ahern

Michael W. Ahern, Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 -*Via E-Mail Notification*
TDES; Michigan; Indiana; Canada

PUBLIC NOTICE PUBLIC HEARING
Issuance of Draft Air Pollution Permit-To-Install
Oregon Clean Energy

Issue Date: 04/04/2013
Permit Number: P0110840
Permit Type: Initial Installation
Permit Description: Installation of a natural gas-fired combined cycle combustion turbine power plant.
Facility ID: 0448020102
Facility Location: 816 Lallendorf Rd,
Oregon, OH 43616
Facility Description: Fossil Fuel Electric Power Generation

The Director of the Ohio Environmental Protection Agency, 50 West Town Street, Columbus Ohio has issued a draft action of an air pollution control permit-to-install (PTI) for the facility at the location identified above on the date indicated. This draft permit proposes to allow the installation of a nominal 799-megawatt (MW) combined cycle gas turbine (CCGT) facility.

This facility will generate significant levels of criteria pollutant emissions including NO_x, CO, VOC, H_2SO_4, GHGs and $PM_{10}/PM_{2.5}$. For PSD purposes, the installation of this equipment makes this a major facility. A PSD analysis was required for any increase in emissions of a pollutant exceeding the PSD threshold emissions level, or the significance levels. Non-Attainment New Source Review was not applicable, due to attainment status.

Short term emissions from this facility are based upon worst case operating conditions. The annual emissions are based on pounds per hour emissions at average operating conditions at 8760 hours or synthetically limited through a throughput restriction.

Emissions from the proposed Facility are as follows:

Pollutant	Proposed Emissions (TPY)	PDS Trigger Level (TPY)
NO_x	199	100
CO	378	100
VOC	114	40
PM_{10}	94	15
$PM_{2.5}$	90	10
SO_2	34	40
H_2SO_4	11	7
Pb	0.00008	0.6
GHGs (CO_2e)	2,801,858	100,000

NO_x = Nitrogen Oxide
CO = Carbon Monoxide
VOC = Volatile Organic Compound
PM_{10} = Particulate Matter <10 microns
$PM_{2.5}$ = Particulate Matter <2.5 microns
SO_2 = Sulfur Dioxide
H_2SO_4 = Sufuric Acid
Pb = Lead
GHG (CO_2e) = Greenhouse Gases (CO_2 equivalent)

Based upon the above information, PSD review is required for NO_x, CO, VOC, H_2SO_4, GHGs and PM10/PM2.5. This facility is subject to the applicable attainment provisions of the Ohio Administrative Code (OAC) rules 3745-31-10 through 20. Predicted impacts of CO, PM_{10}, $PM_{2.5}$ and NO_2 were below their

corresponding PSD significant impact increments so no additional modeling by Ohio EPA to demonstrate protection of both the NAAQS and PSD increments was required. Impacts of toxic pollutants subject to the modeling review met the MAGLC. The initial air modeling performed for NO_x, CO, PM_{10} and $PM_{2.5}$ gave the following estimated impacts:

Pollutant	Averaging Period	Modeled Ambient Impact (ug/m)	Rule/Policy Allowed Ambient Impact (ug/m)
NO_x	1-Hour	6.96	--
NO_x	Annual	0.074	25
CO	1-Hour	172.72	1,000
CO	8-Hour	109.80	2,500
PM_{10}	24-Hour	3.37	30
$PM_{2.5}$	24-Hour	0.61	9
$PM_{2.5}$	Annual	0.04	4

A public hearing and information session on the draft air permit is scheduled for May 8, 2013, at the Lake Erie Center, 6200 Bayshore Rd, Oregon, 43616. The public information session will commence at 6:30 p.m. and the hearing will follow immediately to accept comments on the draft permit. A presiding officer will be present and may limit oral testimony to ensure that all parties are heard.

All interested persons are entitled to attend or be represented and give written or oral comments on the draft permit at the hearing. Written comments on the draft permit must be received by the close of the business day on May 13, 2013. Comments received after this date will not be considered to be a part of the official record. Written comments may be submitted at the hearing or sent to: Matt Stanfield, Toledo Div of Environmental Services, 348 S Erie St, Toledo, Ohio, 43602.

Copies of the draft permit application and technical support information may be reviewed at http://epa.ohio.gov/dapc/permitsonline.aspx by entering the permit # and/or copies made by first calling to make an appointment with Matt Stanfield, Toledo Div of Environmental Services at the above address during normal business hours. Ph (419) 936-3015

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Permit Strategy Write-Up

1. Check all that apply:

 X Synthetic Minor Determination **(SO_2)**

 Netting Determination

 X PSD**(CO, NO_x, PM_{10}, $PM_{2.5}$, VOC, H_2SO_4, Greenhouse gases)**

2. Source Description:
This permit is for the installation of a 799 megawatt combined cycle combustion turbine power plant that includes the following emissions units that is proposed to be at 816 Lallendorf Rd, in Oregon, Ohio.

B001 99 mmBtu/hr natural gas fired auxiliary boiler

P001 Combustion turbine generator exhausting through a dedicated Heat Recovery Steam Generator (HRSG). The HRSG will generate steam from the waste heat energy in the exhaust gas. Each HRSG will be equipped with supplemental fuel firing via a duct burner. The duct burner provides additional energy to the HRSG, which produces more steam that can be fed to the steam turbine generator (STG). Steam generated in the HRSG will be expanded through a STG multi-stage, reheat, condensing turbine and associated electric generator to generate additional electricity. This emissions unit will utilize dry low NOx combustors, a catalytic oxidizer, and selective catalytic reduction (SCR). The permittee has requested to install one of the following 2 options for this emissions unit:

Mitsubishi 501GAC turbine:
The maximum heat input to the turbine is reported to be 2,932 mmBtu/hr and the maximum heat input to the duct burner at the heat recovery steam generator is reported to be 300 mmBtu/hr; or

Siemens SCC6-8000H turbine:
The maximum heat input to the turbine is reported to be 2,932 mmBtu/hr and the maximum heat input to the duct burner at the heat recovery steam generator is reported to be 300 mmBtu/hr.

P002 Combustion turbine generator exhausting through a dedicated Heat Recovery Steam Generator (HRSG). The HRSG will generate steam from the waste heat energy in the exhaust gas. Each HRSG will be equipped with supplemental fuel firing via a duct burner. The duct burner provides additional energy to the HRSG, which produces more steam that can be fed to the steam turbine generator (STG). Steam generated in the HRSG will be expanded through a STG multi-stage, reheat, condensing turbine and associated electric generator to generate additional electricity. This emissions unit will utilize dry low NOx combustors, a catalytic oxidizer, and selective catalytic reduction (SCR). The permittee has requested to install one of the following 2 options for this emissions unit:

Mitsubishi 501GAC turbine:
The maximum heat input to the turbine is reported to be 2,932 mmBtu/hr and the

maximumheat input to the duct burner at the heat recovery steam generator is reported to be 300 mmBtu/hr; or

Siemens SCC6-8000H turbine:
The maximum heat input to the turbine is reported to be 2,932 mmBtu/hr and the maximum heat input to the duct burner at the heat recovery steam generator is reported to be 300 mmBtu/hr.

P003 2,250 kW emergency diesel-fired generator
P004 300 hp emergency diesel-fired fire pump
P005 16-Cell Wet Cooling Tower equipped with a high efficiency drift eliminator – 322,000 gpm

3. Facility Emissions and Attainment Status:
This permit will be subject to PSD requirements for CO, NOx, PM2.5, PM10, sulfuric acid mist, VOC, and greenhouse gases, and will be a synthetic minor source for SO_2 emissions. Lucas County is attainment for all criteria pollutants. Table 1 specifies the potential emissions if Mitsubishi turbines are purchased, and Table 2 specifies the potential emissions if Siemens turbines are purchased.

Table 1 – Summary of facility-wide PTE and PSD Applicability for Mitsubishi turbine option

Pollutant	Annual Emissions (tpy)	PSD Major Source Threshold (tpy)	PSD Significant Emission Rate (tpy)[a]	PSD Applies (Yes/No)
NO_x	198.96	100	40	Yes
VOC	113.63	100	40	Yes
CO	378.02	100	100	Yes
PM_{10}	93.97	100	15	Yes
$PM_{2.5}$	89.48	100	10	Yes
SO_2	34.35	100	40	No
H_2SO_4	10.53	100	7	Yes
GHGs	2,801,858	100,000	75,000	Yes
Pb	8.0E-05	10	0.6	No
NH_3	169.07	n/a	n/a	n/a

[a] This facility falls under the stationary source category under OAC rule 3745-31-01(LLL)(2)(a)(i) and 3745-31-01(LLL)(4)(z).

Table 2 – Summary of facility-wide PTE and PSD Applicability for Siemens turbine option

Pollutant	Annual Emissions (tpy)	PSD Major Source Threshold (tpy)	PSD Significant Emission Rate (tpy)[a]	PSD Applies (Yes/No)
NO_x	193.36	100	40	Yes
VOC	58.83	100	40	Yes
CO	154.62	100	100	Yes
PM_{10}	128.17	100	15	Yes
$PM_{2.5}$	123.67	100	10	Yes
SO_2	36.95	100	40	No
H_2SO_4	13.25	100	7	Yes

GHGs	2,884,330	100,000	75,000	Yes
Pb	8.0E-05	10	0.6	No
NH_3	166.44	n/a	n/a	n/a

[a] This facility falls under the stationary source category under OAC rule 3745-31-01(LLL)(2)(a)(i) and 3745-31-01(LLL)(4)(z).

4. Source Emissions:

P001, P002

The combustion turbines may be operated with or without the duct burner in operation. The following emissions are based on manufacturer's data.

Table 3 – Emissions from each turbine/HRSG During Steady State, Full Load Operation – For *Mitsubishi* turbine option[a]

Pollutant	Operating Mode	Emissions (lb/mmBtu)[b]	Emissions (ppmvd)[c]	Emissions (lb/hr)[f]	Emissions (lb/hr)[g]
NO_x	CT Only	n/a	2.0	20.0	22.6 (-8ºF)
	CT with DB[d]	n/a	2.0	20.8	20.8 (59ºF)
VOC	CT Only	n/a	2.0	7.0	7.9 (-8ºF)
	CT with DB	n/a	2.0	7.3	7.3 (59ºF)
CO	CT Only	n/a	2.0	12.2	13.7 (-8ºF)
	CT with DB	n/a	2.0	12.7	12.7 (59ºF)
$PM_{10}/PM_{2.5}$	CT Only	3.84E-03	n/a	10.1	11.3 (-8ºF)
	CT with DB	3.73E-03	n/a	10.1	10.1 (59ºF)
SO_2	CT only	1.4E-03	n/a	3.7	4.2 (-8ºF)
	CT with DB	1.4E-03	n/a	3.9	3.9 (90ºF)
H_2SO_4	CT Only	4.1E-04	n/a	1.1	1.2 (-8ºF)
	CT with DB	4.4E-04	n/a	1.2	1.2 (59ºF)
NH_3	CT Only	n/a	n/a	18.5	20.9 (-8ºF)
	CT with DB	n/a	n/a	19.3	19.3 (90ºF)
CO_2	CT Only	840[e]	n/a	305,607	343,986 (0ºF)
	CT with DB		n/a	317,920	317,960(95ºF)
CO_2e	CT Only	n/a	n/a	305,907	344,187(0ºF)
	CT with DB	n/a		318,404	318,404(90ºF)

a. Facility may exceed these limits during defined periods of startup
b. Emission rates are based on Higher Heating Value (HHV) of natural gas
c. Concentrations are ppmvd at 15% oxygen
d. Duct burner
e. Expressed as lbs CO_2 per megawatt-hr gross energy output on an annual basis.
f. Pound per hour emission rates are at ISO conditions. The annual emissions limitation is based on use of these values for steady state operation.
g. Worst case hourly emission rates reported by the manufacturer. The manufacturer conducted testing under numerous operating conditions, and these values represent the worst case hourly emission limitations.

Table 4
Startup Emissions[c] if Mitsubishi turbine is installed (per turbine)

	Cold Startup		Hot Startup		Warm Startup	
Number of Events per Year	50		250[a]			
Minimum Downtime Preceding Event, hours[b]	60		0		8	
Duration of Event, minutes	150		67		110	
	Emissions Per Event[d]					
	pounds	lbs/hr	Lbs	lbs/hr	lbs	lbs/hr
NOx	108.9	43.56	52.4	46.93	77.5	42.27
CO	2,766.8	1,106.72	646	578.50	1,784.6	973.42
VOC	848.5	339.4	122.1	109.34	575.8	314.07

a. Total hot start and warm start emissions are 250 starts.
b. Cold Start applies to units that are down more than 60 hours. Warm start applies to units that are down between 8 and 60 hours. Hot start applies to units that are down less than 8 hours.
c. The permittee has indicated that hourly emissions occurring during periods of shutdown are less than the allowable hourly emissions rate during steady state operation.
d. Pound per hour emissions as presented are averaged over the duration of the event.

Table 5
Average Hourly Emissions for Start-up and Shutdown Events for each turbine/HRSG – *For Mitsubishi turbine option*

Pollutant	**Allowable emissions during steady state operation (lbs/hr)**	**Cold Startup** annual average[b] (lb/hr) during startup	Self Correcting?	**Hot Startup** annual average[b] (lb/hr) during startup	Self Correcting?	**Warm Startup** annual average[b] (lb/hr) during startup	Self Correcting?
NOx	20.8	1.74	Yes	46.93	No	7.88	Yes
CO	12.7	44.27	No	578.51	No	181.48	No
VOC	7.3	13.58	No	109.34	No	58.56	No

a. Annual average emission rate during start-up was used for determining annual Potential to Emit (PTE). This rate includes the minimum downtime.
b. Self correcting means annual average hourly startup emissions are less than the allowable hourly emission rate during steady state operation.

Table 6
Summary of Allowable Annual Emissions from each turbine/HRSG for *Mitsubishi* turbine option.

NO_x	94.8
VOC	56.0
CO	183.9
PM_{10}/ $PM_{2.5}$	44.2
SO_2	17.1
H_2SO_4	5.26
GHGs	1,394,611
Pb	0.0
NH_3	84.53

The following emissions are based on manufacturer's data.

Table 7 – Emissions from each turbine/HRSG During Steady State, Full Load Operation – For *Siemens* turbine option[a]

Pollutant	Operating Mode	Emissions (lb/mmBtu)[b]	Emissions (ppmv)[c]	Emissions (lb/hr)[f]	Emissions (lb/hr)[g]
NO_x	CT Only	n/a	2.0	20.0	22.0 (-8ºF)
	CT with DB[d]	n/a	2.0	21.0	21.0 (59ºF)
VOC	CT Only	n/a	1.0	3.4	3.9 (-8ºF)
	CT with DB	n/a	1.9	5.2	5.9 (105ºF)
CO	CT Only	n/a	2.0	12.0	13.0 (-8ºF)
	CT with DB	n/a	2.0	13.0	13.0 (59ºF)
$PM_{10}/PM_{2.5}$	CT Only	4.7E-03	n/a	11.8	13.3 (0ºF)
	CT with DB	5.5E-03	n/a	14.0	14.0 (59ºF)
SO_2	CT Only	1.4E-03	n/a	3.9	4.4 (-8ºF)
	CT with DB	1.4E-03	n/a	4.2	4.2 (59ºF)
H_2SO_4	CT Only	0.0006	n/a	1.4	1.6 (-8ºF)
	CT with DB	0.0007	n/a	1.5	1.5 (59ºF)
NH_3	CT Only	n/a	n/a	18.0	20 (-8ºF)
	CT with DB	n/a	n/a	19.0	19 (59ºF)
CO_2	CT Only	833[e]	n/a	301,814	342,359 (0ºF)
	CT with DB		n/a	327,380	327,380(59ºF)
CO_2e	CT Only	n/a	n/a	302,110	342,694 (0ºF)
	CT with DB	n/a		327,819	327,819(59ºF)

a. Facility may exceed these limits during defined periods of startup.
b. Emission rates are based on Higher Heating Value (HHV) of natural gas
c. Concentrations are ppm_v at 15% oxygen
d. Duct burner
e. Expressed as lbs CO_2 per megawatt-hr gross energy output on an annual basis.
f. Pound per hour emission rates are at ISO conditions. The annual emissions limitation is based on use of these values for steady state operation.
g. Worst case hourly emission rates reported by the manufacturer. The manufacturer conducted testing under numerous operating conditions, and these values represent the worst case hourly emission limitations.

Table 8
Emissions and Downtimes Associated with each turbine/HRSG for Start-up[c] Events (*For Siemens turbine option*)

	Cold Startup		Hot Startup		Warm Startup	
Number of Events per Year	50		250[a]			
Minimum Downtime Preceding Event (hours)[b]	64		0		16	
Duration of Event (minutes)	180		82		98	
	Emissions Per Event[d]					
	pounds	lbs/hr	pounds	lbs/hr	pounds	lbs/hr
PM10/PM2.5	56	18.67	22	16.10	26	15.92
NOx	188	62.67	105	76.83	129	78.98
CO	546	182.0	289	211.46	351	214.90
VOC	168	56.0	114	83.41	138	84.49

a. Total hot start and warm start emissions are 250 starts
b. Cold Start applies to units that are down more than 64 hours. Warm start applies to units that are down between 16 and 64 hours. Hot start applies to units that are down less than 16 hours.
c. The permittee has indicated that hourly emissions occurring during periods of shutdown are less than the allowable hourly

emissions rate during steady state operation.
d. Pound per hour emissions as presented are averaged over the duration of the event.

Table 9 - Average Hourly Emissions from each turbine/HRSG for Start-up and Shutdown Events – *For Siemens turbine option*

Pollutant	Cold Startup Emissions annual average[a.] (lbs/hr)	Self Correcting?[b]	Hot Startup annual average[a.] (lbs/hr)	Self Correcting?[b]	Warm Startup annual average[a.] (lbs/hr)	Self Correcting?[b]	Allowable emissions during steady state operation (lbs/hr)
PM10/PM2.5	0.84	Yes	16.1	No	1.47	Yes	14.0
NOx	2.81	Yes	76.83	No	7.32	Yes	21.0
CO	8.15	Yes	211.46	No	19.91	No	13.0
VOC	2.51	Yes	83.41	No	7.83	No	5.2

a. Annual average emission rate during start-up was used for determining annual Potential to Emit (PTE). This rate includes the minimum downtime.
b. Emissions are "self correcting" if annual average hourly startup emissions are less than the allowable hourly emission rate specified for steady state operation.

Table 10
Summary of Allowable Annual Emissions from each turbine/HRSG for *Siemens*turbine option.

NO_x	92.0
VOC	28.6
CO	72.2
PM_{10}/ $PM_{2.5}$	61.3
SO_2	18.4
H_2SO_4	6.57
GHGs	1,435,847
Pb	0.0
NH_3	83.22

B001 – 99 mmBtu/hr natural gas fired boiler

Table 11
B001 Emissions, Restricted to 2,000 hours of operation per year

Pollutant	Technology Limit	pound/hr	tons/yr	Control Technology
$PM_{10}/PM_{2.5}$	0.008 lb/mmBtu	0.79	0.79	low sulfur fuel
SO_2	1.4E-03 lb/mmBtu	0.14	0.14	low sulfur fuel
H_2SO_4	1.1E-04 lb/mmBtu	0.011	0.011	low sulfur fuel
NO_x	0.020 lb/mmBtu	1.98	1.98	low NOx burners and flue gas recirculation
CO	0.055 lb/mmBtu	5.45	5.45	good combustion controls

VOC	0.006 lb/mmBtu	0.59	0.59	good combustion controls
CO_2e	n/a	n/a	11,671	use of natural gas, good combustion controls

The CO, NO_x, $PM_{10}/PM_{2.5}$, and VOC lb/mmBtu limitations are based on manufacturer's data.

The SO_2 lb/mmBtu limitation is based on 0.5 grains sulfur per 100 scf of natural gas
0.5 gr S/100 scf(64.07 lb SO_2/lb-mole) / (32.06 lb S/lb-mole)(lb/7000 gr) (scf/1020 Btu)(10^6 Btu/mmBtu)
= 1.4E-03 lb SO_2/mmBtu

The lb H_2SO_4/mmBtu limitation is based on 5% of the SO_2 being converted to SO_3 and then being converted to H_2SO_4 in the presence of water vapor.

1.4E-03 lb SO_2/mmBtu(0.05)(98 lb H_2SO_4/lb-mole)(lb-mole/64 lb SO_2) = 1.1E-04 lb H_2SO_4/mmBtu

The lb/hr limitations are based on lb/mmBtu x 99 mmBtu/hr.

Annual limits for CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, H_2SO_4 and VOC are based on lb/hr limits multiplied by 2,000 hrs/yr and divided by 2,000 lbs/ton.

CO_2e emissions limitations are based on the AP-42 emission factors from Table 1.4-2 dated 7/98 for CO_2 (120,000 lb/mmscf), N_2O (0.64 lb/mmscf), and CH_4 (2.3 lb/mmscf), multiplied by the global warming potential constants from Table A-1 to Subpart A of 40 CFR 98 for CO_2 (1), N_2O (310), and CH_4 (21).

$$\left(99\frac{mmBtu}{hr}\right)x\left[\left(120{,}000\frac{lb}{mmscf}x1\right)+\left(0.64\frac{lb\ x\ 310}{mmscf}\right)+\left(2.3\frac{lb\ x\ 21}{mmscf}\right)\right]x\left(\frac{scf}{1020Btu}\right)\left(2{,}000\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000lb}\right)$$
$$= 11{,}671\ tonsCO2e/yr$$

P003 - 2,250 kW emergency diesel-fired generator
Restricted to 500 hours of operation per year

Table 12
P003 – 2,250 kW Generator Emissions

Pollutant	Technology Limit	pound/hr	tons/yr	Control Technology
$PM_{10}/PM_{2.5}$	0.20 g/kW-hr	0.99	0.25	state of the art combustion design
SO_2	15 ppm S	0.03	0.008	low sulfur fuel
H_2SO_4	1.32E-04 lb/mmBtu	6.5E-04	1.6E-04	low sulfur fuel
NO_x	5.61 g/kW-hr	27.8	6.95	state of the art combustion design
CO	3.5 g/kW-hr	17.35	4.34	state of the art combustion design
VOC	0.79 g/kW-hr	3.93	0.98	state of the art

				combustion design
Pb		0.0003	7.0E-05	
CO_2e	n/a	3,512	878	state of the art combustion design

P004 - 300 hp emergency diesel-fired fire pump
Restricted to 500 hours of operation per year

Table 13
P004 Emissions

Pollutant	Technology Limit	pound/hr	tons/yr	Control Technology
$PM_{10}/PM_{2.5}$	0.20 g/kW-hr	0.10	0.025	state of the art combustion design
SO_2	15 ppm S	0.003	8.0E-04	low sulfur fuel
H_2SO_4	1.32E-04 g/kW-hr	6.5E-05	1.6E-05	low sulfur fuel
NO_x	3.5 g/kW-hr	1.7	0.43	state of the art combustion design
CO	3.5 g/kW-hr	1.7	0.43	state of the art combustion design
VOC	0.50 g/kW-hr	0.25	0.06	state of the art combustion design
Pb		3.0E-05	7.0E-06	
CO_2e	n/a	347.3	87	state of the art combustion design

P005 – 16 cell wet mechanical draft cooling tower

Table 14
P005 Emissions

Pollutant	Technology Limit	pound/hr	tons/yr	Control Technology
PM_{10}	0.0005% drift	1.03	4.5	high efficiency drift eliminator
$PM_{2.5}$	0.0005% drift	3.4E-03	0.015	high efficiency drift eliminator

PM_{10} = Q x (TDS ppm) x (Drift/100) x (Density) x (60 min/hr) x PMfraction

where:
Q = maximum cooling tower circulating water flow rate (322,000 gallons/min)
TDS = the maximum total dissolved solids concentration in the circulating water 2,030.5 mg/L (2,030.5 ppm by weight);
Drift = the maximum drift loss, 0.0005%; and
Density = Density of water, 8.34 lb/gal

The PM_{10} and $PM_{2.5}$ fractions were estimated by the permittee in the below calculation.

Procedure Citation: AWMA Abstract No 216, Session No. AM-1b, Orlando, 2001.

Cooling Tower Design Data:

Cooling Tower Recirculating Water Total Dissolved Solids:	2030.5	ppmw
Cooling Tower PM Density (assuming NaCl):	2.2	g/cm3

Particle Size Distribution:

Droplet Diameter (µm)	Droplet Volume (m3)	Droplet Mass (g)	Particle Mass (g)	Particle Volume (m3)	Particle Diameter (µm)	Mass Fraction (%)
10	5.24E-16	5.24E-10	1.06E-12	4.83E-19	0.974	0.000
20	4.19E-15	4.19E-09	8.51E-12	3.87E-18	1.947	0.196
30	1.41E-14	1.41E-08	2.87E-11	1.30E-17	2.921	0.226
40	3.35E-14	3.35E-08	6.80E-11	3.09E-17	3.895	0.514
50	6.54E-14	6.54E-08	1.33E-10	6.04E-17	4.868	1.816
60	1.13E-13	1.13E-07	2.30E-10	1.04E-16	5.842	5.702
70	1.80E-13	1.80E-07	3.65E-10	1.66E-16	6.815	21.348
90	3.82E-13	3.82E-07	7.75E-10	3.52E-16	8.763	49.812
110	6.97E-13	6.97E-07	1.42E-09	6.43E-16	10.710	70.509
130	1.15E-12	1.15E-06	2.34E-09	1.06E-15	12.657	82.023
150	1.77E-12	1.77E-06	3.59E-09	1.63E-15	14.604	88.012
180	3.05E-12	3.05E-06	6.20E-09	2.82E-15	17.525	91.032
210	4.85E-12	4.85E-06	9.85E-09	4.48E-15	20.446	92.468
240	7.24E-12	7.24E-06	1.47E-08	6.68E-15	23.367	94.091
270	1.03E-11	1.03E-05	2.09E-08	9.51E-15	26.288	94.689
300	1.41E-11	1.41E-05	2.87E-08	1.30E-14	29.209	96.288
350	2.24E-11	2.24E-05	4.56E-08	2.07E-14	34.077	97.011
400	3.35E-11	3.35E-05	6.80E-08	3.09E-14	38.945	98.340
450	4.77E-11	4.77E-05	9.69E-08	4.40E-14	43.813	99.071
500	6.54E-11	6.54E-05	1.33E-07	6.04E-14	48.681	99.071
600	1.13E-10	1.13E-04	2.30E-07	1.04E-13	58.418	100.000

Linear Interpolation for PM10:

Droplet Diameter (µm)	Droplet Volume (m3)	Droplet Mass (g)	Particle Mass (g)	Particle Volume (m3)	Particle Diameter (µm)	Mass Fraction (%)
90	3.82E-13	3.82E-07	7.75E-10	3.52E-16	8.763	49.812
110	6.97E-13	6.97E-07	1.42E-09	6.43E-16	10.710	70.509
					10.000	62.963

Mass Fraction of Cooling Tower PM ≤ PM10: **0.62963**

Linear Interpolation for PM2.5:

Droplet Diameter (μm)	Droplet Volume (m3)	Droplet Mass (g)	Particle Mass (g)	Particle Volume (m3)	Particle Diameter (μm)	Mass Fraction (%)
20	4.19E-15	4.19E-09	8.51E-12	3.87E-18	1.947	0.196
30	1.41E-14	1.41E-08	2.87E-11	1.30E-17	2.921	0.226
					2.500	0.213

Mass Fraction of Cooling Tower PM ≤ PM2.5: **0.00213**

PMfraction = decimal fraction of PM10/PM2.5 = 0.63 for PM_{10}, 0.0021 for $PM_{2.5}$

PM_{10} = 322,000 gal/min(2030.5/1E06)(0.0005/100)(8.34 lb/gal)(60 min/hr)(0.63) = 1.03 lbs/hr
PM_{10} = 1.03 lbs/hr(8760 hrs/yr)(ton/2000 lbs) = 4.5 tons/yr

$PM_{2.5}$ = 322,000 gal/min(2030.5/1E06)(0.0005/100)(8.34 lb/gal)(60 min/hr)(0.0021) = 3.4E-03 lb/hr
$PM_{2.5}$ = 3.4E-03 lb/hr(8760 hrs/yr)(ton/2000 lbs) = 0.015 ton/yr

Based on previous guidance from Ohio EPA Central Office, a VE BAT/BACT should be set at 10% opacity or less.

The allowable PE limitation specified by OAC rule 3745-17-11(B) is less stringent than the calculated allowable PE limitation taking into account BACT maximum drift loss of 0.0005%.

5. Synthetic minor limitation for SO2 emissions

The permittee has requested facility-wide allowable SO2 emissions of less than 40 tons per year to avoid PSD requirements for SO2. Ohio EPA is restricted to setting only 1 BAT limitation under ORC 3704.03(T), and limitations specified under this rule cannot be set as lb/hr limits for P001 and P002. As demonstrated by the following calculation, facility-wide potential SO2 emissions could exceed 40 tons/yr SO2 without restrictions on operation.

P001/P002 unrestricted PTE for SO2
Maximum sulfur content = 0.5 grains per 100 standard cubic feet of natural gas burned
From PTI application, maximum heat input to turbine = 2,932 mmBtu/hr
From PTI application, maximum heat input to duct burner is 300 mmBtu/hr
2932 mmBtu/hr + 300 mmBtu/hr = 3,232 mmBtu/hr

As calculated for B001 above, the maximum SO_2 emission rate was calculated to be 1.4E-03 lb/mmBtu based on a maximum sulfur content in natural gas of 0.5 gr/100 scf.

3,232 mmBtu/hr(1.4E-03 lb/mmBtu) = 4.5248 lb/hr

4.5248 lb/hr(8760 hrs/yr)(ton/2000 lbs) = 19.81 tons/yr (from each turbine/duct burner)

Potential emissions from the remaining emissions units are listed below.

Emissions Unit	without restricted SO_2, tons/yr at B001, P001, P002, P003, and P004
P001	19.81
P002	19.81
B001	0.61 (without 2,000 hr/yr restriction)
P003	0.28 (without 500 hr/yr restriction)
P004	0.025 (without 500 hr/yr restriction)
P005	0
Total	40.5 tons

The permittee has requested the following restrictions that will serve to restrict potential facility-wide SO2 emissions: restrict B001 to 2,000 hrs/yr of operation; restrict P001 and P002 to 17.1 tons/yr each if Mitsubishi turbines are installed, and has requested that annual SO_2 emissions be restricted to 18.4 tons/yr each if Siemens turbines are installed; and restrict P003 and P004 to 500 hrs/yr of operation.

A combined federally enforceable emissions limitation for P001 and P002 of 34.2 tons SO2 per rolling, 12-month period will be established under OAC rule 3745-31-05(D) if Mitsubishi turbines are installed and 36.8 tons SO_2 per rolling, 12-month period if Siemens turbines are installed. To demonstrate compliance with the annual emissions limitation, a restriction on the fuel usage is required. The permittee will be required to track the natural gas usage to demonstrate compliance with the emissions limitation.

6. Greenhouse gases
   Greenhouse gas emissions from the combustion turbines will be minimized by: utilizing natural gas as fuel; if Mitsubishi turbines are purchased, the maximum design net plant heat rate will not exceed 7,280 Btu/kW-hr and if Siemens turbines are purchased, the design net plant heat rate will not exceed 7,227 Btu/kW-hr; circuit breakers will be enclosed pressure SF_6 circuit breakers with leak detection to minimize SF_6 emissions.

7. Modeling (PSD)
   The permittee submitted dispersion modeling results with the permit application for PSD. This modeling package is being reviewed by Ohio EPA Central Office.

8. Air Toxics
   The permittee modeled Air Toxics emissions from the combustion turbines. Per Engineering Guide #70, natural gas-fired boilers, process heaters, and emergency diesel generators are not required to be modeled. Therefore, only the combustion turbines are required to be modeled.

   Below is a summary of the Air Toxics modeling results for H_2SO_4, ammonia, formaldehyde, toluene, and

xylenes.

TLV mg/m^3 = (TLV in ppm)(MW)/24.45 at 25 °C and 760 mmHg

H_2SO_4
MW = 98.079
TWA = 0.2 mg/m^3
MAGLC = 0.2 mg/m^3/42(1,000 µg/mg) = 4.76 µg/m^3

Ammonia
MW = 17.031
TWA = 25 ppm
TLV mg/m^3 = 25(17.031)/24.45 = 17.41 mg/m^3
MAGLC = 17.41 mg/m^3/42(1,000 µg/mg) = 414.5 µg/m^3

Formaldehyde
MW = 30.03
STEL = 0.3 ppm
TWA = 0.3 ppm(0.737) = 0.2211 ppm
TLV mg/m^3 = 0.2211(30.03)/24.45 = 0.27 mg/m^3
MAGLC = 0.27 mg/m^3/42(1,000 µg/mg) = 6.4 µg/m^3

Toluene
MW = 92.14
TWA = 20 ppm
TLV mg/m^3 = 20(92.14)/24.45 = 75.37 mg/m^3
MAGLC = 75.37 mg/m^3/42(1,000 µg/mg) = 1,794 µg/m^3

Xylenes
MW = 106.16
TWA = 100 ppm
TLV mg/m^3 = 100(106.16)/24.45 = 434.2 mg/m^3
MAGLC = 434.2 mg/m^3/42(1,000 µg/mg) = 10,338 µg/m^3

The following emissions rates were modeled.

Air Toxic	Mitsubishi Operating Condition	lb/hr	g/s	Siemens Operating Condition	lb/hr	g/s
H_2SO_4	17	1.2	0.15	1	0.7	0.09
Ammonia	17	19.3	2.43	18	19	2.39
Formaldehyde	4	0.324	0.04	12	0.300	0.04
Toluene	4	0.383	0.05	1	0.381	0.05
Xylenes	4	0.189	0.02	1	0.187	0.02

Air Toxic	Mitsubishi	Siemens

	Maximum Predicted Ground-Level Concentration µg/m³	MAGLC µg/m³	% of MAGLC	Maximum Predicted Ground-Level Concentration µg/m³	MAGLC µg/m³	% of MAGLC
H_2SO_4	0.329	4.76	6.9	0.169	4.76	3.6
Ammonia	5.295	414.5	1.3	5.081	414.5	1.2
Formaldehyde	0.08	6.4	1.2	0.078	6.4	1.2
Toluene	0.094	1,794	5.2E-03	0.092	1,794	5.1E-03
Xylenes	0.046	10,338	4.4E-04	0.045	10,338	4.4E-04

9. Conclusion:
   It is recommended that the permit be issued first as a draft permit. It is recommended that a public hearing be scheduled for this permit. This permit is subject to PSD requirements for CO, NO_x, PM_{10}, $PM_{2.5}$, VOC, H_2SO_4, and greenhouse gases. The permit results in a synthetic minor increase in SO_2 emissions.

10. Please provide additional notes or comments as necessary:

Applicable Rules/Regulations

OAC rule 3745-17-07(A)(1)	visible PE from any stack shall not exceed 20% opacity as a 6-minute average (less stringent than BAT)
OAC rule 3745-17-10(B)(1)	B001 - 0.020 lb PE/mmBtu – less stringent than BAT
OAC rule 3745-17-11(B)(4)	P001, P002: 0.040 lb PE/mmBtu - less stringent than BAT
OAC rule 3745-17-11(B)(5)(a)	P003, P004: 0.310 lb PE/mmBtu – less stringent than BAT
OAC rule 3745-18-06(A)	exemption from 3745-18-06(F) SO_2 standard of 0.5 lb/mmBtu for turbines when burning natural gas
OAC rule 3745-31-05(D)	Federally enforceable restrictions on potential to emit for SO_2
OAC rule 3745-31-11 through 20	PSD requirements
OAC rule 3745-103	P001 and P002 are affected units under the Acid Rain program per 3745-103-02(a)(3). Acid Rain permitting is covered under a separate Acid Rain operating permit. Per OAC rule 3745-103-03(A)(2)(b), an Acid Rain permit application is required to be submitted at least 24 months prior to commencing operation.
OAC rule 3745-110-03(J)(16,19)	Exemption from NOx RACT requirements, since annual emissions are restricted to less than 25 tons/yr NOx, and the emissions unit is subject to a BACT emission limitation for NOx
40 CFR Part 60, Subpart Dc	B001: no emission standard is set for natural gas, but does require initial notifications per 60.48c(a) and fuel usage recordkeeping per 60.48c(g). Heat recovery steam generators and duct burners at P001 & P002 are exempt from this rule per 60.40c(e) due to being regulated under Subpart KKKK.
40 CFR Part 60, Subpart IIII	P003: 6.4 g/kW-hr NMHC+NOx; 3.5 g/kW-hr CO; 0.20 g/kW-hr PM; 20% opacity during acceleration mode, 15% opacity during lugging mode, 50% opacity during peaks in acceleration or lugging mode – opacity measured per 40 CFR Part 86, Subpart I. P004: 4.0 g/kW-hr (3.0 g/hp-hr) NMHC + NOx; 0.20 g/kW-hr (0.15 g/hp-

	hr) PM – At this time, the above limits apply, but if newer emission standards are added that apply to the model year of engine installed, this limit may need to be revised.
40 CFR Part 60, Subpart KKKK	15 ppm NO_x at 15% O_2 or 54 ng/J of useful output (0.43 lb/MWh) - The HRSGs will not be operated independently of the turbines. SO_2 emissions are restricted to 110 ng/J (0.90 lbs/MWhr) gross output or 26 ng/J (0.060 lb/mmBtu) heat input. The permittee has elected not to monitor sulfur content of fuel as allowed under 60.4365(a). The NSPS KKKK limitations for NOx and SO2 are less stringent than the BACT limits for these pollutants. The limitations specified by this rule are less stringent than BAT. On 8/29/2012, EPA published proposed changes to this rule, however, these proposed changes have not been finalized yet.
40 CFR Part 63, Subpart Q	Not applicable – this facility is not a major HAP source
40 CFR Part 63, Subpart YYYY	Not applicable - this facility is not a major HAP source
40 CFR Part 63, Subpart ZZZZ	P003, P004: P003 & P004 are affected sources under this rule, however, per 63.6590(c)(1), the permittee must meet the requirements under 40 CFR Part 60, Subpart IIII, and no other requirements under 40 CFR Part 63 apply.
40 CFR Part 63, Subpart JJJJJJ	B001 and HRSGs/duct burners are exempt per 63.11195(e) due to combusting only natural gas.

Note that the summary of permit allowable emissions listed below lists the worst case emissions per pollutant for the Mitsubishi and Siemens turbines options. The Mitsubishi turbine option results in the worst case CO, NOx, VOC, and ammonia emissions. The Siemens turbine option results in the worst case PM_{10}, $PM_{2.5}$, SO_2, greenhouse gas, and H_2SO_4 emissions.

11. Total Permit Allowable Emissions Summary (for informational purposes only):

Pollutant	Tons Per Year
CO	378.02
NOx	198.96
PM10	128.17
$PM_{2.5}$	123.67
SO_2	36.95
VOC	113.63
H_2SO_4	13.25
GHG	2,884,330
Ammonia	169.07

STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT UNDER THE PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS FOR OREGON CLEAN ENERGY, LLC OREGON, OHIO PERMIT NUMBER P0110840

The Clean Air Act and regulations promulgated thereunder require that major air pollution sources undergoing construction or modification comply with all applicable Prevention of Significant Deterioration (PSD) provisions and nonattainment area New Source Review requirements. The federal PSD rules govern emission increases in attainment areas for major sources, which are sources with the potential to emit 250 tons per year or more of any pollutant regulated under the Clean Air Act, or 100 tons per year or more if the source is included in one of 28 source categories. In nonattainment areas, the definition of major source is one having at least 100 tons per year potential emissions. A major modification is one resulting in a contemporaneous increase in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within a five-year period are considered to be contemporaneous. In addition, Ohio now has incorporated the PSD and NSR requirements by rule under OAC 3745-31.

Both PSD and nonattainment rules require that certain analyses be performed before a facility can obtain a permit authorizing construction of a new source or major modification to a major source. The principal requirements of the PSD regulations are:

1. Best Available Control Technology (BACT) review - A detailed engineering review must be performed to ensure that BACT is being installed for the pollutants for which the new source is a major source.

2. Ambient Air Quality Review - An analysis must be completed to ensure the continued maintenance of the National Ambient Air Quality Standards (NAAQS) and that any increases in ambient air pollutant concentrations do not exceed the incremental values set pursuant to the Clean Air Act.

For nonattainment areas, the requirements are:

1. Lowest Achievable Emissions Rate (LAER) - New major sources must install controls that represent the lowest emission levels (highest control efficiency) that has been achieved in practice.

2. The emissions from the new major source must be offset by a reduction of existing emissions of the same pollutant by at least the same amount, and a demonstration must be made that the resulting air quality shows a net air quality benefit. This is more completely described in the Emission Offset Interpretative Ruling as found in Appendix S of 40 CFR Part 51.

3. The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing State Implementation Plan (SIP) or are on an approved schedule resulting in full compliance with the SIP.

For rural ozone nonattainment areas, the requirements are:

1. LAER - New major sources must install controls that represent the lowest emissions levels (highest control efficiency) that has been achieved in practice.

2. The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing SIP or are on an approved schedule resulting in full compliance with the SIP.

Finally, New Source Performance Standards (NSPS), SIP emission standards and public participation requirements must be followed in all cases.

SITE DESCRIPTION

The facility is in Oregon, Ohio, which is located in Lucas County. This area is classified as attainment or unclassifiable for all of the criteria pollutants, particulate matter less than 10 microns, particulate matter less than 2.5 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

FACILITY DESCRIPTION

Oregon Clean Energy, LLC (OCE) is proposing to construct the Oregon Clean Energy Center, a nominal 799-megawatt (MW) combined cycle gas turbine (CCGT) facility (hereinafter "Facility").

The facility will be located within an approximately 30-acre parcel of land located entirely within Lucas County in the City of Oregon, Ohio. The site is industrially zoned within the Cedar Point Development Park, a designated Foreign Trade Zone. Its setting is within a mixed industrial, commercial and agricultural area that is located east of North Lallendorf Road, west of farmland located at 4632 Cedar Point Road, north of the Norfolk Southern Railroad, and south of the John Gradel and Sons' Farms.

PROJECT DESCRIPTION

OCE is proposing to construct the Oregon Clean Energy Center, a nominal 799-megawatt (MW) (unfired International Standards Organization [ISO] conditions) CCGT facility. The facility will utilize combined cycle combustion turbine technology in a 2 x 2 x 1 configuration. OCE is requesting a permit-to-install (PTI) that will allow two optional plant configurations. The turbines being considered for the Facility are:

- Option 1 -- Two Mitsubishi M501 GAC units; or
- Option 2 – Two Siemens SGT-8000H units

The permit application is being provided in two submittals to differentiate the two options. This submittal, Volume I, presents information for Option 1, the Mitsubishi engines. Volume II reflects the same information for the Siemens engines.

The facility will include the following major and ancillary equipment:

- Two Combustion Turbines Generators (CTGs);
- Two heat recovery steam generators (HRSGs) with supplemental duct firing;
- One steam turbine generator (STG);
- One mechanical draft wet cooling tower;
- One 2,250-kilowatt (kW) emergency diesel generator;
- One natural gas-fired, 99-million British thermal units (MMBtu) steam production auxiliary boiler; and

- One 300-horsepower (hp) fire pump.

Combustion Turbine Generators

Thermal energy will be produced in the two CTGs through the combustion of natural gas as the sole fuel. Each CTG is capable of running independently of the other. The thermal energy is converted to mechanical energy in the CTG turbine that drives the CTG compressor and electric generator. The maximum heat input rate of each CTG is 2,932 MMBtu per hour (MMBtu/hr) (higher heating value [HHV]) and occurs at 100 percent load, 0 degrees Fahrenheit [°F]), relative humidity of 60 percent and an atmospheric pressure of 14.38 pounds per square inch absolute (psia).

Heat Recovery Steam Generators and Duct Burners

In combined cycle configuration, each CTG will exhaust through a dedicated HRSG to generate steam from the waste heat energy in the exhaust gas. Each HRSG will be equipped with supplemental fuel firing via a duct burner. The duct burners provide additional thermal energy to the HRSG, to provide more steam to the STG during periods of high demand. The duct burners will be natural gas-fired and each will have a maximum input capacity of 300 MMBtu/hr (HHV), although the duct burners will not always operate at maximum capacity. The use of the duct burners will vary based upon different temperature and operating conditions.

Steam Turbine Generator

Steam generated in the HRSGs will be expanded through a multi-stage, reheat-capable, condensing steam turbine. Rotational power in the steam turbine is converted to electric power via the steam turbine generator.

Cooling Tower

The steam condenser cooling system will utilize a 16-cell mechanical draft wet cooling tower. In the cooling tower, circulating water is distributed among multiple cells of the cooling tower, where it cascades downward through each cell and then collects in the cooling tower basin. The mechanical draft cooling tower employs electric motor-driven fans to move air through each cooling tower cell. The cascading circulating water is partially evaporated and the evaporated water is dispersed to the atmosphere as part of the moist air leaving each cooling tower cell. The circulating water is cooled primarily through its partial evaporation. The cooling tower will be equipped with a high-efficiency drift eliminator with a drift rate of 0.0005 percent.

Auxiliary Boiler

The auxiliary boiler will be natural gas-fired and operate as needed to keep the HRSG warm during periods of turbine shutdown and provide sealing steam to the steam turbine during warm and hot starts. The auxiliary boiler will have a maximum input capacity of 99 MMBtu/hr, and will be limited to 2,000 hours of operation per year.

Emergency Diesel Generator

The Project will have a 2,250 kW (3016.6 hp) emergency diesel generator to provide on-site emergency power capabilities independent of the utility grid. The emergency generator will fire ultra-low sulfur (0.0015%) diesel (ULSD) fuel and will typically only operate for testing and to maintain operational readiness in the event of an emergency. Routine operation of the generator will be limited to a maximum of 500 operating hours per year.

Emergency Diesel Fire Pump

The Project will have a 300-hp (223.6 kW) emergency fire pump to provide on-site fire fighting capabilities independent of the utility grid. The emergency fire pump will fire ULSD fuel and will typically only operate for testing and to maintain operational readiness in the event of an emergency. Similar to the emergency generator, it will be limited to a maximum of 500 operating hours per year.

NEW SOURCE REVIEW (NSR)/PSD APPLICABILITY

This facility will generate significant levels of criteria pollutant emissions including NOx, CO, VOC, H_2SO_4, GHGs and $PM_{10}/PM_{2.5}$. For PSD purposes, the installation of this facility makes OCE a major facility. A PSD analysis was required for any increase in emissions of a pollutant exceeding the PSD threshold emissions level, or the significance levels. Non-Attainment New Source Review was not applicable, due to attainment status.

OCE is subject to MACT. The facility is subject to 40 CFR Part 63 Subpart ZZZZ.

Short term emissions from this facility are based upon worst case operating conditions. The annual emissions are based on pounds per hour emissions at average operating conditions at 8760 hours or synthetically limited through a throughput restriction.

Emissions from the proposed Facility are as follows:

Pollutant	Proposed Emissions (TPY)	PDS Trigger Level (TPY)
NOx	199	100
CO	378	100
VOC	114	40
PM_{10}	94	15
$PM_{2.5}$	90	10
SO_2	34	40
H_2SO_4	11	7
Lead (Pb)	0.00008	0.6
GHGs (CO2e)	2,801,858	100,000

NO_X = Nitrogen Oxide
CO = Carbon MoNOXide
VOC = Volatile Organic Compound
PM_{10}= Particulate Matter <10 microns
$PM_{2.5}$ = Particulate Matter <2.5 microns
SO_2= Sulfur Dioxide
H_2SO_4 = Sufuric Acid
GHG (CO2e) = Greenhouse Gases (CO2 equivalent)

Based upon the above information, PSD review is required for NOx, CO, VOC, H_2SO_4, GHGs and $PM_{10}/PM_{2.5}$.

BACT REVIEW

As part of the application for any source regulated under the PSD requirements, an analysis must be conducted that demonstrates that Best Available Control Technology will be employed by the source. In this specific case, the BACT analysis was conducted for NOx, CO, VOC, H_2SO_4, GHGs and $PM_{10}/PM_{2.5}$. Each pollutant will be reviewed separately.

The application used a "top-down" approach to determine an appropriate level of control.

The basic steps to be followed are:

- Identify all available potential control options;
- Eliminate technically infeasible options;
- Rank remaining technologies by control effectiveness;
- Evaluate the feasible controls by performance and cost analysis; and
- Select BACT

BACT Analysis for NOx

NOx is formed during the combustion of fuel and is generally classified as either thermal NOx or fuel-related NOx. Thermal NOx results when atmospheric nitrogen is oxidized at high temperatures to produce nitrogen oxide (NO), NOx, and other oxides of nitrogen. The major factors influencing the formation of thermal NOx are temperature, concentrations of oxygen in the inlet air and residence time within the combustion zone. Fuel-related NOx is formed from the oxidation of chemically bound nitrogen in the fuel. Fuel-related NOx is generally minimal for natural gas combustion. As such, NOx formation from combustion of natural gas is due mostly to thermal NOx formation.

Reduction in NOx formation can be achieved using combustion controls and/or flue gas treatment. Available combustion controls include water or steam injection and low emission combustors. Most gas turbines are designed to operate at a nearly stoichiometric ratio of fuel in the combustion zone, with additional air introduced downstream. Fuel-to-air ratios below stoichiometric are referred to as fuel-lean mixtures. This type of fuel mixture limits the formation of NOx because there is lower flame temperature with a lean fuel mixture. Using this concept, lean combustors are designed to operate below the stoichiometric ratio, thereby reducing the thermal NOx formation within the combustion chamber.

The turbines proposed for the facility utilize a lean fuel technology. In addition, exhaust gases from the turbine (and duct burner) will exhaust through a selective catalytic reduction system (SCR) to further reduce NOx emissions to 2.0 ppm_v at 15 percent O_2, with and without duct burning.
The facility will also utilize an auxiliary boiler, emergency diesel fire pump and emergency diesel generators. The auxiliary boiler will utilize flue gas recirculation and low-NOx burner technology, two combustion optimization techniques that also reduce the formation of NOx. Using these enhanced combustion techniques, emissions from the auxiliary boiler will be limited to 0.02 lb/MMBtu.

The emergency diesel fire pump and the diesel black-start engines will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII).

The following discussion demonstrates that the proposed NOx emission rates for the combined cycle turbines and ancillary equipment are considered BACT.

Identification of Control Options

SCR is an add-on NOx control technology that is placed in the exhaust stream following the gas turbine/duct burner. SCR involves the injection of ammonia into the exhaust gas upstream of a catalyst bed. On the catalyst surface, NH_3 reacts with the NOx contained within the flue gas to form nitrogen gas and water in accordance with the following chemical reactions:

$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O$
$8NH_3 + 6NOX \rightarrow 7N_2 + 12H_2O$

The catalyst's active surface is usually a noble metal (platinum), base metal (titanium or vanadium) or a zeolite-based material. Metal-based catalysts are usually applied as a coating over a metal or ceramic substrate. Zeolite catalysts are typically a homogeneous material that forms both the active surface and the substrate. NH_3 is fed and mixed into the combustion gas upstream of the catalyst bed in greater than stoichiometric amounts to achieve maximum conversion of NOx. Excess NH_3 which is not reacted in the catalyst bed is subsequently emitted through the stack; this is called "ammonia slip."

An important factor that affects the performance of an SCR system is the operating temperature. The optimal temperature range for standard base metal catalysts is between 400°F and 800°F. Because the optimal temperature is below the CTG exhaust temperature but above the stack exhaust temperature, the catalyst needs to be located within the HRSG.

An undesirable side effect of the use of SCR systems is the potential for formation of ammonium bisulfate and ammonium sulfate, referred to as ammonium salts. These salts are reaction products of SO_3 and NH_3. Ammonium salts are corrosive and can stick to the heat exchanger surfaces, duct work or the stack at low temperatures. In addition, ammonium salts are considered $PM_{10}/PM_{2.5}$, and, therefore, increase the emissions of these criteria pollutants. Use of low sulfur fuels such as natural gas minimizes the formation of SO_3 and the subsequent formation of these ammonium salts.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified several natural gas-fired combined cycle combustion turbine facilities. The lowest permitted NOx limit for a natural gas-fired combined cycle turbine with duct burning was 2.0 ppm_v at 15 percent O_2. All of these facilities use SCR systems in combination with combustion optimization technology such as low-NOx burners. It is our understanding that several of these facilities have demonstrated compliance with the 2.0 ppm_v emission limits under primary operating modes. Some of these facilities have permit limits above 2.0 ppm_v to accommodate alternative operating modes such as duct burning.

In general, BACT determinations have focused on the level that can be achieved in the primary operating mode (typically gas-fired 100 percent load), with NOx levels being set for alternative modes (duct burning, partial load, etc.) at the levels that result from application of the same degree of control used to achieve BACT in the primary mode.

Auxiliary Boiler

The RBLC and recent air permit search for natural gas-fired boilers between 10 and 100 MMBtu/hr in size identified close to 100 installations. NOx emission limits for these boilers widely range from approximately 0.0035 lb/MMBtu to 0.37 lb/MMBtu. The facilities with emission limits less than 0.011 lb/MMBtu are generally industrial/commercial boilers less than 30 MMBtu/hr that are operated continuously to support industrial processes or other operations; these were not considered relevant to the facility. Beyond these facilities, other determinations generally proposed NOx emission limits greater than 0.03 lb/MMBtu. The most recent determination for an auxiliary boiler in Ohio proposed a NOx emission limit of 0.035 lb/MMBtu.

BACT Determinations

Combustion Turbine Generators and Duct Burners

OCE is proposing a NOx emission limit of 2.0 ppm_v at 15 percent O_2 (with and without duct burning) as BACT for the proposed Facility. This level of emissions will be achieved through the application of dry low-NO_x (DLN) burners in combination with SCR. This emission level is consistent with the most stringent level of control found during the RBLC search and has been demonstrated in practice.

BACT determination is same for both Mitsubishi and Siemens turbines.

Auxiliary Boiler

OCE is proposing a NOx emission limit of 0.02 lb/MMBtu. The auxiliary boiler will use flue gas recirculation in combination with low-NOx burners. These technologies, used in combination, are capable of reducing NOx emissions by 60 to 90 percent. This limit is consistent with the results from the RBLC database search and is the lowest in the RBLC database for auxiliary boilers at energy facilities.

BACT determination is same for both Mitsubishi and Siemens turbines.

Diesel Engines

OCE is proposing to utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years for the emergency fire pump and emergency generator. Thus, OCE proposes emission rates of 3.0 g/hp-hr (4.0 g/kW-hr) for the emergency fire pump and 4.8 g/hp-hr (6.4 g/kW-hr) for the emergency generator. The emission rates apply to NOx and VOCs combined. These limits are consistent with NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. In addition, the NSPS implements standards in more stringent phases from 2007 to 2015 based upon their feasibility analysis for future years. As such, compliance with the applicable NSPS for the proposed emergency engines associated with the facility is considered BACT for NOx.

BACT determination is same for both Mitsubishi and Siemens turbines.

BACT Analysis for VOC

Combustion turbines have inherently low VOC emission rates. Emissions of VOC from a combustion turbine occur as a result of incomplete combustion of organic compounds within the fuel. In an ideal combustion

process, all carbon and hydrogen contained within the fuel are oxidized to form CO_2 and water. VOC emissions can be minimized by the use of good combustion controls and add-on controls as described below.

The turbines proposed for the facility will utilize good combustion controls and exhaust through an oxidation catalyst to further reduce VOC emissions. Emissions of VOC from the exhaust stack will be limited to 2.0 ppm_v at 15 percent O_2 with and without duct burning.

The facility will also utilize an auxiliary boiler, emergency diesel fire pump and emergency diesel generators. The auxiliary boiler will utilize combustion optimization technologies to minimize incomplete combustion and subsequent emissions of VOC. Using good combustion controls, emissions from the auxiliary boiler will be limited to 0.006 lb/MMBtu. As discussed previously, the emergency diesel fire pump and the emergency generator will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII). The following discussion demonstrates that the proposed VOC emission rates for the combined cycle turbines and ancillary equipment are considered BACT.

Identification of Control Options

There are only two practical methods for controlling VOC emissions from combustion processes: efficient combustion and add-on control equipment. The most stringent level of control is through the use of add-on control equipment. The only post-combustion control that can be practically implemented is catalytic oxidation. Oxidation catalyst systems consist of a passive reactor comprised of a grid of metal panels with a platinum catalyst. The optimal location for VOC control, in the 900°F to 1,100°F temperature range, would be upstream of the HRSG or in the front-end section of the HRSG. However, at the high temperatures necessary to make the oxidation catalyst optimized for VOC reduction, there is the undesirable result of causing substantially more conversion of SO_2 to SO_3. As described previously, SO_3 may react with water and/or NH_3 to form H_2SO_4 and/or ammonium salt ($PM_{10}/PM_{2.5}$). Therefore, the placement of the oxidation catalyst in the “cooler” section of the HRSG, which is necessary for CO control, is the optimal design.

VOC emissions from the auxiliary boiler will also occur due to incomplete combustion. As such, VOC emissions are minimized by combustion practices that promote high combustion temperatures, long residence times, and turbulent mixing of fuel and combustion air. In practice, post-combustion control methods are not routinely implemented for the reduction of VOC emissions from auxiliary boilers, as supported by the search of the RBLC determinations presented below.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified many natural gas-fired combined cycle combustion turbine facilities. Based on the search, use of an oxidation catalyst appears to be the most stringent level of VOC control for natural gas fired combined cycle turbines. VOC limits in the RBLC range from 0.3 ppm_v to 34 ppm_v. The 0.3 ppm_v limit appears to be an error in the database. The VOC limit for Chouteau Power Plant, based on their most recent Title V air permit is 0.7 ppmv. However, the CO limit for the facility is 10 ppm_v, which is considerably higher than the 2 ppm_v proposed for the facility. This is indicative of the fact that it is difficult to design a system that provides a very high level of control for VOC while simultaneously providing a very high level of control for CO. As such, systems are more commonly designed to provide substantial control for both CO and VOC simultaneously. This is illustrated by the fact that most of the RBLC entries seem to be between 1.5 and 2 ppm_v. This small variation in VOC concentrations between

different facilities is not unexpected due to differences in turbine and HRSG manufacturers and overall engineering design. Based on the review of the RBLC, BACT for VOC is utilization of an oxidation catalyst system to achieve an outlet VOC concentration of 2.0 ppm_v.

Auxiliary Boiler

The RBLC and recent air permit search for natural gas-fired boilers between 10 and 100 MMBtu/hr in size identified close to 100 installations. VOC emission limits for these installations range from approximately 0.002 lb/MMBtu to 0.02 lb/MMBtu. The most recent determination in the database is for a commercial boiler with a VOC BACT limit of 0.003 lb/MMBtu. Most of the boilers that operate in a similar manner to the proposed boiler also have operational restrictions on hours. There are several determinations for auxiliary boilers at energy generating facilities in the database. The majority of the installations have emission limits of 0.005 lb/MMBtu or greater. Based on the review of the RBLC, BACT for VOC is good combustion practices to achieve a VOC emission limit in the 0.004 to 0.006 lb/MMBtu range. The small variations in VOC emissions are not unexpected due to differences in boiler manufacturers, overall burner design, the very small emissions of VOC and the desire to optimize the simultaneous minimization of NOx, CO and VOC.

BACT Determinations

Combustion Turbine Generators and Duct Burners

OCE is proposing a VOC emission limit of 2 ppm_v at 15 percent O_2 with and without duct burning as BACT for Mitsubishi turbines.

OCE is proposing a VOC emission limit of 1.9 ppm_v at 15 percent O_2 with duct burning and 1.0 ppm_v at 15 percent O_2 without duct burning as BACT for Siemens turbines.

This level of emissions will be achieved via good combustion control and an oxidation catalyst.

Auxiliary Boiler

OCE is proposing a VOC emission limit of 0.006 lb/MMBtu with reduced annual operating hours for the auxiliary boiler using good combustion practices as BACT.
BACT determination is same for both Mitsubishi and Siemens turbines.

Diesel Engines

OCE is proposing to utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years for the emergency fire pump and emergency generator. Thus, OCE proposes emission rates of 3.0 g/hp-hr (4.0 g/kW-hr) for the emergency fire pump and 4.8 g/hp-hr (6.4 g/kW-hr) for the emergency generator. The emission rates apply to NOxand VOCs combined. These limits are consistent with NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. In addition, the NSPS implements standards in more stringent phases from 2007 to 2015 based upon a feasibility analysis for future years. As such, compliance with the applicable NSPS for the proposed emergency engines associated with the Facility is considered BACT for VOC.

BACT determination is same for both Mitsubishi and Siemens turbines.

BACT Analysis for CO

Emissions of CO from combustion occur as a result of incomplete combustion of fuel. CO emissions are minimized by the use of proper combustor design, good combustion practices and add-on controls. The combined cycle turbines and the auxiliary boiler will be sources of CO emissions. Since the potential emissions from the facility exceed PSD significance thresholds, BACT is required for CO emissions.

The turbines proposed for the facility will utilize good combustion controls and exhaust through an oxidation catalyst to reduce CO emissions. Emissions of CO from the exhaust stack will be limited to 2.0 ppm_v at 15 percent O_2 with and without duct burning.
The auxiliary boiler will utilize good combustion practices to minimize incomplete combustion and subsequent emissions of CO. Using good combustion controls, emissions from the auxiliary boiler will be limited to 0.055 lb/MMBtu. The emergency diesel fire pump and the emergency diesel generator will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII).

The following discussion demonstrates that the proposed CO emission rates for the combined cycle turbines and ancillary equipment are considered BACT.

Identification of Control Options

There are only two practical methods for controlling CO emissions from combustion processes: efficient combustion and add-on control equipment. The most stringent level of control is the use of add-on equipment. The only post-combustion control that can be practically implemented is catalytic oxidation. Oxidation catalyst systems consist of a passive reactor comprised of a grid of metal panels with a platinum catalyst. CO reduction efficiencies in the range of 80 to 90 percent can be expected, although CO reduction may at times be less than these values due to the low inlet concentrations expected from the turbines.

CO emissions from the auxiliary boiler will also occur due to incomplete combustion. As such, combustion design that promotes high combustion temperatures, long residence times, and turbulent mixing of fuel and combustion air is the common practice used to minimize CO emissions. Although it is technologically feasible to control CO emissions from a boiler in the 10 to 100 MMBtu/hr size range using an oxidation catalyst, current combustion technology results in very low emissions of CO such that add-on control would not be considered cost-effective for auxiliary boilers that are not operated continuously. The facility will limit operation of the auxiliary boiler to 2,000 hours per year.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC available permits identified almost 300 natural gas-fired combined cycle combustion turbine facilities. Based on this search, use of an oxidation catalyst appears to be the most stringent level of control for natural gas-fired combined cycle turbines.

CO emission limits from recently permitted facilities generally ranged from 0.9 ppm_v to 15 ppm_v (or greater). The lowest CO limit found in a permit for a natural gas fired combined cycle turbine was 0.9 ppm_v without duct

burning and 1.8 ppm_v with duct burning, issued to Kleen Energy Systems in Connecticut. While the duct burning limit is consistent with other determinations, the 0.9 ppm_v limit is an outlier. It is important to note that Kleen Energy has a VOC BACT limit of 5.0 ppm_v, which is significantly higher than the proposed VOC limit for the facility. This is indicative of the fact that it is difficult to design a system that provides a very high level of control for CO while simultaneously providing a very high level of control for VOC. As such, systems are more commonly designed to provide substantial control for both CO and VOC simultaneously. This is illustrated by two recent BACT/Lowest Achievable Emission Rate (LAER) determinations for proposed combined cycle power plants in New Jersey. Draft permits for the Woodbridge Energy Center and the Newark Energy Center were issued in June 2012. Both facilities proposed CO BACT limits of 2.0 ppm_v and VOC LAER limits of 1.0 ppm_v (without duct burning). For these facilities, the turbine train was designed to optimize control of both CO and VOC. There are many facilities in the RBLC with recently permitted BACT CO emission limits of 2.0 ppm_v (or greater). For example, the Empire Generating and Caithness Long Island Energy facilities in New York State have permit limits of 2.0 ppm_v for CO, which is considered representative of BACT. It is our understanding that several of these facilities are operating in compliance with their 2.0 ppm_v limit.

Auxiliary Boiler

The RBLC and recent air permit search for natural gas-fired boilers between 10 and 100 MMBtu/hr in size identified close to 100 installations. CO emission limits for these installations range from approximately 0.0073 lb/MMBtu to 0.8 lb/MMBtu.

The most stringent limit for an auxiliary boiler at an energy generating facility is 0.0164 lb/MMBtu at Emery Generating Station in Iowa, which was permitted in 2002. This installation is operational and it utilizes a catalytic oxidizer with an estimated control efficiency of 80 percent to achieve this emission rate. Since this installation, there have been many facilities permitted without add-on controls that utilize good combustion practices to achieve CO control. The most recent auxiliary boiler installation listed in the RBLC has a CO limit of 0.15 lb/MMBtu. There are several other recent determinations with CO limits between 0.02 and 0.08 lb/MMBtu. The small variations in CO emissions are not unexpected due to differences in boiler manufacturers, overall burner design, and the desire to optimize the simultaneous minimization of NOx, CO and VOC.

BACT Determinations

Combustion Turbine Generators and Duct Burners

OCE is proposing a CO emission limit of 2.0 ppm_v at 15 percent O_2 with and without duct burning as BACT for the proposed facility. This level of emissions will be achieved via good combustion control and an oxidation catalyst. This proposal is consistent with the limits and control technologies found in the RBLC and with recent BACT determinations in Ohio and in other states.

<u>BACT determination is same for both Mitsubishi and Siemens turbines.</u>

Auxiliary Boiler

OCE is proposing a CO emission limit of 0.055 lb/MMBtu from the auxiliary boiler using good combustion practices and a limitation of operation to 2,000 hours per year. This is consistent with BACT determinations for this type of equipment.

BACT determination is same for both Mitsubishi and Siemens turbines.

Diesel Engines

The proposed diesel engines for the Facility will utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years. Thus, OCE proposes CO emission rates of 2.6 g/hp-hr (3.5 g/kW-hr) for the emergency fire pump and emergency generators as BACT, with limited annual hours of operation. These limits are consistent with NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. In addition, the NSPS implements standards in more stringent phases from 2007 to 2015 based upon a feasibility analysis for future years. As such, compliance with the applicable NSPS for the proposed emergency engines associated with the facility is considered BACT for CO.

BACT determination is same for both Mitsubishi and Siemens turbines.

BACT Analysis for Particulate Matter ($PM_{10}/PM_{2.5}$)

Emissions of particulate matter from combustion occur as a result of inert solids contained in the fuel, unburned fuel hydrocarbons which agglomerate to form particles, and mineral matter in water that may be injected for NOx or power augmentation in certain applications. Particulate emissions can also result from the formation of ammonium salts due to the conversion of SO_2 to SO_3, which is then available to react with ammonia to form ammonium sulfates. All of the particulate matter emitted from the turbines is conservatively assumed to be less than 2.5 microns in diameter. Therefore, PM_{10} and $PM_{2.5}$ emission rates are assumed to be the same.

The combustion of clean-burning fuels is the most effective means for controlling particulate emissions from combustion equipment. The facility is proposing to use natural gas as the only fuel for the turbines. Natural gas is a very clean-burning fuel with very low associated particulate emissions. OCE is not aware of any combustion turbine facilities in existence that have add-on particulate control.

The turbines proposed for the facility will utilize natural gas as their only fuel to minimize particulate emissions. Emissions of $PM_{10}/PM_{2.5}$ from the exhaust stack will be limited to 0.0038 lb/MMBtu without duct burning and 0.0039 lb/MMBtu with duct burning.

The facility will also utilize an auxiliary boiler, emergency diesel fire pump, emergency generator and cooling towers. The auxiliary boiler will combust only natural gas, resulting in a $PM_{10}/PM_{2.5}$ emission limit of 0.008 lb/MMBtu. The cooling tower will also be a source of $PM_{10}/PM_{2.5}$ emissions. The facility is proposing use of a high-efficiency drift eliminator (0.0005 percent). The emergency diesel fire pump and the diesel generator engines will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII).

The following discussion demonstrates that the proposed $PM_{10}/PM_{2.5}$ emission rates for the combined cycle turbines and ancillary equipment are considered BACT.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified several natural gas-fired combined cycle combustion turbine facilities. Based on this search, use of clean-burning fuels is the primary control for particulate emissions. Particulate matter emission limits in the RBLC database generally ranged from approximately 0.003 lb/MMBtu to 0.3 lb/MMBtu (or greater). The most recent $PM_{10}/PM_{2.5}$ BACT determination for a large combined cycle turbine train is 0.0066 lb/MMBtu for the Sumpter Power Plant in Michigan. Beyond this example, there are many facilities in the RBLC with permitted BACT $PM_{10}/PM_{2.5}$ emission limits in the range of 0.006 lb/MMBtu to 0.01 lb/MMBtu. Generally, all of these facilities utilize clean-burning fuel as their primary control technology and their emission limits are based upon the overall quality of their commercial natural gas source.

Auxiliary Boiler
A review of the RBLC indicates that good combustion practices and clean-burning fuels have typically been determined to be BACT for boilers. $PM_{10}/PM_{2.5}$ emission limits for natural gas-fired boilers vary widely, ranging from 0.002 lb/MMBtu through 0.6 lb/MMBtu. $PM_{10}/PM_{2.5}$ emission limits for gas-fired auxiliary boilers of similar size are as low as 0.003 lb/MMBtu. The most recent listing in the RBLC for an auxiliary boiler proposed a $PM_{10}/PM_{2.5}$ limit of 0.008 lb/MMBtu.

Cooling Tower

A review of the RBLC provides very few entries for cooling towers, the most recent being in 2005. In the RBLC listings, BACT for PM_{10} and $PM_{2.5}$ was determined to be utilization of high-efficiency drift eliminators with a removal efficiency of 0.0005 percent. A drift rate of 0.0005 percent is the most effective drift eliminator commercially available.

BACT Determinations

Combustion Turbine Generators and Duct Burners

OCE is proposing a $PM_{10}/PM_{2.5}$ emission limit of 0.0038 lb/MMBtu without duct burning and 0.0039 lb/MMBtu with duct burning as BACT for Mitsubishi turbine.

OCE is proposing a $PM_{10}/PM_{2.5}$ emission limit of 0.0047 lb/MMBtu without duct burning and 0.0055 lb/MMBtu with duct burning as BACT for Siemens turbine.

This level of emissions will be achieved by combusting only commercially available, pipeline quality natural gas in the turbines. This emission level is consistent with the limits and control technologies found in the RBLC for recent BACT determinations in Ohio and in other states. The high degree of NOx control, which creates secondary formation of particulate, and the variability of sulfur content in natural gas precludes a lower vendor guarantee.

Auxiliary Boiler

OCE is proposing the exclusive use of clean-burning pipeline quality natural gas in conjunction with good combustion practices as BACT for the auxiliary boiler. The facility proposes a $PM_{10}/PM_{2.5}$ emission limit of

0.008 lb/MMBtu boiler using natural gas as the only fuel. This is consistent with other BACT determinations for this type of equipment. BACT determinations with lower limits were for smaller size boilers with different natural gas sulfur content.

BACT determination is same for both Mitsubishi and Siemens turbines.

Diesel Engines

The proposed engines for the facility will utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years. Thus, OCE proposes $PM_{10}/PM_{2.5}$ emission rates of 0.15 g/hp-hr (0.2 g/kW-hr) for the emergency fire pump and emergency generator as BACT, with limited annual hours of operation. These limits are consistent with NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. In addition, the NSPS implements standards in more stringent phases from 2007 to 2015 based upon a feasibility analysis for future years. As such, compliance with the applicable NSPS for the proposed emergency engines associated with the Facility is considered BACT.

BACT determination is same for both Mitsubishi and Siemens turbines.

Cooling Tower

OCE is proposing use of 0.0005 percent high-efficiency drift eliminators as BACT and for PM_{10} and $PM_{2.5}$. This equates to hourly emission rates of 1.04 lb/hr for PM_{10} and 0.004 lb/hr for $PM_{2.5}$. Use of high-efficiency drift eliminators is consistent with recent BACT determinations in Ohio and in other states.

BACT determination is same for both Mitsubishi and Siemens turbines.

BACT Analysis for Sulfuric Acid

Emissions of SO_2 are formed from the oxidation of sulfur in the fuel. Normally, all sulfur compounds contained in the fuel will oxidize, and virtually all will oxidize to form SO_2. A small percentage will oxidize to SO_3 and sulfate (SO_4), dependent on a number of factors including: combustor design; temperature; pressure; oxygen level; and moisture level in the combustion zone and downstream in the combined cycle system, exhaust stack, and ambient air proximate to the stack. After being formed, the SO_3 and SO_4 will react to form H_2SO_4 and sulfate particulate. H_2SO_4 emissions can be controlled using pre- and post-combustion controls. Pre-combustion controls involve the use of low sulfur fuels such as natural gas or ULSD. Post-combustion controls involve the use of add-on control technology such as wet and dry flue gas desulfurization (FGD) processes. Installation of such systems is an established technology principally on coal-fired and high sulfur oil-fired steam electric generation stations. However, FGD systems are not practical for combustion turbines due to several factors including the large exhaust flow (and corresponding pressure drop) and the low inlet concentration in the flue gas. The use of natural gas and ULSD are the most common methods for controlling H_2SO_4 emissions from combustion turbines.

The turbines proposed for the facility will utilize natural gas with a maximum sulfur content of 0.5 grains (gr) per 100 standard cubic feet (scf) as their only fuel to minimize H_2SO_4 emissions. Emissions of H_2SO_4 from the exhaust stack will be limited to 0.0004 lb/MMBtu with and without duct burning, respectively.

The facility will also utilize an auxiliary boiler, emergency diesel fire pump, emergency generator. The auxiliary boiler will combust only natural gas, resulting in H_2SO_4 emission limits of 0.00011 lb/MMBtu, respectively. The diesel fire pump and the diesel generator engines will utilize ULSD. Emissions of H_2SO_4 from both the fire pump and generators engines will be limited to 0.000132 g/kW-hr.

The following discussion demonstrates that the proposed H_2SO_4 emission rates for the combined cycle turbines and auxiliary boiler are considered BACT.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified more than 300 natural gas fired combined cycle facilities. Based on this search, use of low sulfur fuels is the primary control for H_2SO_4 emissions, with emission limits being dependent upon the sulfur content of the fuel and engine design. A search of permits for natural gas-fired combined cycle units indicated H_2SO_4 emissions ranging from 0.0001 lb/MMBtu to 0.002 lb/MMBtu (or greater).

Auxiliary Boiler

A review of the RBLC indicates that combustion of clean burning low-sulfur fuels has typically been determined to be BACT for H_2SO_4. A search of the RBLC for H_2SO_4 emissions only identified two boilers of similar size to the proposed auxiliary boiler. Of these listings, only one was for an auxiliary boiler at an energy facility. This facility, CPV Saint Charles, proposed an H_2SO_4 limit of 0.0001 lb/MMBtu. BACT limit is based upon the assumed sulfur content of the pipeline quality natural gas.

BACT Determinations

Combustion Turbine Generators and Duct Burners

OCE is proposing an H_2SO_4 emission limit of 0.0004 lb/MMBtu (with and without duct burning) as BACT for Mitsubishi turbine.

OCE is proposing an H_2SO_4 emission limit of 0.0006 and 0.007 lb/MMBtu, with and without duct burning, respectively, as BACT for Siemens turbine.

This level of emissions will be achieved by combusting commercially available, pipeline quality natural gas with a maximum sulfur content of 0.5 gr/100 scf in the combustion turbines. This emission level is consistent with the limits and control technologies found in the RBLC. The emissions of H_2SO_4 is directly dependent on the maximum sulfur content in natural gas, which has substantial variability between facilities.

Auxiliary Boiler

OCE is proposing an H_2SO_4 emission limit of 0.00011 lb/MMBtu as BACT for the proposed facility. The proposed auxiliary boiler will combust natural gas with a maximum sulfur content of 0.5 gr/100 scf. This is consistent with other BACT determinations for this type of equipment. BACT determinations with lower limits were for smaller size boilers with different natural gas sulfur content.

BACT determination is same for both Mitsubishi and Siemens turbines.

Diesel Engines

The proposed diesel engines for the facility will use ULSD with a maximum sulfur content of 15 parts per million by weight (ppm_w) as a fuel. Thus, OCE proposes H_2SO_4 emissions of 0.000132 g/kW-hr for the engines as BACT, with limited annual hours of operation.

BACT determination is same for both Mitsubishi and Siemens turbines.

BACT Analysis for Greenhouse Gases

This section presents the BACT analysis for GHGs using methodology presented in the USEPA document *PSD and Title V Permitting Guidance for Greenhouse Gases* (USEPA, 2011).

The principal GHGs associated with the facility are CO_2, methane (CH_4), and nitrous oxide (N_2O). Because these gases differ in their ability to trap heat, one ton of CO_2 in the atmosphere has a different effect on warming than one ton of CH_4 or one ton of N_2O. For example, CH_4 and N_2O have 21 times and 310 times the global warming potential of CO_2, respectively. GHGs emissions from the proposed facility are primarily attributable to combustion of fuels in the turbines, auxiliary boiler and emergency engines. There will also be minor fugitive releases of natural gas (CH_4) from valves and flanges associated with the natural gas piping and of sulfur hexafluoride (SF_6) from the circuit breakers in the substation. By far the greatest proportion of potential GHGs emissions associated with the facility are CO_2 emissions associated with combustion of natural gas in the turbines. Trace amounts of CH_4 and N_2O, will be emitted during combustion in varying quantities depending on operating conditions. However, emissions of CH_4 and N_2O are negligible when compared to total CO_2 emissions. In addition, as presented previously, the facility is proposing to implement BACT for both VOC (expressed as CH_4) and NOx, such that these pollutants are being effectively controlled. As such, BACT for the combustion processes focus on the options for reducing and controlling emissions of CO_2.

Identification of Control Options

CO_2 is a product of combusting any carbon containing fuel, including natural gas. All fossil fuel contains significant amounts of carbon. During complete combustion, the fuel carbon is oxidized into CO_2 via the following reaction:

$$C + O_2 \rightarrow CO_2$$

Full oxidation of carbon in fuel is desirable because CO, a product of partial combustion, has long been a regulated pollutant and because full combustion results in more useful energy. In fact, emission control technologies required for CO emissions (oxidation catalysts) increase CO_2 emission by oxidizing CO to CO_2. Recent BACT determinations for combined cycle power plants have focused on reducing emissions of CO_2 through high efficiency engine technology and use of cleaner-burning fuels. There are limited post-combustion options for controlling CO_2. The USEPA has indicated in the document, *PSD and Title V Permitting Guidance for Greenhouse Gases,* that carbon capture and sequestration (CCS) should be considered in BACT analyses as a technically feasible add-on control option for CO_2 (USEPA, 2011). Currently, there are no combined cycle power plants utilizing CCS, and although theoretically feasible, this technology is not commercially available. Each of these control options are discussed in greater detail in the sections below.

Engine Efficiency

Because emissions of CO_2 are directly related to the amount of fuel combusted, an effective means of reducing GHGs emissions is through highly efficient combustion technologies. By utilizing more efficient technology, less fuel is required to produce the same amount of output electricity. The facility is proposing to use combustion turbines which utilize highly efficient combustion technology.

The facility is designed for baseload electricity generation and will utilize state-of-the-art combustion turbine technology in combined cycle mode. Combined cycle generation takes advantage of the waste heat from the combustion turbines, capturing that heat in the HRSG and generating steam which then powers a conventional steam turbine. Use of waste heat in this manner makes combined cycle facilities considerably more efficient than conventional boiler technology. The proposed facility has a "Design Base Heat Rate" of approximately 6,454 British thermal units per kilowatt-hour (Btu/kW-hr), HHV full load at ISO conditions (59°F, 71 percent relative humidity) with no duct firing which equates to 840 lb CO_2 per MW-hr gross output. The emphasis on GHG reductions via efficient combustion is reflected in the recently proposed NSPS for power plants and recently issued BACT determinations for similar facilities.

On March 27, 2012, the USEPA proposed an NSPS for carbon emissions from power plants. This NSPS would apply to new fossil-fuel-fired electric utility generating units (EGUs), which, under this rule, include stationary combined cycle turbine units larger than 25 MW. New EGUs would be required to meet an output-based standard of 1,000 pounds of CO_2 per MW-hr gross output. The NSPS emission limits are based on the USEPA's extensive analysis of the feasibility of controls. In addition, the NSPS implements standards in more stringent phases from 2007 to 2015 based upon a feasibility analysis for future years. As such, compliance with an applicable NSPS can be considered BACT.

In addition to the NSPS, there are several recent combined cycle power plant facilities that have been issued permits incorporating engine efficiency into the GHG BACT determination. Under these permits, the BACT limits range from 887 lb CO_2/MW-hr gross to 918 lb CO_2/MW-hr net, while combusting natural gas.

Cleaner-Burning Fuels

Another effective method to reduce GHG emissions is pollution prevention or the use of inherently lower-emitting fuels. The combustion turbines and auxiliary boiler for the proposed facility will combust natural gas as their only fuel source. As presented in the following Table, other fossil fuels generate a greater amount of CO_2 per MMBtu of fuel consumed. As such, using natural gas as the only fuel source for the turbine and the auxiliary boiler, which have the potential to emit 99.97% of the annual CO_2 emissions for the facility, effectively minimizes the production of CO_2 from combustion.

Comparison of CO_2 Emissions from Different Fuels (lb CO_2/ MMBtu)

Pollutant	**Emission Factor**
Natural Gas	117
Diesel Fuel	164
Coal	210

Note that the emergency engines will utilize ULSD fuel because, as emergency equipment, they need a

discrete, on-site fuel source. However, the annual hours of operation for these engines are limited to 500 hours per year. As such, only 0.033% of potential annual CO_2 emissions are from these sources.

Carbon Capture and Sequestration (CCS)

There are limited post-combustion options for controlling CO_2, the most common being CCS, which is considered a technically feasible add-on control option for CO_2. CCS is a relatively new technology which requires three distinct processes:

1. Isolation of CO_2 from the waste gas stream;
2. Transportation of the captured CO_2 to a suitable storage location; and
3. Safe and secure storage of the captured and delivered CO_2.

The first step in the CCS process is capture of the CO_2 from the process in a form that is suitable for transport. There are several methods that may be used for capturing CO_2 from gas streams including chemical and physical absorption, cryogenic separation, and membrane separation. Exhaust streams from natural gas combustion sources have relatively low CO_2 concentrations. Only physical and chemical absorption would be considered technically implementable for a high volume, low concentration gas stream. The capital expenditure required to capture CO_2 from the exhaust and compressing it to the pressure required for transport and sequestration are very significant. The Report of the *Interagency Task Force on Carbon Capture and Storage* indicates that it costs approximately $105 per ton ($95 per metric ton) to install a post-combustion system on a new installation to capture and compress CO_2 for transport and sequestration. Applying this factor to the 2,784,983 tpy of CO_2 potentially emitted from the combustion turbines and annualizing the cost over 10 years (including capital recovery costs) results in an estimated annual cost of $41,641,065 or a total capital expenditure (for the first 10 years) of $416,410,658. This is clearly an excessive cost, and does not take into account the large parasitic load caused by a CCS system, which reduces the overall efficiency of the facility and increases overall emissions of CO_2 and all other regulated pollutants on a per megawatt-hour basis. The next step in the CCS process is transportation of the captured CO_2 to a suitable storage location. Currently CO_2 storage is available at only a very limited number of sites. Geologic conditions at the proposed facility site are not suitable for carbon sequestration. OCE does not own or control any other sites that would be appropriate for CO_2 sequestration. Funding from the Department of Energy (DOE) is supporting a research and demonstration facility called the Regional Carbon Sequestration Partnership (RCSP). While several large-scale CO_2 sequestration demonstrations have been initiated under this program, the results of these facilities will not be known for some time. Currently, the closest commercially available CO_2 sequestration site is in Saskatchewan Canada, over 1,600 miles from the facility site.

As such, to remain a viable control technology, captured CO_2 would have to be transported to a remote storage site in order to achieve any environmental benefit. Pipelines are the most common method for transporting large quantities of CO_2 over long distances. There are currently approximately 3,600 miles of existing pipeline located in the United States, there nearest being over 700 miles away. As such, a CO_2 transportation pipeline would need to be constructed to tie into the existing pipeline structure. The cost for permitting and constructing this pressurized pipeline would be economically prohibitive and impractical.

It is important to note that there are no combined cycle power plants utilizing CCS. As such, this technology, while theoretically feasible, has not been demonstrated in practice for combined cycle facilities. As demonstrated above, even if it were commercially available, the cost for designing, installing and operating this type of capture system would be prohibitive. Based upon the large costs associated with the capture, transportation and storage of CO_2, in addition to the large parasitic load, CCS is considered cost prohibitive

and economically infeasible for the facility.

Search of RBLC Determinations

OCE is aware of several facilities that have been issued permits incorporating GHG requirements. These facilities include:

Russell City Energy Center (final permit)

Cricket Valley Energy Center (final permit)

Lower Colorado River Authority (final permit)

Woodbridge Energy Center (final permit)

Newark Energy Center (final permit)

The GHG emissions limits in these permits are based upon engine efficiency expressed as HHV heat rate and range from 7,522 to 7,730 Btu/kW-hr (operating at 100 percent load, ISO conditions without duct firing). Several of these permits also incorporate emission limits for CO_2 in lbs CO_2 per MW-hr. These limits range from 887 lb CO_2/MW-hr gross to 918 lb CO_2/MW-hr net, while combusting natural gas.

The heat rate limits for the above referenced facilities incorporate a margin over the design heat rate to account for degradation over the life of the equipment. Documentation associated with Russell City Energy Center provides a methodology for determining a reasonable estimate of degradation. The Bay Area Air Quality Management District (BAAQMD) in California issued a permit in February 2010 for the Russell City Energy Center that included a BACT limit. Russell City is a proposed combined cycle generating facility with a nominal capacity of 600 MW utilizing two Siemens F-class combustion turbines. In its analysis, the BAAQMD evaluated factors that could be reasonably expected to degrade the theoretical design efficiency of the turbines and increase the heat rate. They considered a number of factors including:

A design margin to reflect that the equipment as constructed and installed may not fully achieve the assumptions that went into the design calculations;

A reasonable performance degradation margin to reflect normal wear and tear; and

A reasonable degradation margin based on normal wear and tear caused by variability in the operation of the auxiliary plant equipment.

Based on their analysis, BAAMD concluded that 12.8 percent was a reasonable compliance margin to add to the design base heat rate to develop a numerical BACT limit.

BACT Determinations

Combustion Turbines

As described above, the technically feasible options for controlling GHG's from the combustion turbines include:

Use of high-efficiency engine technology

Use of natural gas; and

Installation and operation of CCS.

As discussed above, installation and operation of a CCS system is economically cost-prohibitive and impractical. Implementation of high efficiency technology and lower-carbon fuels is being utilized by the facility. The facility will utilize combined-cycle technology which provides greater power output per fuel input, and will burn natural gas exclusively. Based upon the facility design, and adding a reasonable margin of compliance consistent with the BAAQMD analysis for Russell City Energy Center (12.8 percent), OCE is proposing the following as BACT for Mitsubishi turbine:

7,280 Btu/kW-hr HHV (full load at ISO conditions without duct firing); and

840 lb CO_2 per MW-hr gross output (ISO conditions).

OCE is also proposing the following as BACT for Siemens turbine:

7,227 Btu/kW-hr HHV (ISO conditions without duct firing); and

833 lb CO_2 per MW-hr gross output (ISO conditions)

These limits are consistent with recently permitted facilities and can reasonably be assured under all full load operating scenarios. This level of emissions will be achieved through utilization of high efficiency, state-of-the-art, combustion turbine technology and combusting only commercially available, pipeline quality natural gas in the turbines.

Auxiliary Boiler

Similar to the combustion turbines, the technically feasible control options for the auxiliary boiler include high efficiency combustion, low-carbon fuels and CCS. The prohibitive costs and technical issues associated with installing a CCS system on the auxiliary boiler are the same those for the combustion turbines. The total equipment cost for a capture and compression system for the auxiliary boiler will exceed $1,225,000, which does not include the costs to the facility caused by the parasitic load associated with the system. In addition, transporting and storing the captured CO_2 would be impractical. As such, BACT for the auxiliary boiler is efficient combustion and use of a lower-carbon fuel, natural gas. The boiler proposed for the facility will combust only natural gas and be state-of-the-art and, thus, have a combustion efficiency reflective of new equipment.

Other Ancillary Sources

There are several other smaller sources associated with the facility that have the potential to emit GHGs. These include fugitive releases from the natural gas pipelines, SF_6 releases from circuit breakers, and combustion emissions from the emergency engines.
Methane is a GHG with a global warming potential of 21 times that of CO_2. There is the potential for minor fugitive leaks of methane gas from connection points along the natural gas pipeline. These connection points include valves, flanges and compressors. The facility will have many of these piping components incorporated into its design. The facility will implement best management practices and routine monitoring to minimize fugitive leaks from the piping components. While BACT for fugitive emissions have not been included in recent permits, this is consistent with BACT determinations for other facilities.

SF_6 is a dielectric fluid used in circuit breakers with a global warming potential of 23,900 times that of CO_2. There is the potential for negligible leakage of SF_6 from circuit breakers and the facility will have several circuit breakers incorporated into its design. The facility will use state-of-the-art enclosed pressure SF_6 circuit breakers with leak detection, which is consistent with BACT for other similar facilities.

The emergency engines will utilize ULSD as a fuel source. Because they are emergency equipment, they require an on-site, discrete fuel source. In addition, operation of the engines will be limited to 500 hours per year. As such, only 0.033% of potential annual CO_2 emissions are from these emergency engines.

SUMMARY OF BACT EVALUATIONS

Following Tables summarize the proposed emission limits and associated control technology for the facility.

Summary of Proposed BACT Emission Limits and Associated Control Technologies for the Mitsubishi Turbine

Pollutant	Emission Rate (lb/MMBtu)	Emission Rate (ppm_v) at 15% O_2	Control Technology
NOx CT only CT w/ DB	0.0077 0.0077	2.0 2.0	DLN and SCR
VOC CT only CT w/ DB	0.0027 0.0027	2.0 2.0	Good combustion controls and oxidation catalyst
CO CT only CT w/ DB	0.0047 0.0047	2.0 2.0	Good combustion controls and oxidation catalyst
$PM_{10}/PM_{2.5}$ CT only CT w/ DB	0.0038 0.0039	n/a n/a	Low sulfur fuel
H_2SO_4 CT only CT w/ DB	0.0004 0.0004	n/a n/a	Low sulfur fuel
GHG[a]	840[a]	n/a	High efficient combustion technology

[a] BACT for GHGs is expressed as lbs CO_2 per MW-hr gross output on an annual basis.

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Siemens Turbine

Pollutant	Emission Rate (lb/MMBtu)	Emission Rate (ppm_v) at 15% O_2	Control Technology
NO_x CT only CT w/ DB	 0.0077 0.0077	 2.0 2.0	DLN and SCR
VOC CT only CT w/ DB	 0.0013 0.0026	 1.0 1.9	Good combustion controls and oxidation catalyst
CO CT only CT w/ DB	 0.0047 0.0047	 2.0 2.0	Good combustion controls and oxidation catalyst
$PM_{10}/PM_{2.5}$ CT only CT w/ DB	 0.0047 0.0055	 n/a n/a	Low sulfur fuel
H_2SO_4 CT only CT w/ DB	 0.0006 0.0007	 n/a n/a	Low sulfur fuel
GHG[a]	833[a]	n/a	High efficient combustion technology

[a] BACT for GHGs is expressed as lbs CO_2 per MW-hr gross output on an annual basis.

Summary of Proposed BACT Emission Limits and Associated Control Technologies for the Auxiliary Boiler (for both Mitsubishi and Siemens turbines)

Pollutant	Emission Rate (lb/MMBtu)	Control Technology
NOx	0.020	LNB[a] and FGR
VOC	0.006	Good combustion controls
CO	0.055	Good combustion controls
$PM_{10}/PM_{2.5}$	0.008	Low sulfur fuel

Pollutant	Emission Rate (lb/MMBtu)	Control Technology
H_2SO_4	0.00011	Low sulfur fuel
CO_2e (GHG)	n/a	Good Combustion Controls and Natural gas Combustion

[a] Low-NOx Burner

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Emergency Fire Pump (for both Mitsubishi and Siemens turbines)

Pollutant	Emission Rate (g/kW-hr)	Emission Rate (g/hp-hr)	Control Technology
NO_x	4.0[a]	3.0	State-of-the-art Combustion design
VOC			State-of-the-art Combustion design
CO	3.5	2.6	State-of-the-art Combustion design
$PM_{10}/PM_{2.5}$	0.2	0.15	State-of-the-art Combustion design
H_2SO_4	--	0.000132 g/kW-hr	Low sulfur fuel

[a] NO_x limit is 3.5 g/kW-hr; VOC limit is 0.50 g/kW-hr

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Emergency Generator (for both Mitsubishi and Siemens turbines)

Pollutant	Emission Rate (g/kW-hr)	Emission Rate (g/hp-hr)	Control Technology
NO_x	6.4[a]	4.8	State-of-the-art Combustion design

Pollutant	Emission Rate (g/kW-hr)	Emission Rate (g/hp-hr)	Control Technology
VOC			State-of-the-art Combustion design
CO	3.5	2.6	State-of-the-art Combustion design
$PM_{10}/PM_{2.5}$	0.2	0.15	State-of-the-art Combustion design
H_2SO_4	--	0.000132 g/kW-hr	Low sulfur fuel

[a] NO_x limit is 5.61 g/kW-hr; VOC limit is 0.79 g/kW-hr

AMBIENT AIR QUALITY MONITORING REQUIREMENTS

The area where the facility is located is attainment for all criteria pollutants. U.S. EPA regulations require the establishment of baseline air quality in the vicinity of the proposed project. This is normally accomplished using representative air quality monitoring data. Air quality monitoring can be utilized to demonstrate that the project will have less than a threshold impact. This threshold impact is identified as the PSD monitoring de minimus level. If the projected impact from the proposed project exceeds this level, ambient data must be collected or existing representative data must be identified.

Oregon Clean Energy Center has conducted ambient air quality modeling to determine the potential impact due to the proposed installation. Potential impacts for CO, PM_{10}, $PM_{2.5}$ and NO_2 are below the PSD monitoring de minimus concentration.

MODELING

Air quality dispersion modeling was conducted to assess the effect of this modification on the national ambient air quality standards (NAAQS) and PSD increments. AERMOD (version 12345) was used in the regulatory default, urban dispersion mode. Five years of meteorological data (2006-2010) from Toledo surface and Detroit, MI upper were used. Building downwash from nearby structures was incorporated into the AERMOD estimates.

Predicted impacts of CO, PM_{10}, $PM_{2.5}$ and NO_2 were below their corresponding PSD significant impact increments so no additional modeling to demonstrate protection of both the NAAQS and PSD increments was required.

Maximum Predicted Impacts (all concentrations are in ug/m3)

Pollutant	Averaging Period	Maximum Concentration	SIL
NO2	1-Hour	6.96	1
	Annual	0.068	10
CO	1-Hour	172.72	2000
	8-Hour	109.8	500
PM10	24-Hour	3.37	5
PM2.5	24-Hour	0.61	1.2
	Annual	0.04	0.3

SECONDARY IMPACT ANALYSIS

Oregon Clean Energy has demonstrated that the predicted pollutant concentrations throughout the study area are below the secondary NAAQS thresholds. The secondary NAAQS are designed to limit the amount of pollutants in the ambient air to levels below those which could have an adverse impact on human welfare, soils and vegetation. The modeling analyses demonstrate that no significant impacts on human welfare, soils or vegetation will occur from the proposed modification.

Soil and Vegetation

EPA Air Quality Criteria documents were reviewed for information on pollutants and adverse effects on the type of vegetation and soils in the area. No adverse impact upon soils or vegetation is expected. The modeled concentrations are below the primary and secondary NAAQS limits.

Visibility

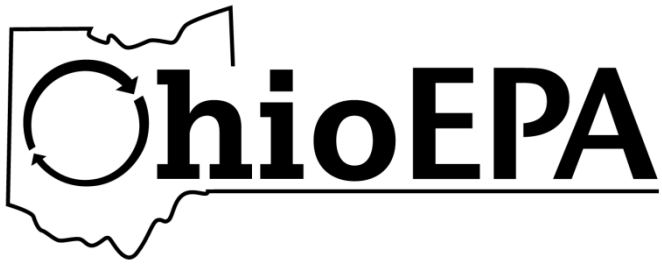
The facility is located nearly 300 kilometers from the closest class I area. Primary or secondary pollutants associated with this project are not anticipated to affect local or class I visibility.

TOXICS ANALYSIS

The Ohio Air Toxics Policy requires evaluation of increases in air toxics above the one ton/year threshold. Emissions rates are modeled to determine whether they exceed the Maximum Acceptable Ground Level Concentration (MAGLC) which is defined under the Review of New Sources of Toxic Air Pollutants. The MAGLC applies to those toxic pollutants which have a Threshold Limit Value in the Association of American Congress of Governmental and Industrial Hygienists handbook and is not subject to a MACT or other federal requirement. Impacts of toxic pollutants subject to the modeling review met the MAGLC.

CONCLUSION

Based upon the review of the permit to install application and the supporting documentation provided by the applicant, the Ohio EPA staff has determined the proposed installation will comply with all applicable State and Federal environmental regulations and that the requirements for BACT are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to the OCE for the proposed installation as described in the P0110840 permit recommendation.



DRAFT

Division of Air Pollution Control
Permit-to-Install
for
Oregon Clean Energy Center

Facility ID:	0448020102
Permit Number:	P0110840
Permit Type:	Initial Installation
Issued:	4/4/2013
Effective:	To be entered upon final issuance

Division of Air Pollution Control
Permit-to-Install
for
Oregon Clean Energy Center

Table of Contents

Authorization

Facility ID:	0448020102
Facility Description:	800 MW combined cycle gas turbine (CCGT) facility
Application Number(s):	A0045417, A0046584
Permit Number:	P0110840
Permit Description:	Installation of a natural gas-fired combined cycle combustion turbine power plant.
Permit Type:	Initial Installation
Permit Fee:	$6,050.00*DO NOT send payment at this time, subject to change before final issuance*
Issue Date:	4/4/2013
Effective Date:	To be entered upon final issuance

This document constitutes issuance to:

Oregon Clean Energy Center
816 Lallendorf Rd
Oregon, OH 43616

of a Permit-to-Install for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Toledo Department of Environmental Services
348 South Erie Street
Toledo, OH 43604
(419)936-3015

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Scott J. Nally
Director

Authorization (continued)

Permit Number: P0110840
Permit Description: Installation of a natural gas-fired combined cycle combustion turbine power plant.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	**B001**
Company Equipment ID:	Auxiliary Boiler
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P003**
Company Equipment ID:	Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P004**
Company Equipment ID:	Emergency Fire Pump
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P005**
Company Equipment ID:	Wet Cooling Tower
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: P001 and P002

Emissions Unit ID:	**P001**
Company Equipment ID:	CTG #1
Superseded Permit Number:	
General Permit Category andType:	Not Applicable
Emissions Unit ID:	**P002**
Company Equipment ID:	CTG #2
Superseded Permit Number:	
General Permit Category andType:	Not Applicable

A. Standard Terms and Conditions

1. Federally Enforceable Standard Terms and Conditions

a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:

(1) Standard Term and Condition A.2.a), Severability Clause

(2) Standard Term and Condition A.3.c) through A. 3.e)General Requirements

(3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements

(4) Standard Term and Condition A.9., Reporting Requirements

(5) Standard Term and Condition A.10., Applicability

(6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install

(7) Standard Term and Condition A.14., Public Disclosure

(8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

(9) Standard Term and Condition A.16., Fees

(10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

a) The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.

b) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.

c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

d) This permit does not convey any property rights of any sort, or any exclusive privilege.

e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

(1) The date, place (as defined in the permit), and time of sampling or measurements.

(2) The date(s) analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of such analyses.

(6) The operating conditions existing at the time of sampling or measurement.

b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:

(1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Toledo Department of Environmental Services.

(2) Quarterly written reports of (i) any deviations from federally enforceable emissionlimitations, operationalrestrictions, andcontroldeviceoperatingparameterlimitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Toledo Department of Environmental Services. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

(3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, andreportingrequirements contained in this permit shall be submitted (i.e., postmarked) to the Toledo Department of Environmental Services every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

(4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Toledo Department of Environmental Services in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

a) The emissions unit(s) identified in this Permit shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

b) Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

c) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:

(1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.

(3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

(4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

d) The permittee shall submit progress reports to the Toledo Department of Environmental Services concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

(1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.

(2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Toledo Department of Environmental Services.

b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission

limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Toledo Department of Environmental Services. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s).

11. Construction of New Sources(s) and Authorization to Install

a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as “permanently shut down” in Ohio EPA’s “Air Services” along with the date the emissions unit(s) was permanently

removed and/or disabled. Submitting the facility profile update will constitute notifying of the permanent shutdown of the affected emissions unit(s).

d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

No emissions unit certified by the authorized official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

13. Construction Compliance Certification

The applicant shall identify the following dates in the online facility profile for each new emissions unit identified in this permit.

a) Completion of initial installation date shall be enteredupon completion of construction and prior to start-up.

b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly (i.e., postmarked), by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the “Owner/Contact Change” functionality in Air Services once the transfer is legally completed.The change must be submitted through Air Services within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

B. Facility-Wide Terms and Conditions

1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

   a) None.

2. The permittee shall ensure that any emissions unit(s) subject to the Clean Air Interstate Rule (CAIR) complies/comply with the requirements of the Ohio Administrative Code (OAC) Chapter 3745-109, which includes submitting timely permit applications.

3. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subpart A and Dc: B001. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the appropriate Ohio EPA district or local air agency.

4. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subpart A and IIII: P003 and P004. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the appropriate Ohio EPA district or local air agency.

5. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subpart A and KKKK: P001 and P002. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the appropriate Ohio EPA district or local air agency.

6. The following emissions unit contained in this permit is subject to 40 CFR Part 63 Subpart A and ZZZZ: P003 and P004. The complete MACT requirements, including the MACT General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the appropriate Ohio EPA district or local air agency.

C. Emissions Unit Terms and Conditions

1. B001, Auxiliary Boiler

Operations, Property and/or Equipment Description:

99 mmBtu/hr natural gas fired boiler with low-NOx burners and flue gas re-circulation

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	see b)(2)a.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Sulfur dioxide (SO_2) emissions shall not exceed 1.4E-03 pound per million Btu (lb/mmBtu) of heat input and 0.14 ton per year. see b)(2)a. and b)(2)b.
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/2006	see b)(2)c.
d.	OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 0.055 pound per million Btu (lb/mmBtu) of heat input, 5.45 pounds per hour (lbs/hr), and 5.45 tons per rolling, 12-month period. Nitrogen Oxides (NO_x) emissions shall not exceed 0.020 lb/mmBtu of heat input, 1.98 lbs/hr, and 1.98 tons per rolling, 12-month period. Particulate matter emissions less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 0.008 lb/mmBtu of heat input, 0.79 lb/hr, and 0.79 ton per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.006

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		lb/mmBtu of heat input, 0.59 lb/hr and 0.59 ton per rolling, 12-month period. Sulfuric acid mist (H_2SO_4) emissions shall not exceed 1.1E-04 lb/mmBtu, 0.011 lb/hr, and 0.011 ton per rolling, 12-month period. Carbon dioxide equivalent (CO_2e) emissions shall not exceed 11,671 tons per rolling, 12-month period. Visible particulate emissions from the stack serving this emissions unit shall not exceed 10 percent opacity as a 6-minute average. see b)(2)d., b)(2)e., and b)(2)k.
e.	OAC rule 3745-17-07(A)	see b)(2)f.
f.	OAC rule 3745-17-10(B)(1)	see b)(2)f.
g.	OAC rule 3745-110-03(J)(16)	exemption - see b)(2)l.
h.	40 CFR Part 60, Subpart A	see b)(2)g.
i.	40 CFR Part 60, Subpart Dc	see b)(2)h. and b)(2)i.
j.	40 CFR Part 63, Subpart JJJJJJ	see b)(2)j.

(2) Additional Terms and Conditions

a. Compliance with the requirements of this rule for CO, NOx, $PM_{10}/PM_{2.5}$, and VOC emissions includes compliance with the requirements of OAC rule 3745-31-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC is less than 10 tons per year .

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The $PM_{10}/PM_{2.5}$ emissions limitations include both filterable and condensable particulate emissions.

e. The lb/mmBtu and lb/hr, emission limitations are based on the emissions unit's potentials to emit. Therefore, no monitoring, record keeping, and reporting requirements are necessary to ensure ongoing compliance with these emission limitations.

f. The emission limitation specified by this rule is less stringent than the limitation established by OAC rule 3745-31-10 through 20.

g. 40 CFR Part 60 subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.

h. This rule does not establish emission limitations for natural gas-fired boilers, but does require recordkeeping of gas usage per 40 CFR 60.48c(g).

i. This emissions unit is subject to the applicable provisions of Subpart Dc of the New Source Performance Standards (NSPS) as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60. The application and enforcement of these standards are delegated to the Ohio EPA. The requirements of 40 CFR Part 60 are also federally enforceable.

j. This emissions unit is exempt from the requirements of this rule per 40 CFR 63.11195(e) due tocombusting only natural gas.

k. The maximum annual operating hours for this emissions unit shall not exceed 2,000 hours per rolling, 12-monthperiod.

To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	720
1-2	1,440
1-3	2,000
1-4	2,000
1-5	2,000

Month(s)	Maximum Allowable Cumulative Operating Hours
1-6	2,000
1-7	2,000
1-8	2,000
1-9	2,000
1-10	2,000
1-11	2,000
1-12	2,000

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

l. The permittee is exempt from the requirements of OAC rule 3745-110-03(A) through (F), since this permit restricts NOx emissions from this emissions unit to less than 25 tons per year.

c) Operational Restrictions

(1) The permittee shall burn only natural gas in this emissions unit.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) The permittee shall maintain monthly records of the following information:

a. the operating hours for each month; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

(3) See 40 CFR Part 60, Subpart Dc (40 CFR 60.4200-4219).

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

(2) Pursuant to the 40 CFR Part 60.7 and 60.48c(a), the permittee is hereby advised of the requirement to report the following at the appropriate times:

a. construction date (no later than 30 days after such date);

b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);

c. actual start-up date (within 15 days after such date); and

d. the design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

(3) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

all exceedances of the rolling, 12-month limitation on the hours of operation for this emissions unit; and for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative hours of operation;

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(4) See 40 CFR Part 60, Subpart Dc (40 CFR 60.4200-4219).

(5) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions shall not exceed 0.055 lb/mmBtu of heat input, 5.45 lbs/hr, and 5.45 tons per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu emission limitation is based on manufacturer's data. The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the CO emission factor supplied by the manufacturer (0.055 lb/mmBtu) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the lb/mmBtu limitation and hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR

Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (5.45 lbs/hr) by the maximum annual operating hours (2,000 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

b. Emission Limitation:

NO_x emissions shall not exceed 0.020 lb/mmBtu of heat input, 1.98 lbs/hr, and 1.98 tons per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu limitation is based on manufacturer's data. The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the NO_x emission factor supplied by the manufacturer (0.020 lb/mmBtu) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the lb/mmBtu and hourly emission limitation using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (1.98 lbs/hr) by the maximum annual operating hours (2,000 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

c. Emission Limitation:

PM_{10} and $PM_{2.5}$ shall not exceed 0.008 lb/mmBtu of heat input, 0.79 lb/hr, and 0.79 ton per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu limitation is based on manufacturer's data. The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the $PM_{10}/PM_{2.5}$ emission factor supplied by the manufacturer (0.008 lb/mmBtu) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the lb/mmBtu and hourly emission limitation using Methods 201 and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.79 lb/hr) by the maximum annual operating hours (2,000 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

d. Emission Limitation:

SO_2 emissions shall not exceed 1.4E-03 lb/mmBtu of heat input and 0.14 ton/yr.

Applicable Compliance Method:

The lb/mmBtu limitation was established based on using pipeline quality natural gas having a maximum sulfur content of 0.5 grains per 100 cubic feet according to the following calculation. Multiply the maximum sulfur content of natural gas (0.5 grain S/100 scf) by the molecular weight of SO_2 (64.07 lb SO_2/lb-mole) divide by the molecular weight of sulfur (32.06 lb S/lb-mole) divide by (7,000 grains/lb), divide by (1,020 Btu/scf), and multiply by (10^6 Btu/mmBtu).

If required, the permittee shall demonstrate compliance with the lb/mmBtu and hourly emission limitation using Methods 1 thru 4 and 6C of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the lb/mmBtu emission limitation (1.4E-03 lb/mmBtu) by the maximum heat input (99 mmBtu/hr), multiplied by the maximum annual operating hours (2,000 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

e. Emission Limitation:

VOC emissions shall not exceed 0.006 lb/mmBtu of heat input, 0.59 lb/hr, and 0.59 ton per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu limitation is based on manufacturer's data. The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the VOC emission factor supplied by the manufacturer (0.006 lb/mmBtu) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the lb/mmBtu and hourly emission limitation using Methods 1 thru 4 and 25 or 25A of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.59 lb/hr) by the maximum annual operating hours (2,000 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is maintained.

f. Emission Limitation:

Sulfuric acid mist (H_2SO_4) emissions shall not exceed 1.1E-04 lb/mmBtu, 0.011 lb/hr, and 0.011 ton per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu emission limitation is based on the assumption that 5% of the SO_2 emissions are converted to SO_3 and then converted to H_2SO_4 when combined with water vapor by the following calculation.

1.4E-03 lb SO_2/mmBtu(0.05)(98 lb H_2SO_4/lb-mole)(lb-mole/64 lb SO_2) = 1.1E-04 lb H_2SO_4/mmBtu

Multiply the lb H_2SO_4/mmBtu (0.11 lb/mmBtu) by the maximum heat input (99 mmBtu/hr) to determine the maximum hourly H_2SO_4 emissions (0.11 lb/hr), and multiply by the maximum annual hours of operation (2,000 hrs/yr) divided by 2,000 lbs/ton to determine the annual H_2SO_4 emissions (0.11 ton/yr).

If required, the permittee shall demonstrate compliance with the lb/mmBtu and lb/hr emissions limitations using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A.

g. Emission Limitation:

Carbon dioxide equivalent (CO_2e) emissions shall not exceed 11,671 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation was established to reflect the potential to emit for this emissions unit by calculating the sum of the product of the maximum natural gas usage (0.104 mmscf/hr) multiplied by the AP-42 emission factor for CO_2, N_2O, and CH_4 from Table 1.4-2 dated 7/98 (120,000 lb/mmscf, 0.64 lb/mmscf, and 2.3 lb/mmscf, respectively), multiplied by the global warming potential for CO_2, N_2O, and CH_4 (1, 310, and 21, respectively from Table A-1 to Subpart A of 40 CFR 98). Multiply the calculated sum by the natural gas heating value used in the application for this emissions unit (950 Btu/scf), divide by the average heating value used for AP-42 emission factors in Table 1.-42 dated 7/98 (1,020 Btu/scf), multiply by the maximum annual hours of operation (2,000 hrs/yr) and divide by 2,000 pounds per ton.

$$\left(99\frac{mmBtu}{hr}\right)x\left[\left(120{,}000\frac{lb}{mmscf}x(1)\right)+\left((0.64\frac{lb}{mmscf)}(310)\right)\right.$$
$$\left.+\left(\left(2.3\frac{lb}{mmscf}\right)(21)\right)\right]x\left(\frac{mmscf}{1020mmBtu}\right)\left(2{,}000\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000lb}\right)$$
$$=11{,}671\frac{tons}{yr}$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the lb/scf CO_2 emission rate does not exceed 120,000 lb/mmscf. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the lb/scf CO_2 emission rate.

h. Emission Limitation:

Visible emissions shall not exceed 10% opacity as a 6-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance with the stack visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with Method 9 of 40 CFR Part 60, Appendix A.

g) Miscellaneous Requirements

(1) None.

2. P003, Emergency Generator

Operations, Property and/or Equipment Description:

2,250 kW emergency diesel fired generator

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Sulfur dioxide (SO_2) emissions shall not exceed 0.03 pound per hour (lb/hr) and 0.008 ton per year. see b)(2)a. and b)(2)b.
b.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/2006	see b)(2)c.
c.	OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hr, 17.35 pounds per hour (lbs/hr), and 4.34 tons per rolling, 12-month period. Nitrogen oxides (NO_x) emissions shall not exceed 5.61 g/kW-hr, 27.8 lbs/hr, and 6.95 tons per rolling, 12-month period. Particulate matter emissions less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 0.20 g/kW-hr, 0.99 lb/hr, and 0.25 tons per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.79 g/kW-hr, 3.93 lbs/hr, and 0.98 ton per rolling, 12-month period. Sulfuric acid mist (H_2SO_4) emissions shall

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		not exceed 1.32E-04 g/kW-hr, 6.5 E-04 lb/hr and 1.6E-04 ton per rolling, 12-month period. Carbon dioxide equivalent (CO_2e) emissions shall not exceed 878 tons per rolling, 12-month period. see b)(2)d. and b)(2)e.
d.	OAC rule 3745-17-07(A)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.
e.	OAC rule 3745-17-11(B)(5)(a)	see b)(2)f.
f.	OAC rule 3745-110-03(J)(16), and (J)(19)	exemptions – see b)(2)g.
g.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	Table 8 to Subpart IIII of 40 CFR Part 60 – Applicability of General Provisions to Subpart IIII shows which parts of the General Provisions in 40 CFR 60.1-19 apply.
h.	40 CFR Part 60, Subpart IIII (40 CFR 60.4200–4219) [In accordance with 40 CFR 60.4200(a)(2), this emissions unit is a compression ignition emergency stationary internal combustion engine (CI ICE) for which construction commenced after July 11, 2005 subject to the emissions limitation/control measures specified in this section.]	Non-methane hydrocarbon (NMHC) + NOx emissions shall not exceed 6.4 g/kW-hr. CO emissions shall not exceed 3.5 g/kW-hr. PM emissions shall not exceed 0.20 g/kW-hr. Exhaust opacity shall not exceed: 20 percent during acceleration mode; 15 percent during lugging mode; and 50 percent during the peaks in either the acceleration or lugging modes. see b)(2)h. [60.4205(b) and 60.4207(b)]
i.	40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6580-63.6675) [In accordance with 40 CFR 63.6590(c)(1), this emissions unit is a new stationary internal combustion engine (RICE) located at an area	see b)(2)i. [63.6590(c), (c)(1)]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	source of HAP emissions subject to the emissions limitation/control measures specified in this section.]	

(2) Additional Terms and Conditions

a. Compliance with the requirements of this rule for CO, NOx, PM_{10}, $PM_{2.5}$, and VOC emissions includes compliance with the requirements of OAC rule 3745-31-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC is less than 10 tons per year taking into account the federally enforceable emissions limitations and operating hours restriction specified by OAC rule 3745-31-10 through 20.

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The $PM_{10}/PM_{2.5}$ emissions limitations include both filterable and condensable particulate emissions.

e. The maximum annual operating hours for this emissions unit shall not exceed 500 hours, based upon a rolling, 12-month summation of the operating hours.

To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	500
1-2	500
1-3	500
1-4	500
1-5	500
1-6	500
1-7	500
1-8	500
1-9	500
1-10	500
1-11	500
1-12	500

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

f. The emission limitation specified by this rule is less stringent than the emission limitation established by OAC rule 3745-31-10 through 20.

g. The requirements of this rule do not apply, since:

i. NOx emissions are restricted to less than 25 tons per year; and

ii. the emissions unit is subject to a BACT limitation for NOx.

h. The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standards:

15 ppm maximum sulfur content; and

a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

i. This emissions unit must meet the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply under this subpart.

c) Operational Restrictions

(1) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain monthly records of the following information:

a. the operating hours for each month; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

(2) For each shipment of diesel fuel received for burning in this emissions unit, the permittee shall maintain records of the oil supplier's (or permittee's) analyses for sulfur contentin parts per million (40 CFR 80.510). The permittee shall perform or require the supplier to perform the analyses for sulfur content in accordance with 40 CFR 80.585.

(3) The permittee shall also maintain documentation of supplier verification that the diesel fuel as purchased has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

(4) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. each shipment of diesel fuel received for burning in this emissions unit which did not comply with the per gallon standards specified in b)(2); and

b. all exceedances of the rolling, 12-month limitation on the hours of operation for this emissions unit; and for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative hours of operation.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

(3) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions shall not exceed 3.5 g/kW-hr, 17.35 lbs/hr, and 4.34 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the Tier 2 emission standards under 40 CFR 89.112(a), Subpart B, Table 1. The hourly emission limitation was developed by multiplying the maximum operating load (2,250 kW) by the CO emission factor supplied by the manufacturer (3.5 g/kW-hr) and dividing by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (17.35 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

b. Emission Limitation:

NOx emissions shall not exceed 5.61 g/kW-hr, 27.8 lbs/hr, and 6.95 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NOx + NMHC emission limitation specified by the Tier 2 standard in 40 CFR 89.112(a) Table 1 (6.4 g/kW-hr) multiplied by the Tier 1 emission limitation for NOx in Table 1 (9.2 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NOx and HC in Table 1 (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (2,250 kW) by the NOx g/kW-hr emission limitation (5.61 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (27.8 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

c. Emission Limitation:

$PM_{10}/PM_{2.5}$ emissions shall not exceed 0.20 g/kW-hr, 0.99 lb/hr, and 0.25 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on manufacturer's emissions data. The hourly emission limitation was developed by multiplying the maximum operating load (2,250 kW) by the $PM_{10}/PM_{2.5}$ emission factor supplied by the manufacturer (0.20 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 201 and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.99 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

d. Emission Limitation:

SO_2 emissions shall not exceed 0.03 lb/hr and 0.008 ton/yr.

Applicable Compliance Method:

The hourly emission limitation is based dividing the AP-42 emission factor for SO_2 from AP-42 Table 3.4-1 dated 10/96 whenburning diesel fuel with a maximum sulfur content of 15 ppmw (0.0015 lb/mmBtu) by (10^6 Btu/mmBtu) multiplied by (7,000 Btu/hp-hr) and multiplied by the maximum power rating (3,016.6 hp).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 6C of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.03 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

e. Emission Limitation:

VOC emissions shall not exceed 0.79 g/kW-hr, 3.93 lbs/hr, and 0.98 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NOx + NMHC emission limitation specified by the Tier 2 standard in 40 CFR 89.112(a) Table 1 (6.4 g/kW-hr) multiplied by the Tier 1 emission limitation for NMHC in Table 1 (1.3

g/kW-hr) divided by the sum of the Tier 1 emission limitations for NOx and HC in Table 1 (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (2250 kW) by the VOC emission factor supplied by the manufacturer (0.79 g/kW-hr) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 25 or 25A of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (3.93 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

f. Emission Limitation:

H_2SO_4 emissions shall not exceed 1.32E-04 g/kW-hr, 6.5 E-04 lb/hr and 1.6E-04 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr emission is based on the sulfuric acid mist emission factor from page 276 of Toxic Air Pollution Emission Factors, EPA 450/2-90-011 (8.9 ng/J x %sulfur in fuel = 8.9(0.0015) = 0.01335 ng/J). The H_2SO_4 emission factor (0.01335 ng/J) was converted to g/kW-hr by multiplying by (1055.1 J/Btu), multiplying by (7000 Btu/hp-hr), multiplying by ($g/10^9$ ng), and multiplying by (1.341 hp/kW) = 1.32E-04 g/kW-hr.

The pound per hour emissions limitation was developed by multiplying the g/kW-hr allowable H_2SO_4 emission limitation (1.32E-04 g/kW-hr) by the maximum operating load (2,250 kW) and divided by 454 grams per pound to determine the hourly emissions (6.5E-04 lb/hr).

If required, the permittee shall demonstrate compliance with the g/kW-hr and lb/hr emission limitation using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The ton per year emission limitation was developed by multiplying the hourly allowable H_2SO_4 emission limitation (6.5E-04 lb/hr) by the maximum annual hours of operation (500 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

g. Emission Limitation:

Carbon dioxide equivalent (CO_2e) emissions shall not exceed 877 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation was established to reflect the potential to emit for this emissions unit by calculating the sum of the maximum capacity (3016.6 hp) by the emission factor for CO_2, N_2O, and CH_4, multiplied by the global warming potential for CO_2, N_2O, and CH_4 (1, 310, and 21, respectively from Table A-1 to Subpart A of 40 CFR 98). Multiply the sum by the maximum annual hours of operation (500 hrs/yr) and divide by 2,000 pounds per ton. The CO_2 emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (1.16 lb/hp-hr). The N_2O emission factor was obtained from 40 Table C-2 to Subpart C of 40 CFR 98 (0.6 g/mmBtu). The CH_4 emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (7.05E-04 lb TOC/hp-hr x 0.09 lb CH_4/lb TOC = 6.34E-05 lb CH_4/hp-hr).

$$(3016.6\ hp)x\left[\left(1.16\frac{lb}{hp-hr}(1)\right)+\left(\left(0.6\frac{g}{mmBtu}\right)\left(7000\frac{Btu}{hp-hr}\right)\left(\frac{mmBtu}{1E06Btu}\right)\left(\frac{lb}{454g}\right)(310)\right)+\left(6.34E-05\frac{lb}{(hp-hr)}\right)(21)\right]x\left(500\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000lb}\right)=878\ tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the lb/hp-hr CO_2 emission rate does not exceed 1.16 lb/hp-hr. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the lb/hp-hr CO_2 emission rate.

h. Emission Limitation:

The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standard: 15 ppm maximum sulfur content

Applicable Compliance Method:

The records required by d)(2) shall be used to demonstrate compliance.

i. Emission Limitation:

The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standard: a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

Applicable Compliance Method:

The records required by d)(2) and d)(3) shall serve as demonstration of compliance.

j. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance according to Method 9 of 40 CFR Part 60, Appendix A.

k. Emission Limitation:

NMHC + NOx emissions shall not exceed 6.4 g/kW-hr;
CO emissions shall not exceed 3.5 g/kW-hr;
PM emissions shall not exceed 0.20 g/kW-hr;

Exhaust opacity shall not exceed:
20 percent during acceleration mode;
15 percent during lugging mode; and
50 percent during the peaks in either the acceleration or lugging modes.

Applicable Compliance Method:

According to 40 CFR 60.4211(c), the permittee shall demonstrate compliance with these emissions limitations by purchasing an engine certified to the emission standards in 40 CFR 60.4205(b) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in 40 CFR 60.4211(g). The permittee shall maintain documentation of certification to the emission standards in 40 CFR 60.4205.

g) Miscellaneous Requirements

(1) None.

3. P004, Emergency Fire Pump

Operations, Property and/or Equipment Description:

300 hp (223.8 kW) emergency diesel-fired fire pump engine

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Sulfur dioxide (SO_2) emissions shall not exceed 0.003 lb/hr and 8.0 E-04 ton/yr. see b)(2)a. and b)(2)b.
b.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/2006	see b)(2)c.
c.	OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hr, 1.7 pounds per hour (lbs/hr), and 0.43 ton per rolling, 12-month period. Nitrogen Oxides (NO_x) emissions shall not exceed 3.5 g/kW-hr, 1.7 lb/hr, and 0.43 ton per rolling, 12-month period. Particulate matter emissions less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 0.20 g/kW-hr, 0.10 lb/hr, and 0.025 ton per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.50 g/kW-hr, 0.25 lb/hr, and 0.06 ton per rolling, 12-month period. H_2SO_4 emissions shall not exceed 1.32 E-04 g/kW-hr, 6.5E-05 lb/hr and 1.6E-05

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		ton per rolling, 12-month period Carbon dioxide equivalent (CO_2e) emissions shall not exceed 87 tons per rolling, 12-month period. see b)(2)d. and b)(2)e.
d.	OAC rule 3745-17-07(A)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.
e.	OAC rule 3745-17-11(B)(5)(a)	see b)(2)f.
f.	OAC rule 3745-18-06(G)	less stringent than 40 CFR Part 63, Subpart IIII
g.	OAC rule 3745-110-03(J)(16), (19)	exemption – see b)(2)g.
h.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	Table 8 to Subpart IIII of 40 CFR Part 60 – Applicability of General Provisions to Subpart IIII shows which parts of the General Provisions in 40 CFR 60.1-19 apply.
i.	40 CFR Part 60, Subpart IIII (40 CFR 60.4200–4219) [In accordance with 40 CFR 60.4200(a)(2), this emissions unit is a compression ignition stationary internal combustion fire pump engine for which construction commenced after July 11, 2005 subject to the emissions limitation/control measures specified in this section.]	Non-methane hydrocarbon (NMHC) + NOx emissions shall not exceed 4.0 g/kW-hr. CO emissions shall not exceed 3.5 g/kW-hr. PM emissions shall not exceed 0.20 g/kW-hr. see b)(2)h. [60.4205(c) and 60.4207(b)]
j.	40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6580-63.6675) [In accordance with 40 CFR 63.6590(c)(1), this emissions unit is a new stationary reciprocating internal combustion engine (RICE) located at an area source of HAP emissions subject to the emissions limitation/control measures specified in this section.]	see b)(2)i [63.6590(c), (c)(1)]

(2) Additional Terms and Conditions

a. Compliance with the requirements of this rule for CO, NOx, PM_{10}, $PM_{2.5}$, and VOC emissions includes compliance with the requirements of OAC rule 3745-31-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC is less than 10 tons per year taking into consideration the federally enforceable emissions limitations and operating hours restriction specified by OAC rule 3745-31-10 through 20.

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The $PM_{10}/PM_{2.5}$ emissions limitations include both filterable and condensable particulate emissions.

e. The maximum annual operating hours for this emissions unit shall not exceed 500 hours, based upon a rolling, 12-month summation of the operating hours.

To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	500
1-2	500
1-3	500
1-4	500
1-5	500
1-6	500
1-7	500

Month(s)	Maximum Allowable Cumulative Operating Hours
1-8	500
1-9	500
1-10	500
1-11	500
1-12	500

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

f. The emission limitation specified by this rule is less stringent than the emission limitation established by OAC rule 3745-31-10 through 20.

g. The requirements of this rule do not apply, since:

i. NOx emissions are restricted to less than 25 tons per year; and

ii. the emissions unit is subject to a BACT limitation for NOx.

h. The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standards:

15 ppm maximum sulfur content; and

a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

i. This emissions unit must meet the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply under this subpart.

c) Operational Restrictions

(1) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain monthly records of the following information:

a. the operating hours for each month; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

(2) For each shipment of diesel fuel received for burning in this emissions unit, the permittee shall maintain records of the oil supplier's (or permittee's) analyses for sulfur contentin parts per million (40 CFR 80.510). The permittee shall perform or require the supplier to perform the analyses for sulfur content in accordance with 40 CFR 80.585.

(3) The permittee shall also maintain documentation of supplier verification that the diesel fuel as purchased has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

(4) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. each shipment of diesel fuel received for burning in this emissions unit which did not comply with the per gallon standards specified in b)(2); and

b. all exceedances of the rolling, 12-month limitation on the hours of operation for this emissions unit; and for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative hours of operation.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

(3) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions shall not exceed 3.5 g/kW-hr, 1.7 lbs/hr, and 0.43 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the standard specified in Table 4 to 40 CFR Part 60, Subpart IIII. The hourly emission limitation was developed by multiplying the maximum operating load (223.8 kW) by the g/kW-hr CO emission limitation (3.5 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (1.7 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

b. Emission Limitation:

NOx emissions shall not exceed 3.5 g/kW-hr, 1.7 lbs/hr, and 0.43 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NOx + NMHC emission limitation specified by the Table 2 to 40 CFR Part 60, Subpart IIII (4.0 g/kW-hr) multiplied by the Tier 1 emission limitation for NOx in Table 1 to 40 CFR 89.112(a) (9.2 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NOx and HC in Table 1 to 40 CFR 89.112(a) (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (223.8 kW) by the g/kW-hr NOx emission limitation (3.5 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (1.7 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

c. Emission Limitation:

$PM_{10}/PM_{2.5}$ emissions shall not exceed 0.20 g/kW-hr, 0.10 lb/hr, and 0.025 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on manufacturer's emissions data. The hourly emission limitation was developed by multiplying the maximum operating load (223.8 kW) by the $PM_{10}/PM_{2.5}$ emission factor supplied by the manufacturer (0.20 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 201 and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.10 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

d. Emission Limitation:

SO_2 emissions shall not exceed 0.003 lb/hr and 8.0E-04 ton/yr.

Applicable Compliance Method:

The hourly emission limitation is based dividing the AP-42 emission factor for SO_2 from AP-42 Table 3.4-1 dated 10/96 whenburning diesel fuel with a maximum sulfur content of 15 ppmw (0.0015 lb/mmBtu) by (10^6 Btu/mmBtu) multiplied by (7,000 Btu/hp-hr) and multiplied by the maximum power rating (300 hp).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 6C of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.003 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

e. Emission Limitation:

VOC emissions shall not exceed 0.50 g/kW-hr, 0.25 lb/hr, and 0.06 ton/yr as a rolling, 12-month summation of the monthly emissions.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NOx + NMHC emission limitation specified by the Table 2 to 40 CFR Part 60, Subpart IIII (4.0 g/kW-hr) multiplied by the Tier 1 emission limitation for NMHC in Table 1 to 40 CFR 89112(a) (1.3 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NOx and HC in Table 1 to 40 CFR 89.112(a) (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (223.8 kW) by the g/kW-hr VOC emission limitation (0.50 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 25 or 25A of

40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.24 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

f. Emission Limitation:

H_2SO_4 emissions shall not exceed 1.32E-04 g/kW-hr, 6.5 E-05 lb/hr and 1.6E-05 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr emission is based on the sulfuric acid mist emission factor from page 276 of Toxic Air Pollution Emission Factors, EPA 450/2-90-011 (8.9 ng/J x %sulfur in fuel = 8.9(0.0015) = 0.01335 ng/J). The H_2SO_4 emission factor (0.01335 ng/J) was converted to g/kW-hr by multiplying by (1055.1 J/Btu), multiplying by (7000 Btu/hp-hr), multiplying by ($g/10^9$ ng), and multiplying by (1.341 hp/kW) = 1.32E-04 g/kW-hr.

The pound per hour emissions limitation was developed by multiplying the g/kW-hr allowable H_2SO_4 emission limitation (1.32E-04 g/kW-hr) by the maximum operating load (223.8 kW) and divided by 454 grams per pound to determine the hourly emissions (6.5E-05 lb/hr).

If required, the permittee shall demonstrate compliance with the g/kW-hr and lb/hr emission limitation using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The ton per year emission limitation was developed by multiplying the hourly allowable H_2SO_4 emission limitation (6.5E-05 lb/hr) by the maximum annual hours of operation (500 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

g. Emission Limitation:

Carbon dioxide equivalent (CO_2e) emissions shall not exceed 87 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation was established to reflect the potential to emit for this emissions unit by calculating the sum of the maximum capacity (300 hp) by the emission factor for CO_2, N_2O, and CH_4, multiplied by the global warming potential for CO_2, N_2O, and CH_4 (1, 310, and 21, respectively from Table A-1 to Subpart of 40 CFR 98). Multiply the sum by the maximum annual hours of operation (500

hrs/yr) and divide by 2,000 pounds per ton. The CO_2 emission factor was obtained from AP-42 Table 3.3-1 dated 10/96 (1.15 lb/hp-hr). The N_2O emission factor was obtained from Table C-2 to Subpart C of 40 CFR 98 (0.6 g/mmBtu). The CH_4 emission factor was obtained from AP-42 Table 3.3-1 dated 10/96 (2.47E-03 lb TOC/hp-hr (0.09 lb CH_4/lb TOC)= 2.223E-04 lb CH_4/hp-hr, this table did not include an estimate of how much methane comprises the TOC emission factor, so the value of 9% from AP-42 Table 3.4-1 dated 10/96 was used).

$$(300\ hp)x\left[\left(1.15\frac{lb}{hp-hr}(1)\right)+\left(\left(0.6\frac{g}{mmBtu}\right)\left(7000\frac{Btu}{hp-hr}\right)\left(\frac{mmBtu}{1E06Btu}\right)\left(\frac{lb}{454g}\right)(310)\right)+\left(2.223E-04\frac{lb}{(hp-hr)}\right)(21)\right]x\left(500\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000lb}\right)=87\ tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the lb/hp-hr CO_2 emission rate does not exceed 1.15 lb/hp-hr. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the lb/hp-hr CO_2 emission rate.

h. Emission Limitation:

The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standard: 15 ppm maximum sulfur content

Applicable Compliance Method:

The records required by d)(2) shall be used to demonstrate compliance.

i. Emission Limitation:

The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standard: a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

Applicable Compliance Method:

The records required by d)(2) and d)(3) shall serve as demonstration of compliance.

j. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with this emissions limitation according to Method 9 of 40 CFR Part 60, Appendix A.

k. Emission Limitation:

NMHC + NOx emissions shall not exceed 4.0 g/kW-hr (3.0 g/hp-hr);
CO emissions shall not exceed 3.5 g/kW-hr (2.6 g/hp-hr); and
PM emissions shall not exceed 0.20 g/kW-hr (0.15 g/hp-hr)

Applicable Compliance Method:

According to 40 CFR 60.4211(c), the permittee shall demonstrate compliance with these emissions limitations by purchasing an engine certified to the emission standards in 40 CFR 60.4205(c) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in 40 CFR 60.4211(g).

g) Miscellaneous Requirements

(1) None.

4. P005, Wet Cooling Tower

Operations, Property and/or Equipment Description:

16 cell mechanical draft wet cooling tower with high efficiency drift eliminator

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	see b)(2)a. and b.
b.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/2006	see b)(2)c.
c.	OAC rules 3745-10 through 20 (Prevention of Significant Deterioration of Air Quality)	Particulate matter emissions less than 10 microns in diameter (PM_{10}) shall not exceed 1.03 pounds per hour and 4.5 tons per rolling, 12-month period. Particulate matter emissions less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 3.4E-03 pound per hour and 0.015 ton per rolling, 12-month period. The permittee shall install a drift eliminator with a maximum drift rate of 0.0005% on this emissions unit. Visible particulate emissions shall not exceed 10% opacity as a 6-minute average. The presence of condensed water vapor shall not be deemed a violation for failure of stack emissions meeting this visible emission limitation. see c)(1)
d.	OAC rule 3745-17-07(A)(1)	see b)(2)d.
e.	OAC rule 3745-17-11(B)	see b)(2)d.

(2) Additional Terms and Conditions

a. The requirements of this rule include compliance with the requirements of OAC rule 3745-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the PM_{10} and $PM_{2.5}$ emissions from this air contaminant source since the calculated annual emission rate for PM_{10} and $PM_{2.5}$ is less than 10 tons per year taking into account the federally enforceable rule limit of 0.0005% drift and a maximum TDS concentration of 2,030.5 mg/l under OAC rule 3745-31-10 through 20.

d. The emission limitation specified by this rule is less stringent than the emission limitation established by OAC rule 3745-31-10 through 20.

c) Operational Restrictions

(1) The permittee shall maintain the total dissolved solids (TDS) concentration of the cooling water less than or equal to 2,030.5 milligrams per liter.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall properly install, operate, and maintain a conductivity meter or other equipment to continuously monitor and record the TDS concentration of the cooling tower water. The monitoring devices shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

(2) Since the TDS data measured by TDS monitors is based on a correlation between conductivity and TDS, an exceedance measured by the TDS monitor is not a violation of the TDS operational restriction, but rather serves as an indicator to initiate corrective action by the permittee to reduce the TDS concentration..

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify all TDS readings in excess of 2030.5 mg/l. The reports shall identify corrective action taken to reduce the TDS concentration.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit

(2) Prior to startup, the permittee shall submit written documentation provided by the vendor/manufacturer, of the maximum drift rate of 0.0005% for the drift eliminator and the premise, basis, and justification for the drift rate.

(3) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

PM_{10} emissions shall not exceed 1.03 lbs/hr and 4.5 tons per rolling, 12-month period.

Applicable Compliance Method:

The lb/hr PM_{10} emission limitation is based on multiplying the maximum re-circulating water flow rate (322,000 gal/min) by the maximum TDS concentration (2030.5/1E06) multiplied by the decimal fraction drift rate (0.000005) multiplied by the density of water (8.34 lbs/gal) multiplied by (60 min/hr) and multiplied by the decimal fraction of PM_{10} contained in the TDS (0.63). The permittee calculated the PM_{10} fraction using AWMA Abstract No. 216, Session No. AM-1b, Orlando, 2001.

The annual emission limitation is based on multiplying the hourly emission limitation (1.03 lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and dividing by (2,000 lbs/ton)

Compliance with the hourly and annual emissions limitation will be assumed provided that the TDS concentration recorded in d) remains below 2030.5 mg/l.

b. Emission Limitation:

$PM_{2.5}$ emissions shall not exceed 3.4E-03 lb/hr and 0.015 ton/yr

The lb/hr $PM_{2.5}$ emission limitation is based on multiplying the maximum re-circulating water flow rate (322,000 gal/min) by the maximum TDS concentration

(2030.5/1E06) multiplied by the decimal fraction drift rate (0.000005) multiplied by the density of water (8.34 lbs/gal) multiplied by (60 min/hr) and multiplied by the decimal fraction of $PM_{2.5}$ contained in the TDS (0.0021). The permittee calculated the $PM_{2.5}$ fraction using AWMA Abstract No. 216, Session No. AM-1b, Orlando, 2001.

The annual emission limitation is based on multiplying the hourly emission limitation (3.4E-03 lb/hr) by the maximum annual hours of operation (8,760 hrs/yr) and dividing by (2,000 lbs/ton)

Compliance with the hourly and annual emissions limitation will be assumed provided that the TDS concentration recorded in d) remains below 2030.5 mg/l.

c. Emission Limitation:

The maximum drift rate shall not exceed 0.0005%.

Applicable Compliance Method:

Manufacturer's emissions data shall be used to demonstrate compliance with this limitation.

Within 90 days of startup, the permittee shall submit to the Toledo Division of Environmental Services written documentation provided by the vendor/manufacturer, of the maximum drift rate of 0.0005% for the drift eliminator and the premise, basis, and justification for the drift rate.

d. Emission Limitation:

The permittee shall maintain the TDS concentration of the cooling water less than or equal to 2,030.5 milligrams per liter.

Applicable Compliance Method:

The monitoring and recordkeeping requirements under d)(1) and d)(2) shall serve as demonstration of compliance.

If required, compliance shall be demonstrated using test procedures that conform to regulation 40 CFR 136, "Test Procedures For The Analysis of Pollutants". Alternative U.S. EPA approved test methods may be used with prior written approval from the Ohio EPA.

g) Miscellaneous Requirements

(1) None.

5. Emissions Unit Group -P001 and P002: CTG #1 and CTG #2

EU ID	Operations, Property and/or Equipment Description
P001	Mitsubishi M501GAC or Siemens SCC6-8000H combined cycle combustion turbine (2,932 mmBtu/hr heat input turbine and 300 mmBtu/hr heat input duct burner) with dry low NOx combustors, selective catalytic reduction (SCR), and catalytic oxidizer.
P002	Mitsubishi M501GAC or Siemens SCC6-8000H combined cycle combustion turbine (2,932 mmBtu/hr heat input turbine and 300 mmBtu/hr heat input duct burner) with dry low NOx combustors, selective catalytic reduction (SCR), and catalytic oxidizer.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

(1) d)(12) through d)(15) and e)(6).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	Sulfur dioxide (SO_2) emissions shall not exceed 1.4E-03 lb/mmBtu of heat input. see b)(2)b.
b.	OAC rule 3745-31-05(D)	The combined SO_2 emissions from P001 and P002 shall not exceed 34.2 tons per rolling 12-month period if Mitsubishi turbines are installed and 36.8 tons per rolling, 12-month period if Siemens turbines are installed. see b)(2)e. and f.
c.	OAC rule 3745-31-10 through 20	Visible particulate emissions from the stack serving this emissions unit shall not exceed 10 percent opacity as a 6-minute average. Carbon dioxide equivalent (CO_2e) emissions from the Mitsubishi turbine shall not exceed 840 lb/MW-hr gross energy output and 318,404 lbs/hr. Carbon dioxide equivalent (CO_2e)

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		emissions from the Siemens turbine shall not exceed 833 lb/MW-hr gross energy output and 327,819 lbs/hr. see b)(2)c., b)(2)d., b)(2)g. through b)(2)n., and b)(2)v. through x.
d.	OAC rule 3745-17-07(A)	see b)(2)o.
e	OAC rule 3745-17-11(B)(4)	see b)(2)o.
f.	OAC rule 3745-18-06(A)	see b)(2)q.
g.	OAC rule 3745-110-03(J)(19)	Exemption
h.	OAC rule 3745-114	see d)(12) through d)(15)
i.	40 CFR Part 60, Subpart A	see b)(2)r.
j.	40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420) [In accordance with 40 CFR 60.4305(a), this emissions unit is a stationary combustion turbine with a heat input at peak load greater than 10 mmBtu/hr with a heat recovery steam generator/duct burners subject to the emissions limitations/control measures specified in this section.]	see b)(2)p. and b)(2)s.
k.	40 CFR Part 63, Subpart YYYY	see b)(2)t.
l.	40 CFR Part 63, Subpart JJJJJJ	see b)(2)u.

(2) Additional Terms and Conditions

a. All requirements specified for in this Section of the permit for Emissions Unit Group P001 and P002 apply to each combined cycle combustion turbine (P001 and P002) unless a combined requirement is otherwise specified.

b. Compliance with the requirements of this rule for CO, NO_x, PM_{10}, $PM_{2.5}$, and VOC includes compliance with the requirements of OAC rule 3745-31-10 through 20.

c. The emissions from this emissions unit shall be vented to the SCR and catalytic oxidation units at all times during which the emissions unit is in operation.

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The PM_{10}/$PM_{2.5}$ emissions limitations include both filterable and condensable particulate emissions.

e. The sulfur content of natural gas burned in this emissions unit shall not exceed 0.5 grains per 100 standard cubic feet.

f. The combined natural gas usage by emissions units P001 and P002 shall not exceed 47,917 mmscf per rolling, 12-month period if Mitsubishi turbines are installed and 51,560 mmscf per rolling, 12-month period if Siemens turbines are installed. To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the natural gas usage levels specified in the following table:

	Maximum Allowable Cumulative Natural Gas Usage by P001 and P002 combined (Million Standard Cubic Feet)	
Month(s)	mmscf, if Mitsubishi turbines are installed	mmscf, if Siemens turbines are installed
1	7,986	8,593
1-2	15,972	17,187
1-3	1123,959	25,780
1-4	31,945	34,373
1-5	39,931	42,967
1-6	47,917	51,560
1-7	47,917	51,560
1-8	47,917	51,560
1-9	47,917	51,560
1-10	47,917	51,560
1-11	47,917	51,560
1-12	47,917	51,560

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual natural gas usage limitation shall be based upon a rolling, 12-month summation of the monthly natural gas usage.

g. The permittee shall comply with the following emissions limitations if a Mitsubishi turbine is installed:

Allowable Emissions if Mitsubishi Turbine is Installed				
Pollutant	**Operating Mode[a]**	**Emission Rate [b,e]**	**Emission rate, lb/hr[b]**	**Emission rate, tons per rolling, 12-month period**
CO	CT with DB	2.0[c]	12.7	-
	CT only	2.0[c]	13.7	-
	All operating modes, including startup periods	-	-	183.9
NOx	CT with DB	2.0[c]	20.8	-
	CT only	2.0[c]	22.6	-
	All operating modes, including startup periods			94.8
$PM_{10}/PM_{2.5}$	CT with DB	3.73E-03[d]	10.1	-
	CT only	3.84E-03[d]	11.3	-
	All operating modes, including startup periods	-	-	44.2
VOC	CT With DB	2.0[c]	7.3	-
	CT only	2.0[c]	7.9	-
	All operating modes, including startup periods	-	-	56.0
H_2SO_4	CT only	4.1E-04[d]	1.2	-
	CT with DB	4.4E-04[d]	1.2	-
	All operating modes, including startup periods	-	-	5.26
CO_2e	All operating modes, including startup periods	-	-	1,394,611

Allowable Emissions if Mitsubishi Turbine is Installed				
Pollutant	**Operating Mode[a]**	**Emission Rate [b,e]**	**Emission rate, lb/hr[b]**	**Emission rate, tons per rolling, 12-month period**

a. CT = combustion turbine
DB = duct burner
b. Emission limitation does not apply during periods of startup and shutdown.
c. Parts per million by volume dry (ppmvd) at 15% oxygen
d. Pound per million Btu of heat input
e. Emissions limitations are based on an hourly average.

h. To ensure enforceability of the rolling, 12-month emissions limitations during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the emission levels specified in the following table:

	Maximum Allowable Cumulative Emissions if a Mitsubishi turbine is installed (Tons)				
Month(s)	CO	NOx	PM10/PM2.5	VOC	H_2SO_4
1	30.7	15.8	7.4	9.3	0.88
1-2	61.3	31.6	14	18.7	1.75
1-3	92.0	47.4	22.1	28.0	2.63
1-4	122.6	63.2	29.5	37.3	3.51
1-5	153.3	79.0	36.8	46.7	4.38
1-6	183.9	94.8	44.2	56.0	5.26
1-7	183.9	94.8	44.2	56.0	5.26
1-8	183.9	94.8	44.2	56.0	5.26
1-9	183.9	94.8	44.2	56.0	5.26
1-10	183.9	94.8	44.2	56.0	5.26
1-11	183.9	94.8	44.2	56.0	5.26
1-12	183.9	94.8	44.2	56.0	5.26

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual emissions limitations shall be based upon a rolling, 12-month summation of the monthly emissions.

i. The permittee shall comply with the following requirements during periods of startup if a Mitsubishi turbine is installed.

	Emissions LimitationsDuring Startup (lbs/hr)[a]		
	Cold Startup	**Hot Startup**	**Warm Startup**
CO	1106.72	578.5	973.42
NOx	43.56	46.93	42.27
VOC	339.4	109.34	314.07
[a] Pound per hour emissions rates as presented are averaged over the duration of the event where the duration of a cold start is 150 minutes, the duration of a warm start is 110 minutes, and the duration of a hot start is 67 minutes.			

"Cold Startup" is defined as a combustion turbine startup that occurs more than 60 hours after a combustion turbine shutdown. The period of startup is defined as the lesser of the first 150 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves two consecutive CEM data points in compliance with the ppmvd emissions limitations for CO and NO_x.

"Hot Startup" is defined as a combustion turbine startup that occurs within 8 hours of a combustion turbine shutdown. The period of hot startup is defined as the lesser of the first 67 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves two consecutive CEM data points in compliance with the ppmvd emissions limitations for CO and NO_x.

"Warm Startup" is defined as a combustion turbine startup that occurs between 8 hours of and 60 hours of a combustion turbine shutdown. The period of startup is defined as the lesser of the first 110 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves two consecutive CEM data points in compliance with the ppmvd emissions limitations for CO and NO_x.

j. The design net plant base heat rate with the Mitsubishi turbine shall not exceed 7,280 Btu/kW-hr HHV (ISO conditions without duct firing).

k. The permittee shall comply with the following emissions limitations if a Siemens turbine is installed:

Allowable Emissions if Siemens Turbine is Installed				
Pollutant	**Operating Mode[a]**	**Emission Rate [b,e]**	**Emission rate, lb/hr[b]**	**Emission rate, tons per rolling, 12-month period**
CO	CT with DB	2.0[c]	13.0	-
	CT only	2.0[c]	13.0	-
	All operating modes, including startup periods	-	-	72.2
NOx	CT with DB	2.0[c]	21.0	-
	CT only	2.0[c]	22.0	-
	All operating modes, including startup periods			92.0
$PM_{10}/PM_{2.5}$	CT with DB	5.5E-03[d]	14.0	-
	CT only	4.7E-03[d]	13.3	-
	All operating modes, including startup periods	-	-	61.3
VOC	CT With DB	1.9[c]	5.9	-
	CT only	1.0[c]	3.9	-
	All operating modes, including startup periods	-	-	28.6
H_2SO_4	CT with DB	7.0E-04[d]	1.5	-
	CT only	6.0E-04[d]	1.6	-
	All operating modes, including			

Allowable Emissions if Siemens Turbine is Installed				
Pollutant	**Operating Mode[a]**	**Emission Rate [b,e]**	**Emission rate, lb/hr[b]**	**Emission rate, tons per rolling, 12-month period**
	startup periods	-	-	6.57
CO_2e	All operating modes, including startup periods	-	-	1,435,847

a. CT = combustion turbine
DB = duct burner
b. Limitation does not apply during periods of startup and shutdown.
c. Parts per million by volume dry (ppmvd) at 15% oxygen
d. Pound per million Btu of heat input
e. Emissions limitations are based on an hourly average.

l. To ensure enforceability of the rolling, 12-month emissions limitations during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the emission levels specified in the following table:

	Maximum Allowable Cumulative Emissions if a Siemens turbine is installed (Tons)				
Month(s)	CO	NOx	PM10/PM2.5	VOC	H_2SO_4
1	12.0	15.3	10.2	4.8	1.10
1-2	24.1	30.7	20.4	9.5	2.19
1-3	36.1	46.0	30.7	14.3	3.29
1-4	48.1	61.3	40.9	19.1	4.3
1-5	60.2	76.7	51.1	23.8	5.48
1-6	72.2	92.0	61.3	28.6	6.57
1-7	72.2	92.0	61.3	28.6	6.57
1-8	72.2	92.0	61.3	28.6	6.57
1-9	72.2	92.0	61.3	28.6	6.57

	Maximum Allowable Cumulative Emissions if a Siemens turbine is installed (Tons)				
Month(s)	CO	NOx	PM10/PM2.5	VOC	H_2SO_4
1-10	72.2	92.0	61.3	28.6	6.57
1-11	72.2	92.0	61.3	28.6	6.57
1-12	72.2	92.0	61.3	28.6	6.57

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual emissions limitations shall be based upon a rolling, 12-month summation of the monthly emissions.

m. The permittee shall comply with the following requirements during periods of startup if a Siemens turbine is installed.

	Emissions LimitationsDuring Startup (lbs/hr)[a]		
	Cold Startup	**Hot Startup**	**Warm Startup**
CO	182.0	211.46	214.90
NOx	62.67	76.83	78.98
VOC	56.0	83.41	84.49

[a] Pound per hour emissions rates as presented are averaged over the duration of the event where the duration of a cold start is 180 minutes, the duration of a warm start is 98 minutes, and the duration of a hot start is 82 minutes.

"Cold Startup" is defined as a combustion turbine startup that occurs more than 64 hours after a combustion turbine shutdown. The period of startup is defined as the lesser of the first 180 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves two consecutive CEM data points in compliance with the ppmvd emissions limitations for CO and NO_x.

"Hot Startup" is defined as a combustion turbine startup that occurs within 16 hours of a combustion turbine shutdown. The period of hot startup is defined as the lesser of the first 82 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves two consecutive CEM data points in compliance with the ppmvd emissions limitations for CO and NO_x.

"Warm Startup" is defined as a combustion turbine startup that occurs between 16 hours of and 64 hours of a combustion turbine shutdown. The period of startup is defined as the lesser of the first 98 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves two consecutive CEM data points in compliance with the ppmvd emissions limitations for CO and NO_x.

n. The design net plant base heat rate with the Siemens turbine shall not exceed 7,227 Btu/kW-hr HHV (ISO conditions without duct firing).

o. The emission limitation specified by this rule is less stringent than the limitation established by OAC rule 3745-31-10 through 20.

p. The emission limitation specified by this rule is less stringent than the limitation established by ORC 3704.03(T).

q. This emissions unit is exempt from the requirements of this rule, since only natural gas is burned.

r. 40 CFR Part 60 subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.

s. This emissions unit is subject to the applicable provisions of Subpart KKKK of the New Source Performance Standards (NSPS) as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60. The application and enforcement of these standards are delegated to the Ohio EPA. The requirements of 40 CFR Part 60 are also federally enforceable.

t. This emissions unit is not subject to the requirements of 40 CFR Part 63, Subpart YYYY, since it is not located at a major source of HAP emissions.

u. The duct burner is exempt from the requirements of this rule per 40 CFR 63.11195(e) due tocombusting only natural gas.

v. Each continuous NOx monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6. At least 45 days before commencing certification testing of the continuous NOx monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of NOx emissions from the continuous monitor(s), in units of the applicable standard(s). Except as allowed below, the plan shall

follow the requirements of 40 CFR Part 60, Appendix F and 40 CFR Part 75, Appendix B. The quality assurance/quality control plan and a logbook dedicated to the continuous monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct relative accuracy test audits for the continuous NOx monitoring system in accordance with the frequencies required pursuant to 40 CFR Part 60 and 40 CFR Part 75; or may follow relative accuracy test audit frequency requirements for monitoring systems subject to 40 CFR 75, Appendix B, in lieu of frequencies required in 40 CFR Part 60. In either case, results shall be recorded and reported in units of the applicable standard(s) in accordance with 40 CFR Part 60.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits pursuant to 40 CFR Part 60, and linearity checks pursuant to 40 CFR Part 75; however, linearity checks completed pursuant to 40 CFR Part 75, Appendix B, may be substituted for the quarterly cylinder gas or relative accuracy audits required per 40 CFR Part 60.

w. Each continuous carbon monoxide (CO) monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 4 or 4a and 6. At least 45 days before commencing certification testing of the continuous CO monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of CO emissions from the continuous monitor(s), in units of the applicable standard(s). The fuel flow monitor/meter shall be maintained as required in Part 75, Appendix D. Except as allowed below, the plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct relative accuracy test audits for the continuous CO monitoring system in accordance with the frequencies required for monitoring systems subject to 40 CFR 60, or may follow relative accuracy test audit frequency requirements for monitoring systems subject to 40 CFR 75, Appendix B. In either case, results shall be recorded and reported in units of the applicable standard(s) in accordance with 40 CFR Part 60.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; however, the quarterly cylinder gas audit and relative accuracy audit frequency requirements may be adjusted to coincide with linearity checks completed for continuous emissions monitoring systems subject to 40 CFR Part 75, Appendix B requirements.

x. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

c) Operational Restrictions

(1) The permittee shall only burn pipeline quality natural gas as fuel in this emissions unit.

(2) To ensure compliance with the PSD modeling, the permittee shall not operate more than one combustion turbine in startup mode at a time.

(3) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420)

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) For purposes of demonstrating compliance with the natural gas sulfur concentration restriction of 0.5 grain/dscf, the permittee shall sample and analyze the natural gas burned in this emissions unit monthly to determine the sulfur content using the appropriate ASTM or Gas Processors Association standards. Fuel supplier data may be used to comply with this requirement, provided that it is demonstrated to be representative of the fuel received for burning at this emissions unit.

(3) The permittee may elect not to monitor the total sulfur content of the fuel combusted in the turbine as specified in d)(2), if the fuel is demonstrated not to exceed potential sulfur emissions of 1.4E-03 lb SO_2/mmBtu. The permittee shall use one of the following sources of information to make the required demonstration:

a. the fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for natural gas is 0.5 grains of sulfur or less per 100 standard cubic feet, has potential sulfur emissions of less than less than 1.4E-03 lb SO_2/mmBtu heat input;

b. representative fuel sampling data which show that the sulfur content of the fuel does not exceed 1.4E-03 lb SO_2/mmBtu heat input. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to part 75 of this chapter is required; or

c. one of the custom sulfur monitoring schedules outlined in 40 CFR 60.4370(c) may be used to comply with the 1.4E-03 lb SO_2/mmBtu standard.

(4) The permittee shall maintain monthly records of the following information:

a. the natural gas usage by P001 and P002 for each month;

b. the combined natural gas usage by P001 and P002 for each month; and

c. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the combined natural gas usage by P001 and P002.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative combined natural gas usage by P001 and P002 for each calendar month.

(5) The permittee shall maintain monthly records of the following information:

a. the CO, NOx, $PM_{10}/PM_{2.5}$, VOC, and H_2SO_4 emission rate for each month of operations; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the CO, NOx, $PM_{10}/PM_{2.5}$, VOC, and H_2SO_4emissions.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative CO, NOx, $PM_{10}/PM_{2.5}$, VOC, and H_2SO_4emissions for each calendar month.

(6) The permittee shall maintain monthly records of the following information for this emissions unit for purposes of calculating rolling, 12-month emissions:

a. date, time, and duration of each cold, warm, and hot startup period;

b. the hours of operation of the combustion turbine;

c. the hours of operation of the duct burner;

d. the total duration of all cold startup periods in hours per rolling, 12-month period;

e. the total duration of all hot startup periods in hours per rolling, 12-month period;

f. the total duration of all warm startup periods in hours per rolling, 12-month period;

g. the total duration of steady-state operation without duct burner firing in hours per rolling, 12-month period;

h. the total duration of steady-state operation with duct burner firing in hours per rolling, 12-month period;

(7) Prior to the installation of the continuous NOx monitoring system, the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specification 2. The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous NOx monitoring system meets the requirements of Performance Specifications 2 and 6; and the U.S. EPA shall certify that the continuous NOx monitoring system meets the requirements under 40 CFR Part 75, which may be approved through the recommendation for certification by Ohio EPA to U.S. EPA. Once received, the letter(s)/document(s) of certification under Part 60 and certification or recommendation for certification under Part 75 shall be maintain on-site and made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.

(8) The permittee shall install, operate, and maintain equipment to continuously monitor and record NOx emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60 and 40 CFR Part 75.

The permittee shall maintain records of all data obtained by the continuous NOx monitoring system including, but not limited to:

a. emissions of NOx in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;

b. emissions of NOx in pounds per hour and in units of the applicable standard(s) in the appropriate averaging period;

c. results of quarterly cylinder gas audits or linearity checks;

d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;

e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);

f. hours of operation of the emissions unit, continuous NOx monitoring system, and control equipment;

g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous NOx monitoring system;

h. malfunction of the control equipment and/or the continuous NOx monitoring system; as well as,

i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

(9) Prior to the installation of the continuous carbon monoxide (CO) monitoring system, the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specification 4 or 4a (as appropriate). The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous CO monitoring system meets the requirements of Performance Specifications 4 or 4a and 6. Once received, the letter(s)/document(s) of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.

(10) The permittee shall operate and maintain equipment to continuously monitor and record CO emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Parts 60.

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to:

a. emissions of CO in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;

b. emissions of CO in pounds per hour and in units of the applicable standard(s) in the appropriate averaging period;

c. results of quarterly cylinder gas audits;

d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;

e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);

f. hours of operation of the emissions unit, continuous CO monitoring system, and control equipment;

g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous CO monitoring system;

h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous CO monitoring system; as well as,

i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

(11) The permittee shall calculate and record the monthly CO_2 emissions from P001 and P002 using data from the continuous flow and moisture content monitors using the procedures set forth in 40 CFR Part 75, Appendix G. From this data, the permittee shall calculate the CO_2 emissions from P001 and P002 per rolling, 12-month period.

(12) The Permit to Install application for these emissions units, P001 and P002, was evaluated based on the actual materials and the design parameters of the emissions unit's(s') exhaust system, as specified by the permittee. The "Toxic Air Contaminant Statute", ORC 3704.03(F), was applied to this/these emissions unit(s) for each toxic air contaminant listed in OAC rule 3745-114-01, using data from the permit application; and modeling was performed for each toxic air contaminant(s) emitted at over one ton per year using an air dispersion model such as SCREEN3, AERMOD, or ISCST3, or other

Ohio EPA approved model. The predicted 1-hour maximum ground-level concentration result(s) from the approved air dispersion model, was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC), calculated as described in the Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A", as follows:

a. the exposure limit, expressed as a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, for each toxic compound(s) emitted from the emissions unit(s), (as determined from the raw materials processed and/or coatings or other materials applied) has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):

   i. threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; or

   ii. STEL (short term exposure limit) or the ceiling value from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent 8-hour TLV.

b. The TLV is divided by ten to adjust the standard from the working population to the general public (TLV/10).

c. This standard is/was then adjusted to account for the duration of the exposure or the operating hours of the emissions unit(s), i.e., "X = 24" hours per day and "Y = 7" days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

   TLV/10 x 8/X x 5/Y = 4 TLV/XY = MAGLC

d. The following summarizes the results of dispersion modeling for the "worst case" toxic contaminant(s) if Mitsubishi turbines are installed:

   Toxic Contaminant: H_2SO_4

   TLV (mg/m3): 0.2 mg/m^3

   Maximum Hourly Emission Rate (lbs/hr): 1.2

   Predicted 1-Hour Maximum Ground-Level Concentration (µg/m3): 0.329

   MAGLC (µg/m3): 4.76

e. The following summarizes the results of dispersion modeling for the "worst case" toxic contaminant(s) if Siemens turbines are installed:

Toxic Contaminant: H_2SO_4

TLV (mg/m3): 0.2

Maximum Hourly Emission Rate (lbs/hr): 0.7

Predicted 1-Hour Maximum Ground-Level Concentration (µg/m3): 0.169

MAGLC (µg/m3): 4.76

The permittee, has demonstrated that emissions of H_2SO_4, from emissions unit(s) P001 and P002, is calculated to be less than eighty per cent of the maximum acceptable ground level concentration (MAGLC); any new raw material or processing agent shall not be applied without evaluating each component toxic air contaminant in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F).

(13) Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration, the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the 1-hour maximum ground-level concentration include, but are not limited to, the following:

a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a new toxic air contaminant with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application; and

c. physical changes to the emissions unit(s) or its/their exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Toxic Air Contaminant Statute" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), has been documented. If the change(s) meet(s) the definition of a "modification", the permittee shall apply for and obtain a final PTI prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

(14) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F):

a. a description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.);

b. the Maximum Acceptable Ground-Level Concentration (MAGLC) for each significant toxic contaminant or worst-case contaminant, calculated in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F);

c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) to be in compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), initially and for each change that requires re-evaluation of the toxic air contaminant emissions; and

d. the documentation of the initial evaluation of compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the emissions unit(s) or the materials applied.

(15) The permittee shall maintain a record of any change made to a parameter or value used in the dispersion model, used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.

(16) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420)

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

(2) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. Any monthly record showing an exceedance of the allowable sulfur content of natural gas,0.5 grain per 100 standard cubic feet; and

b. all exceedances of the rolling, 12-monthcombined natural gas usage limitation; and for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative combined natural gas usage levels.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous NOx monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of NOx emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, 40 CFR Parts 75 and 76, OAC Chapters 3745-14 and 3745-23, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous NOx and other associated monitors;

iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;

v. the total NOx emissions for the calendar quarter (tons);

vi. the total operating time (hours) of the emissions unit;

vii. the total operating time of the continuous NOx monitoring system while the emissions unit was in operation;

viii. results and date of quarterly cylinder gas audits or linearity checks;

ix. unless previously submitted, results and date of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

x. unless previously submitted, the results of any relative accuracy test audit showing the continuous NOx monitor out-of-control and the compliant results following any corrective actions;

xi. the date, time, and duration of any/each malfunction** of the continuous NOx monitoring system, emissions unit, and/or control equipment;

xii. the date, time, and duration of any downtime** of the continuous NOx monitoring system and/or control equipment while the emissions unit was in operation; and

xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter. Data substitution procedures from 40 CFR 75 are not to be used for showing compliance with the short term OAC 3745-31-05(A)(3) rule-based or NSPS-based limitation(s) in this permit.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

(4) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous CO monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of CO emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-21, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous CO and other associated monitors;

iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;

v. the total CO emissions for the calendar quarter (tons);

vi. the total operating time (hours) of the emissions unit;

vii. the total operating time of the continuous CO monitoring system while the emissions unit was in operation;

viii. results and dates of quarterly cylinder gas audits;

ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

x. unless previously submitted, the results of any relative accuracy test audit showing the continuous CO monitor out-of-control and the compliant results following any corrective actions;

xi. the date, time, and duration of any/each malfunction** of the continuous CO monitoring system, emissions unit, and/or control equipment;

xii. the date, time, and duration of any downtime** of the continuous CO monitoring system and/or control equipment while the emissions unit was in operation; and

xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter. Data substitution procedures from 40 CFR 75 are not to be used for showing compliance with the short term OAC 3745-31-05(A)(3) rule-based or NSPS-based limitation(s) in this permit.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

(5) The permittee shall collect, record, and maintain measurements, data, records, and reports required per 40 CFR Part 75; and shall submit certification, recertification, notifications, applications, monitoring plans, petitions for alternative monitoring systems, electronic quarterly reports, and any other pertinent record and/or report to the Administrator (U.S. EPA), as required by this Part.

(6) The permittee shall submit annual reports that include any changes to any parameter or value used in the dispersion model used to demonstrate compliance with the “Toxic Air Contaminate Statute”, ORC 3704.03(F), through the predicted 1 hour maximum concentration. The report should include:

a. the original model input;

b. the updated model input;

c. the reason for the change(s) to the input parameter(s); and

d. a summary of the results of the updated modeling, including the input changes; and

e. a statement that the model results indicate that the 1-hour maximum ground-level concentration is less than 80% of the MAGLC.

If no changes to the emissions, emissions unit(s), or the exhaust stack have been made during the reporting period, then the report shall include a statement to that effect.

(7) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420)

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

If a Mitsubishi turbine is installed, CO emissions from this emissions unit shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 12.2 lbs/hr when the duct burner is not in operation; and, 2.0 ppmvd at 15% oxygen as an hourly average and 12.7 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the CO emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

If required, the permittee shall demonstrate compliance using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

b. Emission Limitation:

If a Mitsubishi turbine is installed, CO emissions from this emissions unit shall not exceed 183.9 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 50 cold startups per year, with a minimum downtime preceding cold startup of 60 hours and a cold startup duration of 150 minutes, maximum CO

emissions of 2,766.8 pounds during each cold startup period; 250 hot startups per year with a of duration of 67 minutes each and maximum CO emissions of 646 pounds during each hot startup period; maximum hourly CO emissions during steady state operation of 12.7 lbs/hr based on manufacturer's data and steady state operating hours was determined by the following equation.

$$8{,}760\ hrs - \left(50\left(60\ hrs + \frac{150\ min}{60\left(\frac{min}{hr}\right)}\right) + 250\left(\frac{67\ min}{60\left(\frac{min}{hr}\right)}\right)\right) = 5{,}355.8 \text{ hours}$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left[\left(50\frac{CS}{yr}\right)\left(2{,}766.8\frac{lbs}{CS}\right)+\left(250\frac{HS}{yr}\right)\left(646\frac{lbs}{HS}\right)+\left(5{,}355.8\frac{hrs}{yr}\right)\left(12.7\frac{lbs}{hr}\right)\right]}{2000\frac{lbs}{ton}} = 183.9 \text{ tons}$$

Where:

CS = cold starts
HS = hot starts

Ongoing compliance with this emissions limitation shall be based on the pounds per hour emission data from the CO CEMS and the actual hours of operation of this emissions unit.

c. Emission Limitation:

If a Mitsubishi turbine is installed, CO emissions from this emissions unit shall not exceed 1106.72 lbs/hr during cold startup, 578.5 lbs/hr during hot startup, and 973.42 lbs/hr during warm startup averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the CO emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

d. Emission Limitation:

If a Mitsubishi turbine is installed, NO_x emissions from this emissions unit shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 22.6 lbs/hr when the duct burner is not in operation; and, NO_x emissions shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 20.8 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NOx emissions limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

If required, the permittee shall demonstrate compliance using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR 60.4400. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

e. Emission Limitation:

If a Mitsubishi turbine is installed, NO_x emissions shall not exceed 94.8 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 250 hot startups per year with a duration of 67 minutes each and maximum NOx emissions of 52.4 pounds during each hot startup period; maximum hourly NOx emissions during steady state operation of 20.8 lbs/hr based on manufacturer's data and steady state operating hours as calculated by the following equation.

$$8{,}760\ hrs - \left(250\left(\frac{67\ min}{60\ \left(\frac{min}{hr}\right)}\right)\right) = 8{,}480.83\ hours\ during\ normal\ operation$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left(250\frac{HS}{yr}\right)\left(52.4\frac{lbs}{HS}\right)+\left(8480.83\frac{hrs}{yr}\right)\left(20.8\frac{lbs}{hr}\right)}{2000\frac{lbs}{ton}} = 94.8 \text{ tons NOx}$$

Where:

HS = hot starts

Ongoing compliance with this emissions limitation shall be determined using the pounds per hour emission data from the NOx CEMS and the actual hours of operation of this emissions unit.

f. Emission Limitation:

If a Mitsubishi turbine is installed, NOx emissions from this emissions unit shall not exceed 43.56 lbs/hr during cold startup, 46.93 lbs/hr during hot startup, and 42.27 lbs/hr during warm startup averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NOx emissions limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

g. Emission Limitation:

If a Mitsubishi turbine is installed, PM_{10} emissions and $PM_{2.5}$ emissions shall not exceed 3.84E-03 lb/mmBtu of heat input and 11.3 lbs/hr when the duct burner is not in operation; and, PM_{10} and $PM_{2.5}$ shall not exceed 3.73E-03 lb/mmBtu of heat input and 10.1 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with these emissions limitations using Methods 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

h. Emission Limitation:

If a Mitsubishi turbine is installed, PM_{10} and $PM_{2.5}$ emissions from this emissions unit shall not exceed 44.2 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable $PM_{10}/PM_{2.5}$ emission limitation (10.1 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

i. Emission Limitation:

The sulfur content of natural gas burned shall not exceed 0.5 grain per standard cubic feet.

Applicable Compliance Method:

Compliance with the lb/mmBtu limitation will be determined by the monitoring and recordkeeping specified in 40 CFR 60.4365 or 40 CFR 60.4370.

If required, the permittee shall demonstrate compliance using the procedures specified in 40 CFR 60.4415(a)(1). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

j. Emission Limitation:

SO_2 emissions shall not exceed 1.4E-03 lb/mmBtu of heat input.

Applicable Compliance Method:

The lb/mmBtu limitation was established based on using pipeline quality natural gas having a maximum sulfur content of 0.5 grains per 100 cubic feet according to the following calculation. Multiply the maximum sulfur content of natural gas (0.5 grain S/100 scf) by the molecular weight of SO_2 (64.07 lb SO_2/lb-mole) divide by the molecular weight of sulfur (32.06 lb S/lb-mole) divide by (7,000 grains/lb), divide by (1,020 Btu/scf), and multiply by (10^6 Btu/mmBtu).

If required, compliance shall be demonstrated according to 40 CFR 60.4415.

k. Emission Limitation:

The combined SO_2 emissions from P001 and P002 shall not exceed 34.2 tons per rolling 12-month period if Mitsubishi turbines are installed.

Applicable Compliance Method:

Compliance with this emissions limitation shall be determined by the following calculation based on the records required by d). Multiply the maximum sulfur content of natural gas (0.5 gr S/100 scf) by the molecular weight of SO_2 (64.07 lb/lb-mole), divide by the molecular weight of sulfur (32.06 lb/lb-mole), divide by (7,000 gr/lb), multiply by the monthly natural gas usage (scf), and divide by (2,000 lbs/ton) to determine the monthly SO_2 emissions (tons). Add the SO_2 emissions calculated for the current month to the total SO_2 emissions calculated for the previous 11 months to determine the tons SO_2 emissions per rolling, 12-month period.

l. Emission Limitation:

If a Mitsubishi turbine is installed, VOC emissions shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 7.9 lbs/hr when the duct burner is not in operation; and, VOC emissions shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 7.3 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA

guidance documents. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

m. Emission Limitation:

If a Mitsubishi turbine is installed, VOC emissions shall not exceed 56.0 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 50 cold startups per year, with a minimum downtime preceding cold startup of 60 minutes and a cold startup duration of 150 minutes, maximum VOC emissions of 848.5 pounds during each cold startup period; 250 hot startups per year with a of duration of 67 minutes each and maximum VOC emissions of 122.1 pounds during each hot startup period; maximum hourly VOC emissions during steady state operation of 7.3 lbs/hr based on manufacturer's data and steady state operating hours was determined by the following equation.

$$8{,}760\ hrs - \left(50\left(60\ hrs + \frac{150\ min}{60\left(\frac{min}{hr}\right)}\right) + 250\left(\frac{67\ min}{60\left(\frac{min}{hr}\right)}\right)\right) = 5{,}355.8 \text{ hours}$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left[\left(50\frac{CS}{yr}\right)\left(848.5\frac{lbs}{CS}\right)+\left(250\frac{HS}{yr}\right)\left(122.1\frac{lbs}{HS}\right)+\left(5{,}355.8\frac{hrs}{yr}\right)\left(7.3\frac{lbs}{hr}\right)\right]}{2000\frac{lbs}{ton}} = 56.0 \text{ tons}$$

Where:

CS = cold starts
HS = hot starts

Ongoing compliance with this emissions limitation shall be based on the following calculation.

$$VOC = \frac{\left[(\#CS)\left(339.5\frac{lbs}{hr}\right) + (\#HS)\left(109.88\frac{lbs}{HS}\right) + (\#WS)\left(314.07\frac{lbs}{hr}\right) + (\#SSDB)\left(7.3\frac{lbs}{hr}\right) + (\#SSNDB)(7.0\frac{lbs}{hr})\right]}{2000\frac{lbs}{ton}}$$

Where:

VOC = tons VOC emissions per rolling, 12-month period

#CS = hours operated in cold startup per rolling, 12-month period

#HS = hours operated in hot startup per rolling, 12-month period

#WS = hours operated in warm startup per rolling, 12-month period

#SSDB = hours operated in steady state with duct burner per rolling, 12-month period

#SSNDB = hours operated in steady state without duct burner per rolling, 12-month period

n. Emission Limitation:

If a Mitsubishi turbine is installed, VOC emissions from this emissions unit shall not exceed 339.4 lbs/hr during cold startup, 109.34 lbs/hr during hot startup, and 314.07 lbs/hr during warm startup averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

o. Emission Limitation:

If a Mitsubishi turbine is installed, H_2SO_4 emissions shall not exceed 4.1E-04 lb/mmBtu of heat input and 1.2 lbs/hr when the duct burner is not in operation; and, H_2SO_4 emissions shall not exceed 4.4E-04 lb/mmBtu of heat input and 1.2 lbs/hr when the duct burner is in operation.

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

p. Emission Limitation:

If a Mitsubishi turbine is installed, H_2SO_4 emissions shall not exceed 5.26 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable H_2SO_4 emission limitation (1.2 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

q. Emission Limitation:

If a Mitsubishi turbine is installed, CO_2e emissions shall not exceed 318,404 lbs/hr and 1,394,611 tons per rolling, 12-month period.

Applicable Compliance Method:

The hourly emission limitation is based on the sum of following manufacturer's data (317,920.46 lbs/hr CO_2, 6.007 lbs/hr CH_4, and 1.154 lbs/hr N_2O) multiplied by the associated global warming potential for each pollutant (CO_2=1, CH_4=21, N_2O=310 from Table A-1 of 40 CFR 98).

$$\left[\left(317{,}920.46\frac{lbs}{hr}\right)(1)+\left(6.007\frac{lbs}{hr}\right)(21)+\left(1.154\frac{lbs}{hr}\right)(310)\right]=318{,}404\ lbs/hr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the hourly CO_2 emission rate does not exceed 317,920.46 lbs/hr. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the hourly CO_2 emission rate.

The annual emission limitation is based on the sum of following manufacturer's data (317,920.46 lbs/hr CO_2, 6.01 lbs/hr CH_4, and 1.15 lbs/hr N_2O) multiplied by the associated global warming potential for each pollutant (CO_2=1, CH_4=21, N_2O=310 from Table A-1 of 40 CFR 98), multiplied by the maximum annual hours of operation (8,760 hrs/yr) and divided by (2,000 lbs/ton).

$$\left[\left(317{,}920.46\frac{lbs}{hr}\right)(1)+\left(6.007\frac{lbs}{hr}\right)(21)+\left(1.154\frac{lbs}{hr}\right)(310)\right]\left(8{,}760\frac{hrs}{yr}\right)\left(\frac{ton}{2000lbs}\right)=1{,}394{,}611\ tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the rolling, 12-month CO_2 emissions as calculated in section d) above do not exceed 1,392,492 tons per rolling, 12-month period (317,920.46 lbs/hr x 8760 hrs/yr x ton/2000 lb = 1,392,492 tons/yr).

r. Emission Limitation:

Visible particulate emissions from any stack serving this emissions unit shall not exceed 10 percent opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with this emissions limitation using Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be approved with prior approval from Ohio EPA.

s. Emission Limitation:

If a Siemens turbine is installed, CO emissions from this emissions unit shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 13.0 lbs/hr when the duct burner is not in operation; and, 2.0 ppmvd at 15% oxygen as an hourly average and 13.0 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the CO emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

If required, the permittee shall demonstrate compliance using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

t. Emission Limitation:

If a Siemens turbine is installed, CO emissions from this emissions unit shall not exceed 182.0 lbs/hr during cold startup, 211.46 lbs/hr during hot startup, and 214.90 lbs/hr during warm startup averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the CO emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

u. Emission Limitation:

If a Siemens turbine is installed, CO emissions from this emissions unit shall not exceed 72.2 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 250 warm startups per year, with a minimum downtime preceding warm startup of 16 hours and a warm startup duration of 98 minutes, maximum CO emissions of 351 pounds during each warm startup period; maximum hourly CO emissions during steady state operation of 13.0 lbs/hr based on manufacturer's data and steady state operating hours was determined by the following equation.

$$8{,}760\ hrs - \left(250\left(16\ hrs + \frac{98\ min}{60\left(\frac{min}{hr}\right)}\right)\right) = 4{,}351.7 \text{ hours}$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left[\left(250\frac{WS}{yr}\right)\left(351\frac{lbs}{WS}\right)+\left(4{,}351.7\frac{hrs}{yr}\right)\left(13.0\frac{lbs}{hr}\right)\right]}{2000\frac{lbs}{ton}} = 72.2 \text{ tons}$$

Where:

WS = warm starts

Ongoing compliance with this emissions limitation shall be based on the pounds per hour emission data from the CO CEMS and the actual hours of operation of this emissions unit.

v. Emission Limitation:

If a Siemens turbine is installed, NO_x emissions from this emissions unit shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 22.0 lbs/hr when the duct burner is not in operation; and, NO_x emissions shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 21.0 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NOx emissions limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

If required, the permittee shall demonstrate compliance using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR 60.4400. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

w. Emission Limitation:

If a Siemens turbine is installed, NO_x emissions shall not exceed 92.0 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable NOx emission limitation (21.0 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

Ongoing compliance with this emissions limitation shall be determined using the pounds per hour emission data from the NOx CEMS and the actual hours of operation of this emissions unit.

x. Emission Limitation:

If a Siemens turbine is installed, NOx emissions from this emissions unit shall not exceed 62.67 lbs/hr during cold startup, 76.83 lbs/hr during hot startup, and 78.98 lbs/hr during warm startup averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NOx emissions limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

y. Emission Limitation:

If a Siemens turbine is installed, PM_{10} emissions and $PM_{2.5}$ emissions shall not exceed 4.7E-03 lb/mmBtu of heat input and 13.3 lbs/hr when the duct burner is not in operation; and, PM_{10} and $PM_{2.5}$ shall not exceed 5.5E-03 lb/mmBtu of heat input and 14.0 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with these emissions limitations using Methods 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

z. Emission Limitation:

If a Siemens turbine is installed, PM_{10} and $PM_{2.5}$ emissions from this emissions unit shall not exceed 61.3 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable $PM_{10}/PM_{2.5}$ emission limitation (14.0 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

aa. Emission Limitation:

The combined SO_2 emissions from P001 and P002 shall not exceed 36.8 tons per rolling, 12-month period if Siemens turbines are installed.

Applicable Compliance Method:

Compliance with this emissions limitation shall be determined by the following calculation based on the records required by d). Multiply the maximum sulfur

content of natural gas (0.5 gr S/100 scf) by the molecular weight of SO_2 (64.07 lb/lb-mole), divide by the molecular weight of sulfur (32.06 lb/lb-mole), divide by (7,000 gr/lb), multiply by the monthly natural gas usage (scf), and divide by (2,000 lbs/ton) to determine the monthly SO_2 emissions (tons). Add the SO_2 emissions calculated for the current month to the total SO_2 emissions calculated for the previous 11 months to determine the tons SO_2 emissions per rolling, 12-month period.

bb. Emission Limitation:

If a Siemens turbine is installed, VOC emissions shall not exceed 1.0 ppmvd at 15% oxygen as an hourly average and 3.9 lbs/hr when the duct burner is not in operation; and, VOC emissions shall not exceed 1.9 ppmvd at 15% oxygen as an hourly average and 5.9 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

cc. Emission Limitation:

If a Siemens turbine is installed, VOC emissions shall not exceed 28.6 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 250 warm startups per year, with a minimum downtime preceding warm startup of 16 hours and a warm startup duration of 98 minutes, maximum VOC emissions of 138 pounds during each warm startup period; maximum hourly VOC emissions during steady state operation of 5.2 lbs/hr based on manufacturer's data and steady state operating hours was determined by the following equation.

$$8{,}760\ hrs - \left(250\left(16\ hrs + \frac{98\ min}{60\left(\frac{min}{hr}\right)}\right)\right) = 4{,}351.7 \text{ hours}$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left[\left(250\frac{WS}{yr}\right)\left(138\frac{lbs}{WS}\right)+\left(4{,}351.7\frac{hrs}{yr}\right)\left(5.2\frac{lbs}{hr}\right)\right]}{2000\frac{lbs}{ton}} = 28.6 \text{ tons}$$

Where:

WS = warm starts

Ongoing compliance with this emissions limitation shall be based on the following calculation.

$$\frac{\left[(\#CS)\left(56.0\frac{lbs}{hr}\right)+(\#HS)\left(83.41\frac{lbs}{HS}\right)+(\#WS)\left(84.49\frac{lbs}{hr}\right)+(\#SSDB)\left(5.2\frac{lbs}{hr}\right)+(\#SSNDB)\left(3.4\frac{lbs}{hr}\right)\right]}{2000\frac{lbs}{ton}} = \text{VOC}$$

Where:

VOC = tons VOC emissions per rolling, 12-month period

#CS = hours operated in cold startup per rolling, 12-month period

#HS = hours operated in hot startup per rolling, 12-month period

#WS = hours operated in warm startup per rolling, 12-month period

#SSDB = hours operated in steady state with duct burner per rolling, 12-month period

#SSNDB = hours operated in steady state without duct burner per rolling, 12-month period

dd. Emission Limitation:

If a Siemens turbine is installed, VOC emissions from this emissions unit shall not exceed 56.0 lbs/hr during cold startup, 83.41 lbs/hr during hot startup, and 84.49 lbs/hr during warm startup averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

ee. Emission Limitation:

If a Siemens turbine is installed, H_2SO_4 emissions shall not exceed 6.0E-04 lb/mmBtu of heat input and 1.6 lbs/hr when the duct burner is not in operation; and, H_2SO_4 emissions shall not exceed 7.0E-04 lb/mmBtu of heat input and 1.5 lbs/hr when the duct burner is in operation.

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

ff. Emission Limitation:

If a Siemens turbine is installed, H_2SO_4 emissions shall not exceed 6.57 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable H_2SO_4 emission limitation (1.5 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

gg. Emission Limitation:

If a Siemens turbine is installed, CO_2e emissions shall not exceed 327,819 lbs/hr and 1,435,847 tons per rolling, 12-month period.

Applicable Compliance Method:

The hourly emission limitation is based on the sum of following manufacturer's data (327,380 lbs/hr CO_2, 6.14 lbs/hr CH_4, and 1.00 lbs/hr N_2O) multiplied by the associated global warming potential for each pollutant (CO_2=1, CH_4=21, N_2O=310 from Table A-1 of 40 CFR 98).

$$\left[\left(327{,}380\,\frac{lbs}{hr}\right)(1)+\left(6.14\,\frac{lbs}{hr}\right)(21)+\left(1.00\,\frac{lbs}{hr}\right)(310)\right]=327{,}819\ lbs/hr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the hourly CO_2 emission rate does not exceed 327,380 lbs/hr. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the hourly CO_2 emission rate.

This emission limitation is based on the sum of following manufacturer's data (327,380 lbs/hr CO_2, 6.14 lbs/hr CH_4, and 1.00 lbs/hr N_2O) multiplied by the associated global warming potential for each pollutant (CO_2=1, CH_4=21, N_2O=310 from Table A-1 of 40 CFR 98), multiplied by the maximum annual hours of operation (8,760 hrs/yr) and divided by (2,000 lbs/ton).

$$\left[\left(327{,}380\,\frac{lbs}{hr}\right)(1)+\left(6.14\,\frac{lbs}{hr}\right)(21)+\left(1.00\,\frac{lbs}{hr}\right)(310)\right]\left(8{,}760\,\frac{hrs}{yr}\right)\left(\frac{ton}{2000lbs}\right)$$
$$=1{,}435{,}847\ tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the rolling, 12-month CO_2 emissions as calculated in section d) above do not exceed 1,433,924 tons per rolling, 12-month period (327,380 lbs/hr x 8760 hrs/yr x ton/2000 lb = 1,433,924 tons/yr).

(2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emission testing shall be conducted within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of the emissions unit.

b. The emission testing shall be conducted to demonstrate compliance with the allowable mass emission rate(s) for CO, NO_x, PM_{10}, $PM_{2.5}$, VOC, and H_2SO_4, in the appropriate averaging period(s).

The emission testing shall also be conducted to determine a site-specific emission factor for CO_2.

c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

For CO, Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A;

For NOx, Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR 60.4400;

For PM_{10} and $PM_{2.5}$, Methods 201A and 202 of 40 CFR Part 52, Appendix M;

For SO_2, 40 CFR 60.4415;

For VOC, Methods 1 through 4 and 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents;

For H_2SO_4, Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A; and

For CO_2, Methods 1, 2, 3A, and 4 of 40 CFR Part 60, Appendix A.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by the appropriate Ohio EPA District Office or local air agency. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is

deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.

d. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

e. Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

f. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Office or local air agency.

(3) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous NOx monitoring system, in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specification 2; Performance Specification 6 relative accuracy requirements; ORC section 3704.03(I); and 40 CFR Part 75.

The permittee shall certify that the fuel flow monitor/meter meets 40 CFR 75 certification requirements prior to the performance specification test and shall demonstrate how the pound per hour emissions of NOx will be calculated stoichiometrically from the fuel flow rate.

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 45 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification, or recommendation for certification by Ohio EPA to U.S. EPA, of the continuous NOx monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60,

Appendix B, Performance Specification 2; Performance Specification 6 relative accuracy requirements; ORC section 3704.03(I); and 40 CFR Part 75.

Ongoing compliance with the NOx emissions limitations contained in this permit, 40 CFR Parts 60 and 75, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

(4) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous CO monitoring system in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specification 4 or 4a (as appropriate); Performance Specification 6 relative accuracy requirements; and ORC section 3704.03(I).

The permittee shall certify that the fuel flow monitor/meter is calibrated prior to the performance specification test and shall demonstrate how the pound per hour emissions of CO will be calculated stoichiometrically from the fuel flow rate.

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous CO monitoring system shall be granted upon determination by the Ohio EPA Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specification 4 or 4a (as appropriate); Performance Specification 6 relative accuracy requirements; and ORC section 3704.03(I).

Ongoing compliance with the CO emission limitations contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

g) Miscellaneous Requirements

(1) None.