



Louisville Metro Air Pollution Control District
 701 West Ormsby Avenue, Suite 303
 Louisville, Kentucky 40203-3137



27 November 2018

Title V Statement of Basis

Source: Paddy's Run Station

 4600 Bells Lane
 Louisville, KY 40211

Owner: Louisville Gas and Electric
 Company
 220 W. Main Street
 Louisville, KY 40202

Application Documents:	See Table 8	Administratively Complete:	06/28/2017
Draft Permit:	08/19/2018	Proposed Permit:	08/19/2018; 10/09/2018
Permitting Engineer:	Martin J Hazelett	Permit Number:	O-0125-18-TV
Plant ID:	0125	SIC:	4911
		NAICS:	221112

Introduction:

This permit will be issued pursuant to: (1) Regulation 2.16, (2) Title 40 of the Code of Federal Regulations Part 70, and (3) Title V of the Clean Air Act Amendments of 1990. Its purpose is to identify and consolidate existing District and Federal air requirements and to provide methods of determining continued compliance with these requirements.

This is a standard Title V permit renewal. This action also updates the permit format and equipment lists.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO2), carbon monoxide (CO), particulate matter less than 10 microns (PM10); and unclassifiable for particulate matter less than 2.5 microns (PM2.5). The county is a non-attainment area for ozone (O3). This facility is located in the portion of the county that is an attainment area for sulfur dioxide (SO2).

Permit Application Type:

- | | | |
|---|--|--|
| <input type="checkbox"/> Initial issuance | <input type="checkbox"/> Permit Revision | <input checked="" type="checkbox"/> Permit renewal |
| | <input checked="" type="checkbox"/> Administrative | |
| | <input type="checkbox"/> Minor | |
| | <input type="checkbox"/> Significant | |

Compliance Summary:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Compliance certification signed | <input type="checkbox"/> Compliance schedule included |
| <input type="checkbox"/> Source is out of compliance | <input checked="" type="checkbox"/> Source is operating in compliance |

I. Source Information

1. **Product Description:** The Louisville Gas & Electric, Paddy’s Run Station, Louisville, KY is a peak load electrical generating station.
2. **Process Description:** This plant uses natural gas-fired combustion turbines for generation of electricity; consisting of two (2) natural gas fueled combustion turbines, each with a diesel fueled compression ignition reciprocating internal combustion engine (CI RICE) cranking engine, and one (1) natural gas fueled combustion turbine that powers a peak load generator.
3. **Site Determination:** There are no other facilities that are contiguous or adjacent and under common control.
4. **Emission Unit Summary:**

Emission Unit	Equipment Description
U1	GT11: one (1) simple cycle combustion turbine, rated capacity 19,500 kW, General Electric, model 5001LA, natural gas fueled with a 300 hp diesel fueled cranking engine GT11ce. GT12: one (1) simple cycle combustion turbine, rated capacity 29,000 kW, Westinghouse, model W-301G, natural gas fueled with a 750 hp diesel fueled cranking engine GT12ce.
U2	GT13: one (1) simple cycle combustion turbine, rated capacity 175 MW, Siemens Westinghouse, model V84.3A2, natural gas fueled.
IA1	Diesel Fuel Storage tank, 500 gallons, Lube Oil tank, 4630 gallons, Lube Oil tank, 1730 gallons, Lube Oil tank, 1500 gallons, and Underground, horizontal, steel, for EG1, 600 gallons.
IA2	EG1: one (1) Emergency generator Cummins, model DFEK 500, 6-cylinder, 4-stroke, diesel engine, 563 kW (750 hp)
IA3	EG2: Kohler, Unit 1, model 40REZG, electric start, 4-stroke, 6-cylinder, 4.3 L displacement, natural gas, 72 HP
IA4	One (1) parts washer, Kleen Tec, KT 1045, cold cleaner equipped with a 45 gallon secondary reservoir

5. **Fugitive Sources:** There are no fugitive emissions at this source.
6. **Permit Revisions:**

Permit No.	Public Notice Date	Issue Date	Change Type	Description/Scope
130-97-TV	10/17/1999	12/17/1999	Initial	Initial Permit Issuance
130-97-TV (R1)	11/01/2012	12/18/2012	Renewal 1	Regular Renewal, Incorporated permit 48-00-C
130-97-TV (R2)	NA	11/2/2016	Admin	Administrative revision of operating permit to include: updated permit format, incorporation of Insignificant

Permit No.	Public Notice Date	Issue Date	Change Type	Description/Scope
				Activities emission points added 4/29/2015, 7/18/2016, and updated Insignificant Activities emissions to reflect District calculations from 2/26/2010
O-0125-18-V	08/19/2018	11/27/2018	Renewal	Regular Renewal
			Admin	Incorporate the CSAPR applicable requirements, CAIR applicable requirements, calculation methodology, addition and removal of insignificant activities, and changed permit number format.

7. Construction Permit History:

Permit No.	Effective Date	Description
331-71-C	08/04/1971	Install gas scrubber for #6 generating unit
628-76-C	12/13/1976	One (1) 130,000 gallon fuel oil storage tank
48-00-C	02/25/2002	GT13: one (1) simple cycle combustion turbine, rated capacity 175 MW, Siemens Westinghouse, model V84.3A2, natural gas fueled

8. Permit Renewal-Related Documents

Document Number	Date Received	Description
59003	09/09/2013	Construction application 563 kW emergency generator (IA)
70989	04/29/2015	Revised insignificant activities
64815	05/13/2015	Revised STAR EA
78133	07/06/2016	Construction application (3) emergency generators (IA)
84854	06/19/2017	Title V Permit Renewal Application
84999	06/27/2017	District requested documents to administratively and technically complete the TV application
85707	06/28/2017	Company response to 06/27/2017 District request for administrative information
85026	06/28/2017	Title V Notice of Administrative Completeness

Document Number	Date Received	Description
85665	08/01/2017	Company response to 06/27/2017 District request for technical information
91716	04/24/2018	Request: clarification of equipment, correct and resubmit forms 200J and 200N
91771	04/27/2018	Response: clarification of equipment, correct and resubmit forms 200J and 200N
91812	05/01/2018	Request: further clarification of equipment, correct and resubmit forms 200J and 200N; 20180501
91869	05/07/2018	Response: further clarification of equipment, correct and resubmit forms 200J and 200N; 20180501
91879	05/09/2018	Paddy's Run (0125) 05082018 site visit follow up
92002	05/14/2018	Response: Paddy's Run (0125) 05082018 site visit follow up
93338	08/03/2018	Company comments on pre-draft permit
93338	08/17/2018	District response to pre-draft comments
93810	09/06/2018 10/09/2018	Company comments on draft permit District Response to comments

9. Emission Summary:

Pollutant	District Calculated Actual Emissions (tpy) 2016Data	Pollutant that triggered Major Source Status (based on PTE)
CO	43.05	Yes
NO _x	37.48	Yes
SO ₂	0.35	No
PM ₁₀	0.088	No
VOC	1.10	No
Total HAPs	0.52	No
Single HAP > 1 tpy	None	No

10. Applicable Requirements:

PSD 40 CFR 60 SIP 40 CFR 63
 NSR 40 CFR 61 District-Origin Other

11. Referenced MACT Federal Regulations:

40 CFR 63 Subpart ZZZZ National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

12. Referenced non-MACT Federal Regulations:

40 CFR Part 60 Subpart A	General Provisions
40 CFR Part 60 Subpart GG	Standards of Performance for Stationary Gas Turbines
40 CFR 60 Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
40 CFR 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
40 CFR Part 72 Subpart A	Acid Rain General Provisions
40 CFR Part 72 Subpart G	Acid Rain Phase II Implementation
40 CFR Part 73 Subpart B	Allowance Allocations (SO ₂)
40 CFR Part 75 Appendix E	Optional NO _x Emissions Estimation Protocol for Gas-Fired Peaking Units and Oil-Fired Peaking Units
40 CFR Part 77	Excess Emissions
40 CFR 96	NO _x Budget Trading Program and CAIR NO _x and SO ₂ Trading Programs for State Implementation Plans
40 CFR 97 Subpart AAAAA	CSAPR NO _x Annual Trading Program
40 CFR 97 Subpart CCCCC	CSAPR SO ₂ Group 1 Trading Program
40 CFR 97 Subpart EEEEE	CSAPR NO _x Ozone Season Group 2 Trading Program

II. Regulatory Analysis

1. **Acid Rain Requirements:** The source is subject to the Acid Rain Program. Appendix A, Phase II Acid Rain Requirements, is attached to the Title V permit. None applicable regulations include 40 CFR Part 76, Acid Rain Nitrogen Oxides Emission Reduction Program because the regulation is for coal fired units, and 40 CFR Part 78, Appeal Procedures for Acid Rain Program, because it applies only to appeal procedures to the acid rain program.
2. **Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. This source does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.
3. **Prevention of Accidental Releases 112(r):** The source does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, *Chemical Accident Prevention Provisions*, in a quantity in excess of the corresponding specified threshold amount. Source stated in letter that a Risk Management Plan (RMP) is not required for this facility.
4. **40 CFR Part 64 Applicability Determination:** Louisville Gas & Electric, Paddy's Run Station is not subject to 40 CFR Part 64 *Compliance Assurance Monitoring for Major Stationary Sources*, because the source does not have any control devices on any of their equipment.

5. **Cross-State Air Pollution Rule (CSAPR):** Affected units are two (2) natural gas-fired combustion turbines, designated as GT-12 and GT13. These natural gas-fired single cycle units at this source are covered by CSAPR. According to 40 CFR 97, Subpart AAAAA, BBBB, and CCCCC, ~~fossil fuel fired boilers~~ electrical generators with nameplate capacity of more than 25 MW producing electricity for sale are subject to CSAPR NO_x annual trading program, CSAPR NO_x ozone season trading program, and SO₂ trading program. CSAPR Phase I implementation is now in place and replaces requirements under EPA's 2005 Clean Air Interstate Rule.
6. **Clean Air Interstate Rule (CAIR):** CAIR requirements are incorporated into this Title V permit pursuant to the CAIR Kentucky SIP approved on 10/4/2007. The CAIR Kentucky SIP establishes State budgets for SO₂ and NO_x in accordance with 40 CFR 96, CAIR NO_x Annual Trading Program, CAIR NO_x Ozone season trading program, and CAIR SO₂ Trading Program. On October 23, 2014, the D.C. Circuit granted EPA's request. On September 7, 2016, the EPA finalized an update to the Cross-State Air Pollution Rule (CSAPR) for the 2008 ozone National Ambient Air Quality Standards (NAAQS) by issuing the final CSAPR Update. CSAPR Phase I implementation is now in place and replaces requirements under EPA's 2005 Clean Air Interstate Rule.
7. **Basis of Regulation Applicability**
 - a. **Plantwide**
 - i. Paddy's Run Station is a potential major source for NO_x, CO, and Greenhouse Gases emissions. The source elected to have a plant-wide limit of less than 100 ton/yr of NO_x to avoid a NO_x RACT. Regulation 2.16 - *Title V Operating Permits* establishes requirements for major sources.
 - ii. The source is subject to a plant-wide NO_x limit of less than 100 tons during any twelve (12) consecutive month period
 - iii. Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 (STAR Program) establishes requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards. LG&E Paddy's Run submitted their TAC Environmental Acceptability Demonstration to the District on December 11, 2007, and May 12, 2014. Compliance with the STAR EA Goals was demonstrated in the source's EA Demonstrations. Category 1 and 2 TACs generated by the uncontrolled combustion of diesel fuel in both of the diesel cranking engines, cannot exceed the Cat 1 and 2 TAC de minimis levels. The TAC emissions from the combustion of natural gas, liquefied petroleum gas, methane (including landfill gas), or propane are considered to be "de minimis emissions" by the District. [Regulation 5.21, section 2.7]. There has been no new

construction or modifications after July 1, 2005, therefore, the company did not have to demonstrate compliance with Category 3 and 4 TACs.

- iv. Regulation 2.16, section 4.1.9.1 and 4.1.9.2 requires monitoring and record keeping to ensure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the District upon request.
- v. Regulation 2.16, section 4.3.5, requires stationary sources for which a Title V is issued shall submit an annual compliance certification by April 15 of the following calendar year. In addition, as required by Regulation 2.16, section 4.1.9.3, the source shall submit compliance reports at least every six months to show compliance with the permit. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.16, section 3.5.11.

b. Emission Unit U1: Turbine generator engines GT11 and GT12

i. Equipment:

Emission Point	Description	Applicable Regulation	Basis for Applicability
GT11	GT11: one (1) simple cycle combustion turbine, General Electric, model 5001LA, 19,500 kW, natural gas fueled with a 300 hp diesel fueled cranking engine GT11ce [with 25 gallon diesel day tank (IA)] Installed 1968	STAR 6.42	Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 are applicable to any process or process equipment at a stationary source that emits a TAC. Regulation 6.42 establishes the requirements for Reasonably Available Control Technology (RACT) determination, demonstration, and compliance for Volatile Organic Compound (VOC) and Nitrogen Oxides (NOx) emitting facilities for new or renewed operating permit applications.
GT12	GT12: one (1) simple cycle combustion turbine, Westinghouse, model W-301G, 29,000 kW, natural gas fueled with a 750 hp diesel fueled cranking engine GT12ce [with 25 gallon diesel day tank (IA)]	40 CFR 63 Subpart ZZZZ	Existing black start RICE engines that emit HAPs at area sources are subject to 40 CFR 63 Subpart ZZZZ.

ii. Standards/Operating Limits**1) HAP**

- (a) 40 CFR 63 Subpart ZZZZ, sections 63.6595, 6603, 6605, 6625, and 6640 establish emission standards and operation requirements for the owner or operator or manufacturer of stationary CI RICE.
- (b) 40 CFR 63 Subpart YYYY is not applicable, because the source is not a major source for HAP emissions.

2) NO_x

- (a) Regulation 6.42 establishes the RACT requirements for NO_x emitting facilities. The source requested a plantwide limit of less than 100 ton/yr for NO_x, to avoid establishing a NO_x RACT Plan.
- (b) The emission standards of 40 CFR 60 Subpart GG are not applicable, because the unit was existing prior to October 3, 1977.

3) TAC

- (a) See Plantwide section above.

iii. Monitoring and Record keeping**1) HAP**

- (a) 40 CFR Subpart ZZZZ, sections 63.6625 and 6655 establish monitoring and record keeping requirements for the stationary CI RICE.

iv. Reporting**1) HAP**

- (a) 40 CFR Subpart ZZZZ, section 63.6640 establish reporting requirements for the stationary CI RICE.

c. Emission Unit U2 – Turbine generator engine GT13**i. Equipment:**

Emission Point	Description	Applicable Regulation	Basis for Applicability
GT13	GT13: one (1) simple cycle combustion turbine, rated capacity 175 MW, Siemens Westinghouse, model V84.3A2, natural gas fueled. Installed 2001	STAR 6.42 6.47 40 CFR 60 Subpart A 40 CFR 60 Subpart GG 40 CFR 72 Subpart A 40 CFR 73 40 CFR 75 Appendix D 40 CFR 75 E 40 CFR 77	<p>Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 are applicable to any process or process equipment at a stationary source that emits a TAC.</p> <p>Regulation 6.42 establishes the requirements for Reasonably Available Control Technology (RACT) determination, demonstration, and compliance for Volatile Organic Compound (VOC) and Nitrogen Oxides (NO_x) emitting facilities for new or renewed operating permit applications.</p> <p>Regulation 6.47 incorporates the Federal Acid Rain Program for existing sources by reference</p> <p>40 CFR 60 Subpart t GG that provides NO_x and SO₂ standards for new combustion turbines.</p> <p>40 CFR 72 through 78 contain regulations for Acid Rain Program, including permits, allowance system, CEM, excess emissions, and appeal procedures.</p>

ii. **Standards/Operating Limits**

1) **NO_x**

- (a) Regulation 6.42 establishes the RACT requirements for NO_x emitting facilities. The source requested a plantwide limit of less than 100 ton/yr for NO_x, to avoid establishing a NO_x RACT Plan.
- (b) 40 CFR 60 Subpart GG, section 60.333(a) establish NO_x emission standards for gas turbines.
- (c) 40 CFR 72 Subpart A defines annual production limits for a peaking unit.
- (d) 40 CFR 75 Appendix E establishes requirements if the peaking unit exceeds the limits of 40 CFR 72 Subpart A.

- (e) 40 CFR 60 Subpart KKKK emission standards are not applicable, because the unit was existing prior to February 18, 2005.
- 2) **SO₂**
 - (a) Regulation 40 CFR 60 Subpart GG, section 60.333(a) and 60.333(b) establish SO₂ emission standards for gas turbines.
 - (b) Appendix A, Process II Acid Rain Requirements is attached to the Title V permit and is required because the unit is a new unit and SO₂ emission allowances were not assigned to the unit when Regulation 40 CFR 73.10(b) Phase II sulfur dioxide allowance allocations became effective.
 - 3) **TAC**
 - (a) See Plantwide section above.

iii. **Monitoring and Record Keeping**

- 1) **NO_x**
 - (a) 40 CFR 60 Subpart GG, section 60.334(a) and 60.334(b) establish monitoring and/or record keeping requirements to show compliance.
- 2) **SO₂**
 - (a) SO₂ allowances shall be monitored and transferred as required by Appendix A, Process II Acid Rain Requirements and 40 CFR 73, Subpart D.
 - (b) Regulation 40 CFR 60 Subpart GG does not require compliance monitoring because the percentage of sulfur in the natural gas fuel tested is less than the 0.8% standard in section 40 CFR 60.333(b).

iv. **Reporting**

- 1) **NO_x**
 - (a) Written notification shall be submitted to the District, within 60 calendar days of the unit exceeding the limits of the definition to be a peaking unit, so that District is aware of the

deadline for the installation of certified CEMS as required by 40 CFR 75 Appendix E and the method to be used for the calculation of annual NO_x emissions.

2) **SO₂**

- (a) Regulation 40 CFR 60 Subpart GG does not require compliance reporting for this pollutant, because the sulfur content is less than the limit of 40 CFR §60.333(b).
- (b) SO₂ allowances shall be monitored and transferred as required by Appendix A, Process II Acid Rain Requirements and 40 CFR 73, Subpart D.
- (c) Emissions that exceed the transferred allowances shall be addressed as required by 40 CFR Part 77, Excess Emissions.

v. **Testing**

1) **NO_x**

- (a) The required EPA reference method performance test to determine a NO_x emissions factor shall be performed at a frequency of at least once every 20 calendar quarters, or as required by the current regulations, to be used in the alternate method for calculating NO_x emissions as allowed by 40 CFR 75 Appendix E.

III. Other Requirements

1. **Temporary Sources:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Emissions Trading:** N/A
4. **Alternative Operating Scenarios:** The source requested approval to perform the Alternative Operating Scenarios listed below without notification to District. Some of the alternative Operating Scenarios were denied in the Title V permit, as listed below.

- a. Relocation of equipment within the facility.
- b. Utilization of new coolants and additives in the coolant systems.

5. Compliance History:

Paddy’s Run Station is required to submit their annual Compliance Certification to the District on or before April 15th of each calendar year. As of the effective date of Permit O-0125-18-V, there are no compliance schedules in effect or progress reports required.

Incid. #	Date	Regulation Violated	Settlement
N/A	5/31/1968	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	8/31/1970	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	11/23/1970	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	2/15/1971	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	7/1/1971	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	9/13/1971	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	9/29/1971	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	12/1/1971	KRS 77.155 Opacity.	Agreement with fine
N/A	1/31/1972	KRS 77.155 Opacity.	Agreement with fine
N/A	4/10/1972	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	9/27/1972	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	9/10/1973	KRS 77.155 Opacity (fly ash).	Agreement with fine
N/A	11/16/1973	KRS 77.155 Opacity (smoke).	Agreement with fine
N/A	5/21/1975	KRS 77.155 Opacity.	Agreement with fine
N/A	5/22/1975	KRS 77.155 Opacity.	Agreement with fine
N/A	8/29/1975	KRS 77.155 Opacity.	Agreement with fine
N/A	1/29/1976	KRS 77.155 Opacity (smoke).	Agreement with fine

Incid. #	Date	Regulation Violated	Settlement
N/A	7/21/1977	KRS 77.155 Opacity.	Agreement with fine
N/A	8/29/1977	KRS 77.155 Opacity.	Agreement with fine
N/A	9/8/1977	KRS 77.155 Opacity.	Agreement with fine
N/A	9/9/1977	KRS 77.155 Opacity.	Agreement with fine
N/A	10/28/1977	Fugitive emissions.	Agreement with fine
N/A	12/8/1977	KRS 77.155 Opacity.	Agreement with fine
N/A	1/10/1978	KRS 77.155 Opacity.	Agreement with fine
N/A	5/25/1978	KRS 77.155 Opacity.	Agreement with fine
0022	5/7/1979	KRS 77.155 Opacity.	Agreement with fine
0037	7/31/1979	KRS 77.155 Opacity.	Agreement with fine

6. Calculation Methodology:

Emissions are calculated by multiplying the throughput (ton, MMCF, gallons, etc) or hours of operation of the equipment by the appropriate emission factor and 1 minus any control device’s efficiency. The following emission factors and calculation methodology shall be used unless other methods or emission factors are approved in writing by the District.

Natural Gas: The emission factor conversions are based on the average natural gas heating value (HHV) of 1020 Btu/scf. The conversion of AP-42 emission factors from (lb/MMBtu) to (lb/10⁶ scf) are calculated by multiplying by 1020 (AP-42, 3.1-1 footnote c).

Diesel: The emission factor conversions are based on the average distillate oil heating value of 139 MMBtu/10³ gallons. The conversion of AP-42 emission factors from (lb/MMBtu) to (lb/10³ gallon) are calculated by multiplying by 139 (AP-42, 3.1-1 footnote f). The conversion of A-42 emission factors from (1b/MMBtu) to (lb/gallon) are calculated by multiplying by 0.139.

As an alternative to using published AP-42, table 3.1-1, notes c and f, fuel heat content factors, the owner or operator may use the average yearly heat content based on actual data or vendor certified fuel data.

The AP-42, table 3.1-1 emission factors may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to the average heating value, as stated in note b of AP-42, table 3.1-1.

Emission Unit U1: Combustion Turbines GT11 and GT12

Emission Unit 1 Natural Gas Emission Factors for Combustion Turbines GT11 and GT12

Emission Source	Pollutant	Natural Gas Emission Factor			Emission Factor Source
		lb/10 ⁶ scf natural gas combusted		lb/MMBtu natural gas combusted	
		Uncontrolled	Controlled		
E11, E12	NO _x	326	326	0.3200	AP-42, 3.1-1
	CO	84	84	0.0820	AP-42, 3.1-1
	PM total	0.52	0.52	5.1E-04	Roy Huntley, EPA ¹
	PM condensable	0.32	0.32	3.1E-04	Roy Huntley, EPA
	PM ₁₀ filterable	0.20	0.20	2.0E-04	Roy Huntley, EPA
	PM _{2.5} filterable	0.11	0.11	1.1E-04	Roy Huntley, EPA
	SO ₂	3.47	3.47	0.0034	AP-42, 3.1-2a, h ²
	VOC	2.14	2.14	0.0021	AP-42, 3.1-2a
NH ₃	3.26	3.26	0.0032	EPA Web FIRE	

$$E = (X)(EF \text{ lb}/10^6 \text{ scf})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

Emission Unit 1 Natural Gas Combustion HAP/TAC Emission Factors for Combustion Turbines GT11 and GT12

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor			Emission Factor Source
			lb/10 ⁶ scf natural gas combusted		lb/MMBtu natural gas combusted	
			Uncontrolled	Controlled		
E11, E12	1,3-Butadiene	106-99-0	4.39E-04	4.39E-04	4.30E-07	AP-42, 3.1-3
	Acetaldehyde	75-07-0	4.08E-02	4.08E-02	4.00E-05	AP-42, 3.1-3
	Acrolein	107-02-8	6.53E-03	6.53E-03	6.40E-06	AP-42, 3.1-3
	Benzene	71-43-2	1.22E-02	1.22E-02	1.20E-05	AP-42, 3.1-3
	Ethylbenzene	100-41-4	3.26E-02	3.26E-02	3.20E-05	AP-42, 3.1-3
	Formaldehyde)	50-00-00	7.24E-01	7.24E-01	7.10E-04	AP-42, 3.1-3
	Naphthalene	91-20-3	1.33E-03	1.33E-03	1.30E-06	AP-42, 3.1-3

¹ The revised PM emission factors are from: "EPA's Emission Inventory and Analysis Group guidance 3/30/2012".

² AP-42 3.1-2a h: All sulfur in the fuel is assumed to be converted to SO₂. S = percent sulfur in fuel. Example, if sulfur content in the fuel is 3.4 percent, then S = 3.4. If S is not available, use 3.4 E-03 lb/MMBtu for natural gas turbines, and 3.3 E-02 lb/MMBtu for distillate oil turbines (the equations are more accurate).

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor			Emission Factor Source
			lb/10 ⁶ scf natural gas combusted		lb/MMBtu natural gas combusted	
			Uncontrolled	Controlled		
	Propylene Oxide	75-56-9	2.96E-02	2.96E-02	2.90E-05	AP-42, 3.1-3
	Toluene	108-88-3	1.33E-01	1.33E-01	1.30E-04	AP-42, 3.1-3
	Xylene	1330-20-7	6.53E-02	6.53E-02	6.40E-05	AP-42, 3.1-3

$$E_{(HAP)} = (X)(EF \text{ lb}/10^6 \text{ scf})(1 \text{ ton}/2000 \text{ lb.})$$

Where: $E_{(HAP)}$ = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

Emission Unit 1 Diesel Emission Factors for Combustion cranking engine for GT11

Emission Source	Pollutant	Diesel Fuel Emission Factor			Emission Factor Source
		lb/gallon diesel fuel combusted		lb/MMBtu diesel fuel combusted	
		Uncontrolled	Controlled		
E11 cranking engine	NO _x	6.13E-01	6.13E-01	4.41	AP-42, 3.3-1
	CO	1.32E-01	1.32E-01	0.95	AP-42, 3.3-1
	PM total	4.31E-02	4.31E-02	0.31	AP-42, 3.3-1, b
	PM condensable	4.31E-02	4.31E-02	0.31	AP-42, 3.3-1, b
	PM ₁₀ filterable	4.31E-02	4.31E-02	0.31	AP-42, 3.3-1
	PM _{2.5} filterable	4.31E-02	4.31E-02	0.31	AP-42, 3.3-1, b
	SO ₂	4.03E-02	4.03E-02	0.290	AP-42, 3.3-1
	VOC	5.00E-02	5.00E-02	0.36	AP-42, 3.3-1

$$E = (X)(EF \text{ lb}/\text{gallon})(1 \text{ ton}/2,000 \text{ lb})$$

Where: E = emissions (tons) annually

X = the amount of diesel fuel (gallons) combusted annually

Emission Unit 1 Diesel Combustion HAP/TAC Emission Factors for Combustion cranking engine for GT11

Emission Source	Individual HAP/TAC	CAS	Diesel Fuel Emission Factor			Emission Factor Source
			lb/gallon diesel fuel combusted		lb/MMBtu diesel fuel combusted	
			Uncontrolled	Controlled		
E11, E12	1,3-Butadiene	106-99-0	5.43E-06	5.43E-06	3.91E-05	AP-42, 3.3-2
	Acenaphthene	83-32-9	1.97E-07	1.97E-07	1.42E-06	AP-42, 3.3-2
	Acenaphthylene	203-96-8	7.03E-07	7.03E-07	5.06E-06	AP-42, 3.3-2
	Acetaldehyde	75-07-0	1.07E-04	1.07E-04	7.67E-04	AP-42, 3.3-2
	Acrolein	107-02-8	1.28E-05	1.28E-05	9.25E-05	AP-42, 3.3-2
	Anthracene	120-12-7	2.60E-07	2.60E-07	1.87E-06	AP-42, 3.3-2
	Benzo(a)anthracene	56-55-3	2.33E-07	2.33E-07	1.68E-06	AP-42, 3.3-2
	Benzene	71-43-2	1.30E-04	1.30E-04	9.33E-04	AP-42, 3.3-2
	Benzo(a)pyrene	50-32-8	2.61E-08	2.61E-08	1.88E-07	AP-42, 3.3-2
	Benzo(b)fluoranthene	205-99-2	1.38E-08	1.38E-08	9.91E-08	AP-42, 3.3-2
	Benzo(g,h,i)perylene	191-24-2	6.79E-08	6.79E-08	4.89E-07	AP-42, 3.3-2
	Benzo(k)fluoranthene	205-82-3	2.15E-08	2.15E-08	1.55E-07	AP-42, 3.3-2
	Chrysene	218-01-9	4.90E-08	4.90E-08	3.53E-07	AP-42, 3.3-2
	Dibenz(a,h)anthracene	53-70-3	8.10E-08	8.10E-08	5.83E-07	AP-42, 3.3-2
	Fluoranthene	206-44-0	1.06E-06	1.06E-06	7.61E-06	AP-42, 3.3-2
	Fluorene	86-73-7	4.06E-06	4.06E-06	2.92E-05	AP-42, 3.3-2
	Formaldehyde	50-00-00	1.64E-04	1.64E-04	1.18E-03	AP-42, 3.3-2
	Indeno (1,2,3-cd) pyrene	193-39-5	5.21E-08	5.21E-08	3.75E-07	AP-42, 3.3-2
	Naphthalene	91-20-3	1.18E-05	1.18E-05	8.48E-05	AP-42, 3.3-2
	Phenanthrene	85-01-8	4.08E-06	4.08E-06	2.94E-05	AP-42, 3.3-2
Pyrene	129-00-0	6.64E-07	6.64E-07	4.78E-06	AP-42, 3.3-2	
Toluene	108-88-3	5.68E-05	5.68E-05	4.09E-04	AP-42, 3.3-2	
xylenes	1330-20-7	3.96E-05	3.96E-05	2.85E-04	AP-42, 3.3-2	

$$E_{(HAP)} = (X)(EF \text{ lb/gallon})(1 \text{ ton}/2,000 \text{ lb})$$

Where: $E_{(HAP)}$ = HAP emissions (tons) annually

X = the amount of diesel fuel (gallons) combusted annually

Emission Unit 1 Diesel Emission Factors for Combustion cranking engine for GT12

Emission Source	Pollutant	Diesel Fuel Emission Factor			Emission Factor Source
		lb/gallon diesel fuel combusted		lb/MMBtu diesel fuel combusted	
		Uncontrolled	Controlled		
E12 cranking engine	NO _x	4.44E-01	4.44E-01	3.20	AP-42, 3.4-1
	CO	1.18E-01	1.18E-01	0.85	AP-42, 3.4-1

Emission Source	Pollutant	Diesel Fuel Emission Factor			Emission Factor Source
		lb/gallon diesel fuel combusted		lb/MMBtu diesel fuel combusted	
		Uncontrolled	Controlled		
	PM total	1.39E-02	1.39E-02	0.10	AP-42, 3.4-1
	PM condensable	1.07E-03	1.07E-03	0.0077	AP-42, 3.4-2
	PM ₁₀ filterable	6.89E-03	6.89E-03	0.0496	AP-42, 3.4-2
	PM _{2.5} filterable	6.65E-03	6.65E-03	0.0479	AP-42, 3.4-2
	SO ₂	7.01E-02	7.01E-02	0.51	AP-42, 3.4-1
	VOC	1.25E-02	1.25E-02	0.09	AP-42, 3.4-1

$$E = (X)(EF \text{ lb/gallon})(1 \text{ ton}/2,000 \text{ lb})$$

Where: E = emissions (tons) annually

X = the amount of diesel fuel (gallons) combusted annually

Emission Unit 1 Diesel Combustion HAP/TAC Emission Factors for Combustion cranking engine for GT12

Emission Source	Individual HAP/TAC	CAS	Diesel Fuel Emission Factor			Emission Factor Source
			lb/gallon diesel fuel combusted		lb/MMBtu diesel fuel combusted	
			Uncontrolled	Controlled		
E11, E12	Acenaphthene	83-32-9	6.50E-07	6.50E-07	4.68E-06	AP-42, 3.4-4
	Acenaphthylene	203-96-8	1.28E-06	1.28E-06	9.23E-06	AP-42, 3.4-4
	Acetaldehyde	75-07-0	3.50E-06	3.50E-06	2.52E-05	AP-42, 3.4-3
	Acrolein	107-02-8	1.09E-06	1.09E-06	7.88E-06	AP-42, 3.4-3
	Anthracene	120-12-7	1.71E-07	1.71E-07	1.23E-06	AP-42, 3.4-4
	Benzo(a)anthracene	56-55-3	8.64E-08	8.64E-08	6.22E-07	AP-42, 3.4-4
	Benzene	71-43-2	1.08E-04	1.08E-04	7.76E-04	AP-42, 3.4-3
	Benzo(a)pyrene	50-32-8	3.57E-08	3.57E-08	2.57E-07	AP-42, 3.4-4
	Benzo(b)fluoranthene	205-99-2	1.54E-07	1.54E-07	1.11E-06	AP-42, 3.4-4
	Benzo(g,h,i)perylene)	191-24-2	7.72E-08	7.72E-08	5.56E-07	AP-42, 3.4-4
	Benzo(k)fluoranthene	205-82-3	3.03E-08	3.03E-08	2.18E-07	AP-42, 3.4-4
	Chrysene	218-01-9	2.13E-07	2.13E-07	1.53E-06	AP-42, 3.4-4
	Dibenz(a,h)anthracene	53-70-3	4.81E-08	4.81E-08	3.46E-07	AP-42, 3.4-4
	Fluoranthene	206-44-0	5.60E-07	5.60E-07	4.03E-06	AP-42, 3.4-4
	Fluorene	86-73-7	1.78E-06	1.78E-06	1.28E-05	AP-42, 3.4-4
	Formaldehyde	50-00-00	1.10E-05	1.10E-05	7.89E-05	AP-42, 3.4-3
	Indeno(1,2,3-cd) pyrene	193-39-5	4.26E-04	4.26E-04	4.14E-07	AP-42, 3.4-4
	Naphthalene	91-20-3	1.81E-05	1.81E-05	1.30E-04	AP-42, 3.4-4
	Phenanathrene)	85-01-8	5.67E-06	5.67E-06	4.08E-05	AP-42, 3.4-4
	Pyrene	129-00-0	5.15E-07	5.15E-07	3.71E-06	AP-42, 3.4-4
Toluene	108-88-3	3.90E-05	3.90E-05	2.81E-04	AP-42, 3.4-3	
xylene	1330-20-7	2.68E-05	2.68E-05	1.93E-04	AP-42, 3.4-3	

$$E_{(HAP)} = (X)(EF \text{ lb/gallon})(1 \text{ ton}/2,000 \text{ lb})$$

Where: E_(HAP) = HAP emissions (tons) annually

X = the amount of diesel fuel (gallons) combusted annually

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

Emission Unit U2: Combustion Turbine GT13

Emission Unit 2 Natural Gas Emission Factors for Combustion Turbines GT13

Emission Source	Pollutant	Natural Gas Emission Factor			Emission Factor Source
		lb/10 ⁶ scf natural gas combusted		lb/MMBtu natural gas combusted	
		Uncontrolled	Controlled		
E13	NO _x	89/326 ³	89	0.3200	AP-42, 3.1-1, stack test 02/2017,
	CO	84	84	0.0820	AP-42, 3.1-1
	PM total	0.52	0.52	0.0005	Roy Huntley, EPA*
	PM condensable	0.32	0.32	0.0003	Roy Huntley, EPA*
	PM ₁₀ filterable	0.20	0.20	0.0002	Roy Huntley, EPA*
	PM _{2.5} filterable	0.11	0.11	0.0001	Roy Huntley, EPA*
	SO ₂	3.47	3.47	0.0034	AP-42, 3.1-2a
	VOC	2.14	2.14	0.0021	AP-42, 3.1-2a
	NH ₃	3.26	3.26	0.0032	EPA Web FIRE

$$E = (X)(EF \text{ lb}/10^6 \text{ scf})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

³ If a NO_x stack test is not performed within ten (10) years from the last test then the AP-42 emission factor for NO_x shall be used to determine emissions.

Emission Unit 2 Natural Gas Combustion HAP/TAC Emission Factors for Combustion Turbines GT13

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor			Emission Factor Source
			lb/10 ⁶ scf natural gas combusted		lb/MMBtu natural gas combusted	
			Uncontrolled	Controlled		
E13	1,3-Butadiene	106-99-0	4.39E-04	4.39E-04	4.30E-07	AP-42, 3.1-3
	Acetaldehyde	75-07-0	4.08E-02	4.08E-02	4.00E-05	AP-42, 3.1-3
	Acrolein	107-02-8	6.53E-03	6.53E-03	6.40E-06	AP-42, 3.1-3
	Benzene	71-43-2	1.22E-02	1.22E-02	1.20E-05	AP-42, 3.1-3
	Ethylbenzene	100-41-4	3.26E-02	3.26E-02	3.20E-05	AP-42, 3.1-3
	Formaldehyde	50-00-00	7.24E-01	7.24E-01	7.10E-04	AP-42, 3.1-3
	Naphthalene	91-20-3	1.33E-03	1.33E-03	1.30E-06	AP-42, 3.1-3
	Propylene Oxide	75-56-9	2.96E-02	2.96E-02	2.90E-05	AP-42, 3.1-3
	Toluene	108-88-3	1.33E-01	1.33E-01	1.30E-04	AP-42, 3.1-3
	Xylene	1330-20-7	6.53E-02	6.53E-02	6.40E-05	AP-42, 3.1-3

$$E_{(HAP)} = (X)(EF \text{ lb}/10^6 \text{ scf})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E_(HAP) = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

Emission Unit IA1: Storage Tanks

Emission Unit IA1 Diesel Fuel Tank Emission Factors

Emission Source	Pollutant	Diesel Fuel Emission Factor (lb/gallon)	Emission Factor Source
IE1	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.
IE2	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.
IE3	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.

Emission Source	Pollutant	Diesel Fuel Emission Factor (lb/gallon)	Emission Factor Source
IE4	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.
IE5	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.

Emission Unit IA2: Emergency Generator

Emission Unit IA2 Diesel Combustion Emission Factors for Emergency Generator IE6

Emission Source	Pollutant	Diesel Emission Factor			Emission Factor Source
		lb/hp-hr	lb/gallon diesel fuel combusted	lb/MMBtu diesel fuel combusted	
IE6	NO _x	1.13E-02	2.23E-01	1.60E+00	Vender Spec
	CO	9.03E-04	1.78E-02	1.28E-01	Vender Spec
	PM total	4.93E-04	9.69E-03	0.090	AP-42, 3.4-2
	PM condensable	5.44E-05	1.07E-03	0.0077	AP-42, 3.4-2
	PM ₁₀ filterable	3.51E-04	6.89E-03	0.0496	AP-42, 3.4-2
	PM _{2.5} filterable	3.39E-04	6.66E-03	0.0479	AP-42, 3.4-2
	SO ₂	1.07E-05	2.11E-04	0.002	AP-42, 3.4-1
	VOC	1.76E-04	3.46E-03	2.49E-02	Vender Spec

$$E = (X)(EF \text{ lb/gallon})(1 \text{ ton}/2,000 \text{ lb})$$

Where: E = emissions (tons) annually

X = the amount of diesel fuel (gallons) combusted annually

[AP-42 EF (lb/MMBtu) converted to (lb/gallon diesel fuel combusted)]

Emission Unit IA2 Diesel Combustion HAP/TAC Emission Factors for Emergency Generator IE6

Emission Source	Individual HAP/TAC	CAS	Diesel Emission Factor			Emission Factor Source
			lb/hp-hr	lb/gallon diesel fuel combusted	lb/MMBtu diesel fuel combusted	
IE6	Acenaphthene	83-32-9	3.31E-08	6.50E-07	4.68E-06	AP-42, 3.4-4
	Acenaphthylene	203-96-8	6.53E-08	1.28E-06	9.23E-06	AP-42, 3.4-4
	Acetaldehyde	75-07-0	1.78E-07	3.50E-06	2.52E-05	AP-42, 3.4-3

Emission Source	Individual HAP/TAC	CAS	Diesel Emission Factor			Emission Factor Source
			lb/hp-hr	lb/gallon diesel fuel combusted	lb/MMBtu diesel fuel combusted	
Acrolein		107-02-8	5.57E-08	1.09E-06	7.88E-06	AP-42, 3.4-3
Anthracene		120-12-7	8.70E-09	1.71E-07	1.23E-06	AP-42, 3.4-4
Benzo(a)anthracene		56-55-3	4.40E-09	8.64E-08	6.22E-07	AP-42, 3.4-4
Benzene		71-43-2	5.49E-06	1.08E-04	7.76E-04	AP-42, 3.4-3
Benzo(a)pyrene		50-32-8	1.82E-09	3.57E-08	2.57E-07	AP-42, 3.4-4
Benzo(b)fluoranthene		205-99-2	7.85E-09	1.54E-07	1.11E-06	AP-42, 3.4-4
Benzo(g,h,i)perylene		191-24-2	3.93E-09	7.72E-08	5.56E-07	AP-42, 3.4-4
Benzo(k)fluoranthene		205-82-3	1.54E-09	3.03E-08	2.18E-07	AP-42, 3.4-4
Chrysene		218-01-9	1.08E-08	2.13E-07	1.53E-06	AP-42, 3.4-4
Dibenz(a,h)anthracene		53-70-3	2.45E-09	4.81E-08	3.46E-07	AP-42, 3.4-4
Fluoranthene		206-44-0	2.85E-08	5.60E-07	4.03E-06	AP-42, 3.4-4
Fluorene		86-73-7	9.05E-08	1.78E-06	1.28E-05	AP-42, 3.4-4
Formaldehyde		50-00-00	5.58E-07	1.10E-05	7.89E-05	AP-42, 3.4-3
Indeno(1,2,3-cd)pyrene		193-39-5	2.93E-09	5.75E-08	4.14E-07	AP-42, 3.4-4
Naphthalene		91-20-3	9.19E-07	1.81E-05	1.30E-04	AP-42, 3.4-4
Phenanthrene		85-01-8	2.88E-07	5.67E-06	4.08E-05	AP-42, 3.4-4
Pyrene		129-00-00	2.62E-08	5.15E-07	3.71E-06	AP-42, 3.4-4
Toluene		108-88-3	1.99E-06	3.90E-05	2.81E-04	AP-42, 3.4-3
Xylenes		1330-20-7	1.36E-06	2.68E-05	1.93E-04	AP-42, 3.4-3

$$E_{(HAP)} = (X)(EF \text{ lb/gallon})(1 \text{ ton}/2,000 \text{ lb})$$

Where: $E_{(HAP)}$ = HAP emissions (tons) annually

X = the amount of diesel fuel (gallons) combusted annually

[AP-42 EF (lb/MMBtu) converted to (lb/gallon diesel fuel combusted)]

Emission Unit IA3: Spark-Ignition Emergency Generators

Emission Unit IA3 Natural Gas Combustion Emission Factors for Emergency Generator IE7

Emission Source	Pollutant	Natural Gas Emission Factor		Emission Factor Source
		lb/10 ⁶ scf natural gas combusted	lb/MMBtu natural gas combusted	
IE7	NO _x	4.16E+03	4.08E+00	AP-42, 3.2-2
	CO	3.23E+02	3.17E-01	AP-42, 3.2-2
	PM total	5.30E-01	0.0005	Roy Huntley, EPA*

Emission Source	Pollutant	Natural Gas Emission Factor		Emission Factor Source
		lb/10 ⁶ scf natural gas combusted	lb/MMBtu natural gas combusted	
	PM condensable	3.16E-01	0.0003	Roy Huntley, EPA*
	PM ₁₀ filterable	2.04E-01	0.0002	Roy Huntley, EPA*
	PM _{2.5} filterable	1.12E-01	0.0001	Roy Huntley, EPA*
	SO ₂	6.00E-01	5.88E-04	AP-42, 3.2-2
	VOC	1.20E+02	1.18E-01	AP-42, 3.2-2
	NH ₃	3.26E+00	3.20E-03	EPA WebFIRE

$$E = (X)(EF \text{ lb}/10^6 \text{ scf})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

Emission Unit IA3 Natural Gas Combustion HAP/TAC Emission Factors for Emergency Generator IE7

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor		Emission Factor Source
			lb/10 ⁶ scf natural gas combusted	lb/MMBtu natural gas combusted	
IE7	1,1,2,2-Tetrachloroethane	79-34-5	4.08E-02	4.00E-05	AP-42, 3.2-2
	1,1,2-Trichloroethane	79-00-5	3.24E-02	3.18E-05	AP-42, 3.2-2
	1,1-Dichloroethane	75-34-3	2.41E-02	2.36E-05	AP-42, 3.2-2
	1,2-Dichloroethane	107-06-2	2.41E-02	2.36E-05	AP-42, 3.2-2
	1,3-Dichloropropene	542-75-6	2.69E-02	2.64E-05	AP-42, 3.2-2
	2-Methylnaphthalene	91-57-6	3.26E-02	3.20E-05	AP-42, 3.2-2
	2,2,4-Trimethylpentane	540-84-1	2.55E-01	2.50E-04	AP-42, 3.2-2
	Acenaphthene	83-32-9	1.28E-03	1.25E-06	AP-42, 3.2-2
	Acenaphthylene	203-96-8	5.64E-03	5.53E-06	AP-42, 3.2-2
	Acetaldehyde	75-07-0	8.53E+00	8.36E-03	AP-42, 3.2-2
	Acrolein	107-02-8	5.24E+00	5.14E-03	AP-42, 3.2-2
	Benzene	71-43-2	4.49E-01	4.40E-04	AP-42, 3.2-2
	Benzo(b)fluoranthene	205-99-2	1.69E-04	1.66E-07	AP-42, 3.2-2
	Benzo(g,h,i)perylene	191-24-2	4.22E-04	4.14E-07	AP-42, 3.2-2
	Biphenyl	92-52-4	2.16E-01	2.12E-04	AP-42, 3.2-2
	Carbon Tetrachloride	56-23-5	3.74E-02	3.67E-05	AP-42, 3.2-2
	Chlorobenzene	108-90-7	3.10E-02	3.04E-05	AP-42, 3.2-2
Chloroform	67-66-3	2.91E-02	2.85E-05	AP-42, 3.2-2	

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor		Emission Factor Source
			lb/10 ⁶ scf natural gas combusted	lb/MMBtu natural gas combusted	
Chrysene		218-01-9	7.07E-04	6.93E-07	AP-42, 3.2-2
Ethylbenzene		100-41-4	4.05E-02	3.97E-05	AP-42, 3.2-2
Ethylene Dibromide		106-93-4	4.52E-02	4.43E-05	AP-42, 3.2-2
Fluoranthene		206-44-0	1.13E-03	1.11E-06	AP-42, 3.2-2
Fluorene		86-73-7	5.78E-03	5.67E-06	AP-42, 3.2-2
Formaldehyde		50-00-00	5.39E+01	5.28E-02	AP-42, 3.2-2
Hexane		110-54-3	1.13E+00	1.11E-03	AP-42, 3.2-2
Methanol		67-56-1	2.55E+00	2.50E-03	AP-42, 3.2-2
Methylene Chloride		75-09-2	2.04E-02	2.00E-05	AP-42, 3.2-2
Naphthalene		91-20-3	7.59E-02	7.44E-05	AP-42, 3.2-2
Phenanathrene		85-01-8	1.06E-02	1.04E-05	AP-42, 3.2-2
Phenol		108-95-2	2.45E-02	2.40E-05	AP-42, 3.2-2
Pyrene		129-00-0	1.39E-02	1.36E-05	AP-42, 3.2-2
Styrene		100-42-5	2.41E-02	2.36E-05	AP-42, 3.2-2
Tetrachloroethane		79-34-5	2.53E-03	2.48E-06	AP-42, 3.2-2
Toluene		108-88-3	4.16E-01	4.08E-04	AP-42, 3.2-2
Vinyl Chloride		75-01-4	1.52E-02	1.49E-05	AP-42, 3.2-2
Xylene		1330-20-7	1.88E-01	1.84E-04	AP-42, 3.2-2

$$E_{(HAP)} = (X)(EF \text{ lb}/10^6 \text{ scf})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E_(HAP) = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf natural gas combusted)]

Emission Unit IA4: Parts Washer

VOC Emissions (tpy) = amount of solvent used (gallons) × VOC Content (lb/gal) × (1 ton/2000 lb)

Insignificant Activity Table: Equipment not covered in any other emission unit

Equipment	Qty	Emission Calculation
Brazing, soldering or welding, plant maintenance use only	1 portable	AP-42 Emission Factors Chapter 12.19, Tables 12.19-1 & 12.19-2
Emergency relief vents	1	None
Diesel Fuel Storage (day) tank, 25 gallons [supplies GT11ce, cranking engine]	1	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.

Equipment	Qty	Emission Calculation
50/50 Glycol-water tank, 1,238 gal, pressurized	1	None
Diesel Fuel Storage (day) tank, 25 gallons [supplies GT12ce, cranking engine and EG1]	1	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses

7. Insignificant Activities

Equipment	Qty	PTE (tpy)	Regulation Basis
Brazing, soldering or welding, plant maintenance use only	1 portable	N/A	Regulation 1.02, Appendix A
Emergency relief vents	1	N/A	Regulation 1.02, Appendix A
Diesel Fuel Storage tank, 500 gallons [supplies GT11ce, cranking engine] (See I.A.-1)	1	VOC = 9.50E-4	Regulation 1.02, Appendix A
Diesel Fuel Storage (day) tank, 25 gallons [supplies GT11ce, cranking engine]	1	VOC = 1.38E-04	Regulation 1.02, Appendix A
50/50 Glycol-water tank, 1,238 gal, pressurized	1	VOC = 5.00E-6	Regulation 1.02
Lube Oil tank, 4,630 gallons [supplies GT13] (See I.A.-1)	1	VOC = 5.00E-05	Regulation 1.02, Appendix A
Lube Oil tank, 1,730 gallons [supplies GT12] (See I.A.-1)	1	VOC = 2.00E-05	Regulation 1.02, Appendix A
Lube Oil tank, 1,500 gallons [supplies GT11] (See I.A.-1)	1	VOC = 1.50E-05	Regulation 1.02, Appendix A
Diesel Fuel Storage tank, make Cummins, 600 gallons [supplies GT12ce, cranking engine and EG1] (See I.A.-1)	1	VOC = 1.50E-04	Regulation 1.02, Appendix A
Diesel Fuel Storage (day) tank, 25 gallons [supplies GT12ce, cranking engine and EG1]	1	VOC = 1.38E-04	Regulation 1.02, Appendix A
Cummins, model DFEK 500, 6-cylinder, 4-stroke, emergency generator for E12, diesel fuel, installed 2012 (See IA2)	1	NO _x = 2.14	Regulation 1.02

Equipment	Qty	PTE (tpy)	Regulation Basis
Kohler, Unit 1, model 40REZG, electric start, 4-stroke, 6-cylinder, natural gas emergency generator, installed 2016 (See IA3)	1	NO _x = 0.58	Regulation 1.02
Parts Washer, Kleen Tec, KT 1045, cold cleaner equipped with a 45 gallon secondary reservoir (See IA4)	1	VOC = 0.025	Regulation 1.02, Appendix A

- 1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements pursuant to Regulation 2.16 section 3.5.4.1.4.
- 2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements as required by Regulation 2.16 section 4.1.9.4.
- 3) The Insignificant Activities Table is correct as of the date the permit was proposed for review by U.S. EPA, Region 4.
- 4) Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
- 5) The owner or operator shall submit an updated list of insignificant activities that occurred during the preceding year pursuant to Regulation 2.16 section 4.3.5.3.6.
- 6) The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions, or use Potential to Emit (PTE) to be reported on the annual emission inventory.
- 7) The District has determined pursuant to Regulation 2.16 section 4.1.9.4 that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.

8. Basis of Regulation Applicability for IA units

a. Emission Unit IA1 – Storage Tanks

i. Equipment

Emission Point	Description	Applicable Regulation	Basis for Applicability
IE1	Diesel Fuel Storage	STAR,	Regulation 5.00, 5.01, 5.02, 5.14, 5.20, 5.21,

Emission Point	Description	Applicable Regulation	Basis for Applicability
	tank, 500 gallons [supplies GT11ce, cranking engine]	7.12	5.22, 5.23 establishes the requirements for Environmental Acceptability for TACs. Regulation 7.12 establishes the requirements for new storage vessels for VOC compounds that commence construction or modification on or after April 19, 1972.
IE2	Lube Oil tank, 4630 gallons [supplies GT13]		
IE3	Lube Oil tank, 1730 gallons [supplies GT12]		
IE4	Lube Oil tank, 1500 gallons [supplies GT11]		
IE5	Diesel Fuel Storage tank, 600 gallons, [supplies GT12ce, cranking engine and EG1]		

ii. **Standards/Operating Limits**

1) **TAC**

(a) See Plantwide section above.

2) **VOC**

(a) Regulation 7.12, section 3.3 establishes emission standards for VOC storage vessels.

b. **Emission Unit IA2 – Compression-Ignition Emergency Generator**

i. **Equipment**

Emission Point	Description	Applicable Regulation	Basis for Applicability
IE6	Cummins, model DFEK 500, 6-cylinder, 4-stroke, diesel engine, 563 kW (750 hp (2012))	STAR 6.42 40 CFR 60, Subpart III 40 CFR 63, Subpart ZZZZ	<p>Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 are applicable to any process or process equipment at a stationary source that emits a TAC.</p> <p>Regulation 6.42 establishes the requirements for Reasonably Available Control Technology (RACT) determination, demonstration, and compliance for Volatile Organic Compound (VOC) and Nitrogen Oxides (NO_x) emitting facilities for new or renewed operating permit applications.</p> <p>40 CFR 60 Subpart III applies to manufacturers, owner or operators of new stationary compression ignition internal combustion engines</p> <p>40 CFR 63 Subpart ZZZZ establishes national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP emissions.</p>

ii. **Standards/Operating Limits**

1) **HAP**

(a) The equipment listed in this emission unit is subject to 40 CFR 63, Subpart ZZZZ. However, there are no HAP standards. According to 40 CFR 63.6590(c) the new emergency generators must meet the requirements of 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR, 60 Subpart III. No further requirements apply for the engine under 40 CFR 63 Subpart ZZZZ.

2) **NO_x**

(a) Regulation 6.42 establishes the RACT requirements for NO_x emitting facilities. The source requested a plantwide limit of less than 100 ton/yr for NO_x, to avoid establishing a NO_x RACT Plan.

3) **TAC**

(a) See Plantwide section above.

4) **Unit Operation**

- (a) These emergency generators are also subject to 40 CFR 60, Subpart IIII because they involve new compression ignition (CI) ICEs as specified in 60 CFR 60.4200(a).
- (b) 40 CFR 60.4202, 4205, 4206, and 4211 establish unit operation requirements for the nonroad engines.
- (c) 40 CFR 60.4207(b) and 40 CFR 80.510(b)(1)(i) have sulfur content requirement for diesel fuel.

iii. **Monitoring and Recordkeeping**

1) **Unit Operation**

- (a) 40 CFR 60.4209 and 4214 establish recordkeeping requirements for this unit.
- (b) 40 CFR 80.510(b)(1)(i) establishes sulfur content requirement for diesel fuel used in nonroad engines.

c. **Emission Unit IA3: Spark-Ignition Emergency Generators**

i. **Equipment**

Emission Point	Description	Applicable Regulation	Basis for Applicability
IE7	Kohler, Unit 1, model 40REZG, electric start, 4-stroke, 6-cylinder, 4.3 L displacement, natural gas 72 HP	STAR 6.42 40 CFR 60, Subpart JJJJ 40 CFR 63, Subpart ZZZZ	Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 are applicable to any process or process equipment at a stationary source that emits a TAC. Regulation 6.42 establishes the requirements for Reasonably Available Control Technology (RACT) determination, demonstration, and compliance for Volatile Organic Compound (VOC) and Nitrogen Oxides (NOx) emitting facilities for new or renewed operating permit applications. 40 CFR 60 Subpart JJJJ applies to manufacturers, owner or operators of new stationary spark ignition internal combustion engines

Emission Point	Description	Applicable Regulation	Basis for Applicability
			40 CFR 63 Subpart ZZZZ establishes national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP emissions.

ii. **Standards/Operating Limits**

1) **HAP**

- (a) The equipment listed in this emission unit is subject to 40 CFR 63, Subpart ZZZZ. However, there are no HAP standards. According to 40 CFR 63.6590(c) the new emergency generators must meet the requirements of 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR, 60 Subpart JJJJ. No further requirements apply for the engine under 40 CFR 63 Subpart ZZZZ.
- 2) **NO_x**
 - (a) Regulation 6.42 establishes the RACT requirements for NO_x emitting facilities. The source requested a plantwide limit of less than 100 ton/yr for NO_x, to avoid establishing a NO_x RACT Plan.
- 3) **TAC**
 - (a) See Plantwide section above.
- 4) **Unit Operation**
 - (a) These emergency generators are also subject to 40 CFR 60, Subpart JJJJ because they involve new compression spark ignition (SI) ICEs as specified in 60 CFR 60.4230(a).
 - (b) 40 CFR 60.4231, 4233, and 4243 establish unit operation requirements for the nonroad engines.
- iii. **Monitoring and Recordkeeping**
 - 1) **Unit Operation**
 - (a) 40 CFR 60.4237 and 4245 establish recordkeeping requirements for this unit.
- d. **Emission Unit IA4 – Parts Washer**
 - i. **Equipment**

Emission Point	Description	Applicable Regulation	Basis for Applicability
IE8	One (1) cold solvent metal parts washer. Installed in April 2010	STAR; 6.18	Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 are applicable to any process or process equipment at a stationary source that emits a TAC. Regulation 6.18 applies to each cold cleaner that uses VOCs to remove soluble impurities from metal surface.

ii. **Standards/Operating Limits**

1) **TAC**

(a) See Plantwide section above.

2) **VOC**

(a) Regulation 6.18, section 4 establishes the requirements to install, maintain, and operate the parts washers.

iii. **Monitoring and Record Keeping**

1) **VOC**

(a) The source is required to monitor and maintain records in accordance with Regulation 6.18, section 4.