

DEQ Requests Comments on Apple Inc.'s Proposed Air Quality Permit Modification

DEQ invites the public to submit written comments on the conditions of Apple Inc.'s proposed permit modification to their Simple Air Contaminant Discharge Permit.

Summary

Apple Inc. operates a data center in Prineville, Oregon. The proposed permit modification is to address and include emission factors for each operating load of the different emergency engine generator sets and changes to the permit recordkeeping requirements.

How do I participate?

To submit your comments for the public record, send them by mail, fax or email:

Nancy Swofford, Permit Coordinator
DEQ Eastern Region – Bend Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701

Fax: 541-388-8283

Email: [Nancy Swofford](mailto:Nancy.Swofford@deq.state.or.us)

Written comments are due by 5 p.m. **Monday, November 14, 2016**

About the facility

This is a modification of a Simple Permit for Apple Inc. located at 1600 SW Baldwin Rd., in Prineville, Oregon.

Apple Inc. operates a data center in Prineville, Oregon. This permit modification regulates emissions from the Cummins emergency engine-generator sets during routine maintenance checks and readiness testing. This permit does not regulate potential emissions during periods of unexpected power outages.

What air pollutants would the permit regulate?

This permit regulates emissions of the pollutants listed in the table at the end of this document.

How does DEQ determine permit requirements?

DEQ evaluates types and amounts of pollutants at the facility's location, and determines permit requirements according to state and federal regulations.

How does DEQ monitor compliance with the permit requirements?

This permit would require the facility to monitor pollutants using federally-approved monitoring practices and standards.

Formulas to calculate emissions are contained in the permit. The permittee is required to calculate facility-wide emissions and submit an emissions report annually. Onsite inspections will be conducted to assure compliance with emission limitations.

What happens after the public comment period ends?

DEQ will consider and provide responses to all comments received at the close of the comment period. DEQ may modify provisions in the proposed permit modification, but the permit writers can only modify conditions of the permit in accordance with the rules and statutes under the authority of DEQ. Participation in the rulemaking or the legislative process is the only way to change the rules or statutes. Ultimately, if a facility meets all legal requirements, DEQ will issue the facility's air quality permit.

Where can I get more information?

Find out more and view the draft documents online at DEQ's "[Active Public Notices](#)" page, or contact Nancy Swofford, Permit Coordinator:

Phone: 541-633-2021 or 866-863-6668

Fax: 541-388-8283

Email: [Nancy Swofford](mailto:Nancy.Swofford@deq.state.or.us)

View the draft permit and related documents in person at the Crook County Library at 175 NW Meadow Lakes Dr. in Prineville or at the DEQ office in Bend. For a review appointment, call Nancy Swofford at 541-633-2021.

Accessibility information

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us.



State of Oregon
Department of
Environmental
Quality

**Eastern Region
Air Quality Program**
475 NE Bellevue Dr., #110
Bend, OR 97701
Phone: 541-388-6146
866-863-6668
Fax: 541-388-8283
Contact: Walt West,
Permit Writer

www.oregon.gov/DEQ

Search for "Apple, Air
Permit, Air Quality,
Prineville"

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Please include your full name and mailing address so that we can remove you from our print mailing list.

Date Issued: 10/14/16
By: Nancy Swofford
Permit Number: 07-0046

Emissions Limits

Criteria Pollutants: Table 1 below presents maximum allowable emissions of criteria pollutants for the facility. The current emission limit reflects maximum emissions the facility can emit under the existing permit. The proposed emission limit reflects maximum emissions the facility would be able to emit under the proposed permit. Typically, a facility's actual emissions are less than maximum limits established in a permit; however, actual emissions can increase up to the permitted limit.

Table 1

Criteria Pollutant	Proposed Limit (tons/yr)
Particulate matter	24
Small particulate matter	14
Fine particulate matter	9
Carbon monoxide	99
Nitrogen oxides	39
Sulfur dioxide	39
Volatile organic compounds	39
Greenhouse Gas	74,000

For more information about criteria pollutants, go to:
EPA's "[Criteria Air Pollutants](#)" page.

Hazardous Air Pollutants: Apple Inc. does not have the potential to be a major source of hazardous air pollutants. The estimated total potential hazardous air pollutant emissions while operating the engines for readiness and testing purposes are shown in the following table:

Table 2

Hazardous Air Pollutants	Potential Emissions (tons/yr)
Benzene	.00969
Toluene	.00351
Naphthalene	.00162
Formaldehyde	.000985
Total HAPs	.02

For more information about hazardous air pollutants, go to:
[Health Effects Notebook for Hazardous Air Pollutants](#)



SIMPLE
AIR CONTAMINANT DISCHARGE PERMIT

Department of Environmental Quality
Eastern Region
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
541-388-6146

This permit is being issued in accordance with the provisions of ORS 468A.040 and based on the land use compatibility findings included in the permit record.

ISSUED TO:

Apple Inc., A Corporation of California
1 Infinite Loop, MS 396-OPS
Cupertino, CA 95014

INFORMATION RELIED UPON:

Application No.: 28789
Date Received: 10/04/2016

PLANT SITE LOCATION:

Prineville Data Center
1600 SW Baldwin Rd.
Prineville, OR 97754

LAND USE COMPATIBILITY FINDING:

Approving Authority: Crook County
Approval Date: 06/22/2012

ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY

Mark W. Bailey, Eastern Region Air Quality Manager Dated

Source(s) Permitted to Discharge Air Contaminants (OAR 340-216-0020):

Table 1 Code	Source Description	SIC
Part 85	Data Processing	7374

Moderate Technical Permit Modification
Addendum No. 2

In accordance with OAR 340-216-0020, this permit has been modified as follows:

Permit Conditions 2.5, 4.2, 4.3, 5.1, 10.0 and 11.0 have been modified. The modified sections are highlighted for ease of identification showing what has changed relative to the original permit.

2.0 SPECIFIC PERFORMANCE, OPERATION AND MAINTENANCE REQUIREMENTS

- 2.1. Emergency Generators
40 CFR Part 60,
Subpart III
NSPS** 40 CFR Part 60 Subpart III, NSPS requirements are applicable to the emergency stationary Compression Ignition (CI) Internal Combustion Engines (ICE). The following includes the fuel, metering, labeling, operating limits and record keeping requirements for each emergency generator.
- 2.2. Fuel** 40 CFR 60.4207(b), requires that emergency generator fuel meet the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.
- 2.3. Metering** 40 CFR 60.4209(a), requires the installation of a non-resettable hour meter prior to startup of each engine.
- 2.4. Labeling** 40 CFR 60.4210(f) and Table 5 of Subpart III, requires permanent labels stating that each engine is for stationary emergency use only. The label must be added according to the labeling requirements specified in 40 CFR 1039.135(b).
- 2.5. Operating Limits** 40 CFR 60.4211(f), requires the permittee to operate the emergency stationary ICE in accordance with the following operation limitations:
- a. There is no time limit on the use of emergency stationary ICE in emergency situations.
 - b. The permittee may operate the emergency stationary ICE for any combination of the following purposes for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by Condition 2.5.c. counts as part of the 100 hours per calendar year allowed by this Condition.
 - i. Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition EPA for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal,

state or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

- ii. Emergency stationary ICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies, or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.
- iii. Emergency stationary ICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.
- c. Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in Condition 2.5.b. The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supplying power as part of a financial arrangement with another entity.

2.6. Record Keeping

40 CFR 60.4214(b), requires keeping records of the operation of the engines in emergency and non-emergency service by recording with a non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

**2.7. Emergency Generators
40 CFR Part 63,
Subpart ZZZZ
NESHAP**

The stationary emergency reciprocating internal combustion engines (RICE) are subject to requirements in 40 CFR 63.6590(c).

4.0 COMPLIANCE DEMONSTRATION

- 4.1. Monitoring Requirements** The permittee must monitor the hours of operation for each engine-generator set using a non-resettable hour meter.
- 4.2. PSEL Compliance Monitoring** Compliance with the PSEL is determined for each 12-consecutive calendar month period based on the following calculation for each pollutant except GHGs:
- $$E = \Sigma(EF \times P)/2000 \text{ lbs}$$
- Where:
- E = pollutant emissions (ton/yr);
EF = pollutant emission factor (see Condition 10.0);
P = process production, the hours of operation for each engine generator set during maintenance and readiness testing (see Condition 11.0)
- 4.3. Emission Factors** The permittee must use the default emission factors provided in Condition 10.0 for calculating pollutant emissions, unless alternative emission factors are approved by DEQ. When the power output is between values provided in Condition 10.0, the permittee will use the emissions factor for the next higher power output that is listed. The permittee may request or DEQ may require using alternative emission factors provided they are based on actual test data or other documentation (e.g., AP-42 compilation of emission factors) that has been reviewed and approved by DEQ.

5.0 RECORDKEEPING REQUIREMENTS

- 5.1. Operation and Maintenance** The permittee must maintain the following records related to the operation and maintenance of each emergency engine-generator set:
- a. The monthly and 12-month rolling total hours of readiness testing for the fire pump and each engine-generator set.
 - b. Monthly hours of operation of each emergency engine-generator set for:
 - i. Maintenance and testing runs;
 - ii. Emergencies; and,
 - iii. Other authorized runs identified in 40 CFR 60.4111(f).

- c. The monthly average operating load for each emergency engine-generator set.
- d. The date, duration and purpose of emergency operation for each emergency engine-generator set.
- e. The total monthly fuel usage in gallons for the emergency engine-generators.
- f. The monthly and 12-month rolling total PSEL monitoring records.

5.2. Excess Emissions

The permittee must maintain records of excess emissions as defined in OAR 340-214-0300 through 340-214-0340 (recorded on occurrence). Typically, excess emissions are caused by process upsets, startups, shutdowns or scheduled maintenance. In many cases, excess emissions are evident when visible emissions are greater than 20% opacity for 3 minutes or more in any 60-minute period. If there is an ongoing excess emission caused by an upset or breakdown, the permittee must cease operation of the equipment or facility no later than 48 hours after the beginning of the excess emissions, unless continued operation is approved by DEQ in accordance with OAR 340-214-0330(4).

5.3. Complaint Log

The permittee must maintain a log of all written complaints and complaints received via telephone that specifically refer to air pollution concerns associated to the permitted facility. The log must include a record of the permittee's actions to investigate the validity of each complaint and a record of actions taken for complaint resolution.

5.4. Retention of Records

Unless otherwise specified, all records must be maintained on site for a period of two (2) years and made available to DEQ upon request.

10.0 EMISSION FACTORS

194 KW Clark Model JU6H-UFADSO		
Emergency Generator Set	Pollutants	Emission Factor (EF) (lb/hr)
		100% Load
Fire Pump	PM/PM ₁₀ /PM _{2.5}	0.05
	NO _x	1.47
	CO	0.34
	SO ₂	0.01
	VOC	0.04

2.0 MW Cummins Model 2000DQKAB					
Emergency Generator Set	Pollutants	Emission Factor (EF) (lb/hr)			
		25% Load	50% Load	75% Load	100% Load
PRZ01GEN01 through PRZ01GEN03	PM/PM ₁₀ /PM _{2.5}	0.26	0.45	0.19	0.26
	NO _x	4.35	9.98	22.68	34.11
	CO	0.92	1.16	0.63	1.16
	SO ₂	0.01	0.02	0.03	0.04
	VOC	0.35	0.42	0.48	0.71

2.75 MW Cummins Model 2750DQLF					
Emergency Generator Set	Pollutants	Emission Factor (EF) (lb/hr)			
		25% Load	50% Load	75% Load	100% Load
PRZ03GEN01 through PRZ03GEN12	PM/PM ₁₀ /PM _{2.5}	0.25	0.22	0.34	0.36
	NO _x	8.06	15.22	29.54	57.28
	CO	1.28	1.21	1.61	3.85
	SO ₂	0.01	0.02	0.04	0.05
	VOC	1.16	1.16	1.21	1.25

4.0 MW Caterpillar Model C175-20					
Emergency Generator Set	Pollutants	Emission Factor (EF) (lb/hr)			
		25% Load	50% Load	75% Load	100% Load
PRZ04GEN01 through PRZ04GEN12	PM/PM ₁₀ /PM _{2.5}	0.34	0.37	0.56	0.75
	NO _x	9.59	21.66	67.04	84.77
	CO	5.17	20.23	9.52	8.09
	SO ₂	0.02	0.03	0.05	0.07
	VOC	1.81	1.37	0.75	0.75

Greenhouse Gases (GHG) Emission Factors:

GHG Pollutant	GHG - Emission Factors (short tons CO ₂ e/gallon)
CO ₂	1.13E-02
CH ₄	1.14E-05
N ₂ O	2.72E-05
GHG CO₂e Emission Factor:	1.134E-02

11.0 PROCESS/PRODUCTION RECORDS

Emissions Device or Activity	Process or Production Parameter	Frequency
All Emergency Engine-Generator Sets and Fire Pump	Total hours of operation for each emergency engine-generator set and fire pump during routine maintenance and readiness testing (per engine)	Monthly & 12-Month Rolling Total for Each Month
	Total hours of operating each emergency engine-generator set during power outages (per engine)	
Cummins and Caterpillar Emergency Engine-Generator Sets	Average power output during routine maintenance and readiness testing (per engine)	

SIMPLE AIR CONTAMINANT DISCHARGE PERMIT
REVIEW REPORT
ADDENDUM 2

Department of Environmental Quality
Eastern Region
Air Quality Program

PERMITTING ACTION

This Moderate Technical Modification of the Simple Air Contaminant Discharge Permit (ACDP) issued to Apple Inc., is proposed to address and include emission factors for each operating load of the different emergency engine generator sets and changes to the permit recordkeeping requirements. The proposed emission factors are based on the manufacturer specifications of each engine. The emissions calculated using the proposed emission factors will provide an accurate and conservative account for how the emergency engine generator sets are operated. Apple Inc., operates a data center located at 1600 SW Baldwin Road in Prineville, Oregon.

PERMIT REVISIONS

Permit Conditions 2.5, 4.2, 4.3, 5.1, 10.0 and 11.0 of the Simple ACDP are being modified to include additional monitoring, recordkeeping and new emission factors based on the operating loads of the existing and newly installed emergency generator engine sets at the facility.

Permit Condition 2.5 is being modified to correct a typographical error. Permit Conditions 4.2 and 4.3 are being modified to include the use of the emission factors for the monthly average operating load of each emergency engine generator set. Permit Condition 5.1 is modified to include additional recordkeeping requirements that verifies and establishes the purpose and operating load of each emergency engine generator set. Permit Condition 10.0 is being modified to include the emission factors for the upper end of each operating load of the emergency engine generator sets and greenhouse gas emissions. Permit Condition 11.0 is modified to include additional process and recordkeeping requirements that verify the operating loads of each emergency engine generator set.

In addition to the proposed permit condition modifications identified above, Apple has requested to clarify the emission unit identifications (EU ID) for the three (3) existing 2.0 MW Cummins Model 2000DQKAB and the twelve (12) existing 2.75 MW Cummins Model 2750DQLF emergency engine generator sets as provided in the table below. These changes are intended to clarify and provide consistency with identifying the specific emergency generator sets:

Emissions Unit Description	Old EU ID	New EU ID
Cummins 2.0 MW Emergency Engine- Generator Sets	NXGEN01	PRZ01GEN01
	NXGEN02	PRZ01GEN02
	NXGEN03	PRZ01GEN03
Cummins 2.75 MW Emergency Engine- Generator Sets	PILR01	PRZ03GEN04
	PILR02	PRZ03GEN05
	PILR03	PRZ03GEN06
	PILR04	PRZ03GEN07
	PILR05	PRZ03GEN08
	PILR06	PRZ03GEN09
	PILR07	PRZ03GEN01
	PILR08	PRZ03GEN02
	PILR09	PRZ03GEN03
	PILR10	PRZ03GEN10
	PILR11	PRZ03GEN11
	PILR12	PRZ03GEN12

PUBLIC NOTICE

Pursuant to OAR 340-216-0064(4)(b), issuance of Simple Air Contaminant Discharge Permits require public notice in accordance with OAR 340-209-0030(3)(b), which requires DEQ to provide notice of the proposed permit action and a minimum of 30 days for interested persons to submit written comments. **The public notice was issued on October 14, 2016 and the comment period will end on November 14, 2016.**

ATTACHMENT 1: EMISSIONS DETAIL SHEET

The annual projected emissions are calculated based on the historic run times of the existing 260 Hp Clark fire pump, the three (3) 2.0 MW Cummins Model 2000DQKAB, the twelve (12) 2.75 MW Cummins Model 2750DQLF engines and anticipated run times of the twelve (12) newly installed 4.0 MW Caterpillar Model C175-20 emergency engine-generator sets. The potential to emit calculations are based on the emergency engine-generator sets operating for 52 hours per year at 50% load during routine testing and annual maintenance. The fire pump emissions are based on operating 100 hours per year at 100% load.

The bracketed load emission factors are provided below for each of the emergency engine generator sets. The emission factors are based on manufacturer specifications:

1 Existing 194 KW Clark Model JU6H-UFADSO					
Power Out Per Engine	PM/PM₁₀/PM_{2.5}	NO_x	CO	SO₂	VOC
	(lbs/hr)				
100%	0.05	1.47	0.34	0.01	0.04

3 Existing 2.0 MW Cummins Model 2000DQKAB					
Power Out Per Engine	PM/PM₁₀/PM_{2.5}	NO_x	CO	SO₂	VOC
	(lbs/hr)				
100%	0.26	34.11	1.16	0.04	0.71
75%	0.19	22.68	0.63	0.03	0.48
50%	0.45	9.98	1.16	0.02	0.45
25%	0.26	4.35	0.92	0.01	0.35

12 Existing 2.75 MW Cummins Model 2750DQLF					
Power Out Per Engine	PM/PM₁₀/PM_{2.5}	NO_x	CO	SO₂	VOC
	(lbs/hr)				
100%	0.36	57.28	3.85	0.05	1.25
75%	0.34	29.54	1.61	0.04	1.21
50%	0.22	15.22	1.21	0.02	1.16
25%	0.25	8.06	1.28	0.01	1.16

12 New 4.0 MW Caterpillar Model C175-20					
Power Out Per Engine	PM/PM₁₀/PM_{2.5}	NO_x	CO	SO₂	VOC
	(lbs/hr)				
100%	0.75	84.77	8.09	0.07	0.75
75%	0.56	67.04	9.52	0.05	0.75
50%	0.37	21.66	20.23	0.03	1.37
25%	0.34	9.59	5.17	0.02	1.81

The following projected emission calculations are based on operating each emergency engine generator set at 50 percent standby operating load for 52 hours per year. The fire pump engine emissions remain based on operating at 100% operating load for 100 hours per year:

Projected Emissions With All Engines Operating for 52 hours per Year at 50% Load					
Engine Type	PM₁₀/PM_{2.5}	NO_x	CO	SO₂	VOC
	(tons/yr)				
194 KW Fire Pump Engine Set	2.0E-03	0.07	0.02	5.0E-04	2.0E-03
2.0 MW Emergency Engine Sets	0.04	0.78	0.09	1.4E-03	0.03
2.75 MW Emergency Engine Sets	0.07	4.75	0.38	7.7 E-03	0.36
4.0 MW Emergency Engine Sets	0.12	6.76	6.31	1.1 E-02	0.43
Total Emissions (tons/yr):	0.22	12.36	6.80	0.002	0.83

The following calculated emissions for Greenhouse Gases are based on operating each emergency engine generator set at 50 percent standby operating load at 52 hours per year. The fire pump engine emissions remain based on operating at 100% operating load for 100 hours per year:

Emergency Engine Generator Set Manufacturer Fuel Usage Specifications				
Manufacturer	Cummins	Cummins	Caterpillar	Clark
Model	2000DQKAB	2750DQLF	Model C175-20	JU6H-UFADSO
Rating	2,000 kWe	2,750 kWe	4,000 kWe	194 kWe
Number of Engines	3	12	12	1
Hourly Fuel Consumption at 50% Operating Load	82 gal/hr	107 gal/hr	162 gal/hr	13 gal/hr
	11 MMBtu/hr	15 MMBtu/hr	22 MMBtu/hr	2 MMBtu/hr
Projected Engine Annual Fuel Usage	4,264 gal/yr	5,564 gal/yr	8,424 gal/yr	1,300 gal/yr
Total Projected Annual Fuel Usage:	12,792 gal/yr	66,768 gal/yr	101,088 gal/yr	1,300 gal/yr

GHG Emissions							
Emission Unit	Annual Diesel Throughput	GHG Pollutant	Emission Factor & GWPs	EF Units	Reference	CO₂ Emissions	
						(metric tons/yr)	(short tons/yr)
Emergency Engine-Generator sets	181,948 Gallons/year	GHG-CH ₄	1.14E-05	Short tons CO ₂ e/ gallon	DEQ (GHG Calculator)	2	2
		GHG-CO ₂	1.13E-02			1,857	2,047
		GHG-N ₂ O	2.72E-05			4	5
Emergency Engine-Generator Sets Total Potential GHG Emissions						1,863	2,054

Annual gallons per year throughput is estimated based on the emergency engine sets operating at 52 hrs/yr and the fire pump engine operating for 100 hrs/yr all at 100% operating loads. Global Warming Potentials (GWPs) used: GHG-CH₄ = 25; GHG-CO₂ = 1; and, GHG-N₂O = 298

Hazardous Air Pollutants (HAPs):

The emergency engine-generator sets are commonly expected to operate at 50% standby operating load for 52 hours per year. The potential to emit Hazardous Air Pollutants (HAPs) has been conservatively calculated for all emergency engine-generator sets operating at 100% load for the maximum of 8,760 hours/yr and at 50% standby load at 52 hours per year. An analysis for operating the engines at 8,760 hours per year was performed to demonstrate that there is no potential for this facility to become a major source of HAPs. An analysis for operating each of the emergency engine-generator sets at 52 hours per year at 50% operating load was performed to provide the annual actual emissions of HAPs expected from this facility. There are three (3) - 2.0 MW and twelve (12) - 2.75 MW Cummins emergency engine-generator sets; and, twelve (12) 4.0 MW Caterpillar emergency engine-generator sets, and one (1) 194 KW Clark fire pump engine:

2.0 MW Cummins Generators (3 Engine Sets)							
Hazardous Air Pollutants - Emissions							
	Potential to Emit (100% Operating load)			Projected Emissions (50% Operating load)			
Maximum Fuel Rate per Engine	141.3	gals/hr		82	gals/hr		
Fuel Density	7.15	lb/gal.		7.15	lb/gal.		
Fuel Heat Value	19300	Btu/lb		19300	Btu/lb		
Maximum Heat Input per Engine	19.5	mmBtu/hr		11.3	mmBtu/hr		
Hazardous Air Pollutant (HAP)	Emission Factor	2.0 MW Cummins Generator Emissions					
	(lb/mmBtu)	Each Unit		3 Combined Units			
		(lbs/hr) at 100% Load	(lbs/hr) at 50% Load	8760 hrs/yr		52 hrs/yr	
				(lbs/yr)	(tons/yr)	(lbs/yr)	(tons/yr)
Acetaldehyde	2.52E-05	4.91E-04	2.85E-04	12.91	6.46E-03	0.04	2.22E-05
Acrolein	7.88E-06	1.54E-04	8.92E-05	4.04	2.02E-03	0.01	6.96E-06
Benzene	7.76E-04	1.51E-02	8.78E-03	397.64	1.99E-01	1.37	6.85E-04
Formaldehyde	7.89E-05	1.54E-03	8.93E-04	40.43	2.02E-02	0.14	6.96E-05
Naphthalene	1.30E-04	2.53E-03	1.47E-03	66.62	3.33E-02	0.23	1.15E-04
Toluene	2.81E-04	5.48E-03	3.18E-03	143.99	7.20E-02	0.50	2.48E-04
Xylenes	1.93E-04	3.76E-03	2.18E-03	98.90	4.94E-02	0.34	1.70E-04
Benzo(a)pyrene	2.57E-07	5.01E-06	2.91E-06	0.13	6.58E-05	0.00	2.27E-07
Annual HAP Emissions for the 2.0 MW Cummins Generators:					0.38		1.32E-03

2.75 MW Cummins Generators (12 Engine Sets)							
Hazardous Air Pollutants - Emissions							
	Potential to Emit (100% Operating load)			Projected Emissions (50% Operating load)			
Maximum Fuel Rate per Engine	186.6	gals/hr	107	gals/hr			
Fuel Density	7.15	lb/gal.	7.15	lb/gal.			
Fuel Heat Value	19300	Btu/lb	19300	Btu/lb			
Maximum Heat Input per Engine	25.7	mmBtu/hr	14.8	mmBtu/hr			
Hazardous Air Pollutant (HAP)	Emission Factor	2.75 MW Cummins Generator Emissions					
	(lb/mmBtu)	Each Unit		12 Combined Units			
		(lbs/hr) at 100% Load	(lbs/hr) at 50% Load	8760 hrs/yr		52 hrs/yr	
				(lbs/yr)	(tons/yr)	(lbs/yr)	(tons/yr)
Acetaldehyde	2.52E-05	6.49E-04	3.72E-04	68.21	3.41E-02	0.23	1.16E-04
Acrolein	7.88E-06	2.03E-04	1.16E-04	21.33	1.07E-02	0.07	3.63E-05
Benzene	7.76E-04	2.00E-02	1.15E-02	2100.50	1.05E+00	7.15	3.57E-03
Formaldehyde	7.89E-05	2.03E-03	1.16E-03	213.57	1.07E-01	0.73	3.63E-04
Naphthalene	1.30E-04	3.35E-03	1.92E-03	351.89	1.76E-01	1.20	5.99E-04
Toluene	2.81E-04	7.24E-03	4.15E-03	760.62	3.80E-01	2.59	1.29E-03
Xylenes	1.93E-04	4.97E-03	2.85E-03	522.42	2.61E-01	1.78	8.89E-04
Benzo(a)pyrene	2.57E-07	6.62E-06	3.79E-06	0.70	3.48E-04	0.00	1.18E-06
Annual HAP Emissions for the 2.75 MW Cummins Generators:					2.02		6.87E-03

4.0 MW Caterpillar Generators (12 Engine Sets)							
Hazardous Air Pollutants - Emissions							
	Potential to Emit (100% Operating load)			Projected Emissions (50% Operating load)			
Maximum Fuel Rate per Engine	274.6	gals/hr	95.5	gals/hr			
Fuel Density	7.15	lb/gal.	7.15	lb/gal.			
Fuel Heat Value	19300	Btu/lb	19300	Btu/lb			
Maximum Heat Input per Engine	37.9	mmBtu/hr	13.2	mmBtu/hr			
Hazardous Air Pollutant (HAP)	Emission Factor	4.0 MW Caterpillar Emissions					
	(lb/mmBtu)	Each Unit		12 Combined Units			
		(lbs/hr) at 100% Load	(lbs/hr) at 50% Load	8760 hrs/yr		52 hrs/yr	
				(lbs/yr)	(tons/yr)	(lbs/yr)	(tons/yr)
Acetaldehyde	2.52E-05	9.55E-04	5.62E-04	100.38	5.02E-02	0.35	1.75E-04
Acrolein	7.88E-06	2.99E-04	1.76E-04	31.39	1.57E-02	0.11	5.48E-05
Benzene	7.76E-04	2.94E-02	1.73E-02	3091.09	1.55E+00	10.79	5.40E-03
Formaldehyde	7.89E-05	2.99E-03	1.76E-03	314.29	1.57E-01	1.10	5.49E-04
Naphthalene	1.30E-04	4.93E-03	2.90E-03	517.84	2.59E-01	1.81	9.04E-04
Toluene	2.81E-04	1.06E-02	6.26E-03	1119.32	5.60E-01	3.91	1.95E-03
Xylenes	1.93E-04	7.31E-03	4.30E-03	768.79	3.84E-01	2.68	1.34E-03
Benzo(a)pyrene	2.57E-07	9.74E-06	5.73E-06	1.02	5.12E-04	0.00	1.79E-06
Annual HAP Emissions for the 4.0 MW Caterpillar Generators:					2.97		1.04E-02

194 KW Clark Generator (1 Engine Set) Hazardous Air Pollutants - Emissions						
		Potential to Emit (100% Operating load)				
Maximum Fuel Rate per Engine		13	gals/hr			
Fuel Density		7.15	lb/gal.			
Fuel Heat Value		19300	Btu/lb			
Maximum Heat Input per Engine		1.8	mmBtu/hr			
Hazardous Air Pollutant (HAP)	Emission Factor	194 KW Clark Generator Emissions				
	Each Unit		1 Fire Pump Engine			
	(lb/mmBtu)	(lbs/hr) at 100% Load	8760 hrs/yr		52 hrs/yr	
			(lbs/yr)	(tons/yr)	(lbs/yr)	(tons/yr)
Acetaldehyde	2.52E-05	4.52E-05	0.40	1.98E-04	2.35E-03	1.18E-06
Acrolein	7.88E-06	1.41E-05	0.12	6.19E-05	7.35E-04	3.68E-07
Benzene	7.76E-04	1.39E-03	12.19	6.10E-03	7.24E-02	3.62E-05
Formaldehyde	7.89E-05	1.42E-04	1.24	6.20E-04	7.36E-03	3.68E-06
Naphthalene	1.30E-04	2.33E-04	2.04	1.02E-03	1.21E-02	6.06E-06
Toluene	2.81E-04	5.04E-04	4.42	2.21E-03	2.62E-02	1.31E-05
Xylenes	1.93E-04	3.46E-04	3.03	1.52E-03	1.80E-02	9.00E-06
Benzo(a)pyrene	2.57E-07	4.61E-07	4.04E-03	2.02E-06	2.40E-05	1.20E-08
Annual HAP Emissions for the 194 KW Clark Generator:				0.01		6.96E-05

The following is a summary of the potential to emit Hazardous Air Pollutants (HAPs) for all emergency engine-generator sets operating at 100% load for the maximum of 8,760 hours/yr:

Highest Levels of Individual HAPs	Emergency Engine-Generator Sets				Total Individual HAPs
	2.0 MW	2.75 MW	4.0 MW	194 KW	
	(tons/year)				
Benzene	0.20	1.05	1.55	0.01	2.80
Formaldehyde	0.02	0.11	0.16	0.001	0.28
Naphthalene	0.03	0.18	0.26	0.001	0.47
Toluene	0.07	0.38	0.56	0.002	1.01

The potential to emit HAP emissions are conservatively calculated to demonstrate that there is no potential for this facility to become a major source of HAPs.

Potential to Emit Totals Hazardous Air Pollutants	
Generators	(tons/yr)
2.0 MW	0.38
2.75 MW	2.02
4.0 MW	2.97
194 KW	1.17E-02
Total HAPS	5.39

The following is a summary of the expected highest levels of individual HAPs for all emergency engine-generator sets operating at 50% standby load for 52 hours/yr. The fire pump engine emissions are based on operating at 100% operating load for 52 hours per year.

Highest Projected Levels of Individual HAPs	Emergency Engine-Generator Sets				Total Individual HAPs
	2.0 MW	2.75 MW	4.0 MW	194 KW	
	(tons/year)				
Benzene	6.85E-04	3.57E-03	5.40E-03	3.62E-05	9.69E-03
Formaldehyde	6.96E-05	3.63E-04	5.49E-04	3.68E-06	9.85E-04
Naphthalene	1.15E-04	5.99E-04	9.04E-04	6.06E-06	1.62E-03
Toluene	2.48E-04	1.29E-03	1.95E-03	9.00E-06	3.51E-03

The following HAP emission calculations provide the expected annual HAP emissions for this facility.

Projected Actual HAP Totals	
Generators	(tons/yr)
2.0 MW	1.32E-03
2.75 MW	6.87E-03
4.0 MW	1.04E-02
194 KW	6.96E-05
Total HAPS	0.02