

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007AI

Administrative Information

- ☐ Section AI.1: Source Information
☐ Section AI.2: Applicant Information
☐ Section AI.3: Owner Information
☐ Section AI.4: Type of Application
☐ Section AI.5: Other Required Information
☐ Section AI.6: Signature Block
☐ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

☐ Additional Documentation attached

Source Name: Kentucky Municipal Energy Agency (KYMEA) Energy Center I

KY EIS (AFS) #: 21- New Source

Permit #: New Source

Agency Interest (AI) ID: New Source

Date: 24-Feb-25

Section AI.1: Source Information

Physical Location	Street:	1757 AC Slaton Road		
Address:	City:	Madisonville	County:	Hopkins
			Zip Code:	42431
Mailing Address:	Street or P.O. Box:	1700 Eastpoint Parkway, Suite 220		
	City:	Louisville	State:	Kentucky
			Zip Code:	40223

Standard Coordinates for Source Physical Location

Longitude: 87°33'4.00"W (decimal degrees) **Latitude:** 37°19'11.04"N (decimal degrees)

Primary (NAICS) Category: 22- Utilities **Primary NAICS #:** 221112- Fossil Fuel Electric Power Generation

Classification (SIC) Category:		Electric Services		Primary SIC #:		4911	
Briefly discuss the type of business conducted at this site:		Kentucky Municipal Energy Agency (KYMEA) is a joint public agency that serves the current and future electric power and energy requirements of the state of Kentucky.					
Description of Area Surrounding Source:	☒ Rural Area	☐ Industrial Park	☐ Residential Area	Is any part of the source located on federal land?	☐ Yes	Number of Employees:	15
	☐ Urban Area	☐ Industrial Area	☐ Commercial Area		☒ No		
Approximate distance to nearest residence or commercial property:		0.15 miles		Property Area:	13.5 Acres		Is this source portable? ☐ Yes ☒ No
What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?							
NPDES/KPDES:		☐ Currently Hold	☒ Need	☐ N/A			
Solid Waste:		☐ Currently Hold	☐ Need	☒ N/A			
RCRA:		☐ Currently Hold	☐ Need	☒ N/A			
UST:		☐ Currently Hold	☐ Need	☒ N/A			
Type of Regulated Waste Activity:		☐ Mixed Waste Generator	☐ Generator	☐ Recycler	☐ Other: _____		
		☐ U.S. Importer of Hazardous Waste	☐ Transporter	☐ Treatment/Storage/Disposal Facility	☒ N/A		

Section AI.2: Applicant Information

Applicant Name: Doug Buresh

Title: (if individual) President/CEO

Mailing Address: **Street or P.O. Box:** 1700 Eastpoint Parkway
City: Louisville **State:** Kentucky **Zip Code:** 40223

Email: (if individual) dburesh@kymea.org

Phone: 502-242-5635

Technical Contact

Name: Jeremy James

Title: Environmental Consultant

Mailing Address: **Street or P.O. Box:** 100 Court Ave STE 300
City: Des Moines **State:** Iowa **Zip Code:** 50309

Email: jamesjeremy@stanleygroup.com

Phone: 515-447-4424

Air Permit Contact for Source

Name: Doug Buresh

Title: President/CEO

Mailing Address: **Street or P.O. Box:** 1700 Eastpoint Parkway
City: Louisville **State:** Kentucky **Zip Code:** 40223

Email: dburesh@kymea.org

Phone: 502 242-5635

Section AI.3: Owner Information

EP7007AI

☒ **Owner same as applicant****Name:****Title:****Mailing Address:****Street or P.O. Box:****City:****State:****Zip Code:****Email:****Phone:**

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name**Position**

Section AI.4: Type of Application

Current Status:	☐ Title V	☐ Conditional Major	☐ State-Origin	☐ General Permit	☐ Registration	☒ None
Requested Action: (check all that apply)	☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment		
	☐ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☒ Initial Source-wide Operating Permit		
	☐ 502(b)(10) Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice		
	☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities		
	☐ Ownership Change	☐ Closure				
Requested Status:	☒ Title V	☐ Conditional Major	☐ State-Origin	☐ PSD	☐ NSR	☐ Other: _____

Is the source requesting a limitation of potential emissions?

☒ Yes☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter	_____	☐ Single HAP	_____
☐ Volatile Organic Compounds (VOC)	_____	☐ Combined HAPs	_____
☒ Carbon Monoxide	225 tons/yr	☐ Air Toxics (40 CFR 68, Subpart F)	_____
☒ Nitrogen Oxides	225 tons/yr	☐ Carbon Dioxide	_____
☐ Sulfur Dioxide	_____	☐ Greenhouse Gases (GHG)	_____
☐ Lead	_____	☐ Other	_____

For New Construction:

Proposed Start Date of Construction:
(MM/YYYY)

06/2025

Proposed Operation Start-Up Date: (MM/YYYY)

04/2027

For Modifications:

Proposed Start Date of Modification:
(MM/YYYY)

Proposed Operation Start-Up Date: (MM/YYYY)

Applicant is seeking coverage under a permit shield.

☐ Yes☒ No

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

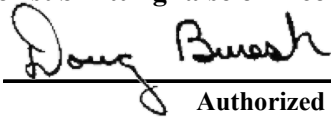
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- | | |
|--|--|
| ☐ DEP7007A Indirect Heat Exchangers and Turbines | ☐ DEP7007CC Compliance Certification |
| ☐ DEP7007B Manufacturing or Processing Operations | ☒ DEP7007DD Insignificant Activities |
| ☐ DEP7007C Incinerators and Waste Burners | ☒ DEP7007EE Internal Combustion Engines |
| ☐ DEP7007F Episode Standby Plan | ☐ DEP7007FF Secondary Aluminum Processing |
| ☐ DEP7007J Volatile Liquid Storage | ☒ DEP7007GG Control Equipment |
| ☐ DEP7007K Surface Coating or Printing Operations | ☐ DEP7007HH Haul Roads |
| ☐ DEP7007L Mineral Processes | ☐ Confidentiality Claim |
| ☐ DEP7007M Metal Cleaning Degreasers | ☐ Ownership Change Form |
| ☒ DEP7007N Source Emissions Profile | ☐ Secretary of State Certificate |
| ☐ DEP7007P Perchloroethylene Dry Cleaning Systems | ☐ Flowcharts or diagrams depicting process |
| ☐ DEP7007R Emission Offset Credit | ☐ Digital Line Graphs (DLG) files of buildings, roads, etc. |
| ☐ DEP7007S Service Stations | ☐ Site Map |
| ☐ DEP7007T Metal Plating and Surface Treatment Operations | ☐ Map or drawing depicting location of facility |
| ☒ DEP7007V Applicable Requirements and Compliance Activities | ☐ Safety Data Sheet (SDS) |
| ☐ DEP7007Y Good Engineering Practice and Stack Height Determination | ☐ Emergency Response Plan |
| ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units | ☐ Other: _____ |
| ☐ DEP7007BB Certified Progress Report | |

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

02/24/2025

Date

Doug Buresh

Type or Printed Name of Signatory

President/CEO

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	DEP7007DD Insignificant Activities ☒ Section DD.1: Table of Insignificant Activities ☒ Section DD.2: Signature Block ☒ Section DD.3: Notes, Comments, and Explanations			
Source Name: KY EIS (AFS) #: Permit #: Agency Interest (AI) ID: Date:	Kentucky Municipal Energy Agency (KYMEA) Energy Center I 21- New Source New Source New Source 10/25/2024 			
Section DD.1: Table of Insignificant Activities				
*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3... etc.				
Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions (ton/yr)
IA 1	Water Heater (20,000 Btu/hr)	Water Heater	Indirect heat exchangers or water heaters rated at 1 million BTU per hour or less actual heat input that use #2 fuel oil, wood, natural gas, LP gas or refinery fuel gas.	PM: 0.0007, PM10: 0.0007, PM2.5: 0.0007, SOx: 0.0001, NOx: 0.0086, VOC: 0.0005, CO: 0.0072, CO2: 10.512, CH4: 0.0002, Hexane: 0.0002
IA 2	Circuit Breakers/Switchgear (200 lbs)	Circuit Breakers	N/A	Sulfur Hexafluoride: 11.4
IA 3	Space Heaters (14 Heaters, 1.35 Total MMBtu/hr)	Space Heaters	Indirect heat exchangers or water heaters rated at 1 million BTU per hour or less actual heat input that use #2 fuel oil, wood, natural gas, LP gas or refinery fuel gas.	PM: 0.0441, PM10: 0.0441, PM2.5: 0.0441, SOx: 0.0035, NOx: 0.5795, VOC: 0.0319, CO: 0.4872, CO2: 709.56, CH4: 0.0136, N2O: 0.0013, Formaldehyde: 0.0004, Hexane: 0.0002
IA 4	Maintenance water (Water-glycol) Tank (2,700 Gallons)	Glycol Tank	Storage vessels having less than 10,567 gallons capacity that contain petroleum or organic liquids with a vapor pressure of 1.5 psia or less at storage temperature.	VOC: 0.0001

Section DD.3: Notes, Comments, and Explanations

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Section EE.2: Operating Information					
Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency, Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? <i>(Yes/No)</i>	Rental Time Period <i>(hrs)</i>	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EU 01	Non-emergency	8760	No	N/A	N/A
EU 02	Non-emergency	8760	No	N/A	N/A
EU 03	Non-emergency	8760	No	N/A	N/A
EU 04	Non-emergency	8760	No	N/A	N/A

Section EE.3: Design Information							
Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power (bhp)	Maximum Engine Speed (rpm)	Total Displacement (L)	Number of Cylinders
EU 01	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18
EU 02	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18
EU 03	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18
EU 04	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used (%)	Maximum Fuel Consumption (Btu/Hp-hr)	Heat Content (Btu/scf)	Sulfur Content (%)	SCC Code	SCC Units
EU 01	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202
EU 02	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202
EU 03	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202
EU 04	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EU 01, EU 02, EU 03, EU 04	Natural Gas	PM	3.32	lb/hr	Mass Balance
		PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2
		PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2
		SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2
		NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2
		VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2
		CO	0.317	lb/MMBtu	AP-42 Table 3.2-2
		Pb	0.00	lb/hr	Mass Balance
		NH ₃	3.18	lb/hr	Mass Balance
		Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2
		CO2	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2
		Nitrous Oxide (N2O)	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2
		Methane (CH4)	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2

Section EE.6: Notes, Comments, and Explanations

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	DEP7007GG Control Equipment	Additional Documentation ☒ Complete Sections GG.1 through GG.12, as applicable ☒ Attach manufacturer's specifications for each control device ☒ Complete DEP7007AI										
<table><tr><td>Source Name:</td><td>Kentucky Municipal Energy Agency (KYMEA) Energy Center I</td></tr><tr><td>KY EIS (AFS) #:</td><td>New Source</td></tr><tr><td>Permit #:</td><td>New Source</td></tr><tr><td>Agency Interest (AI) ID:</td><td>New Source</td></tr><tr><td>Date:</td><td>10/25/2024</td></tr></table>			Source Name:	Kentucky Municipal Energy Agency (KYMEA) Energy Center I	KY EIS (AFS) #:	New Source	Permit #:	New Source	Agency Interest (AI) ID:	New Source	Date:	10/25/2024
Source Name:	Kentucky Municipal Energy Agency (KYMEA) Energy Center I											
KY EIS (AFS) #:	New Source											
Permit #:	New Source											
Agency Interest (AI) ID:	New Source											
Date:	10/25/2024											

Source Name:	Kentucky Municipal Energy Agency (KYMEA) Energy Center I
KY EIS (AFS) #:	New Source
Permit #:	New Source
Agency Interest (AI) ID:	New Source
Date:	10/25/2024

Section GG.1: General Information - Control Equipment

[illegible]

Section GG.11: Other Control Equipment		
Control Device ID #	Identify all Emission Units and Control Devices that Feed to Control Equipment	Type of Control Equipment (provide description and a diagram with dimensions)
CD 02	EU 01	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).
CD 04	EU 02	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).
CD 06	EU 03	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).
CD 08	EU 04	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).

Section GG.12: Notes, Comments, and Explanations

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999 DEP7007N Source Emissions Profile X Section N.1: Emission Summary X Section N.2: Stack Information X Section N.3: Fugitive Information Section N.4: Notes, Comments, and Explanations Additional Documentation X Complete DEP7007AI																	
Source Name: Kentucky Municipal Energy Agency (KTIME) Energy Center I KY EIS (AFS) #: New Source Permit #: New Source Agency Interest (AI) ID: New Source Date: 2/18/2025																	
N.1: Emission Summary																	
Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCFM Units/Year)	Pollutant	Uncontrolled Emission Factor (lb/hr)	Uncontrolled Emission Factor Units	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/yr)	Controlled Potential (lb/yr)	Uncontrolled Potential (lb/yr)	Controlled Potential (lb/yr)
EU 01	Reciprocating Internal Combustion Engine #1	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 01, CD 02	EP 01	151.54 MMbbl/yr	PM	3.19	lb/yr	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497*
								PM10	0.00999	lb/MMBtu	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497*
								PM2.5	0.00999	lb/MMBtu	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497*
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903
								NOx	4.08	lb/MMBtu	Manufacturer Data	100.00%	99.60%	618.2832	2.4600	2708.0804	13.20*
								VOC	0.118	lb/MMBtu	Manufacturer Data	100.00%	72.32%	17.8817	4.9500	78.3219	21.78*
								CO	0.317	lb/MMBtu	Manufacturer Data	100.00%	89.61%	48.0382	4.9900	210.4072	23.93*
								Pl	0.00	lb/yr	Manufacturer Data	-	-	0.0000	0.0000	0.0000	0.0000
								NH3	2.02	lb/yr	Manufacturer Data	-	-	2.0200	2.0200	8.8476	8.8476
								Formaldehyde, CH2O	0.0528	lb/MMBtu	Manufacturer Data	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	Manufacturer Data	100.00%	62.11%	1.2669	0.4800	5.5489	2.1024
								Acrolein, C3H6O	0.00514	lb/MMBtu	Manufacturer Data	100.00%	13.99%	0.7789	0.6700	3.4117	2.8346
								Methanol, CH3OH	0.0025	lb/MMBtu	Manufacturer Data	100.00%	28.73%	0.3789	0.2700	1.6594	1.1626
								Carbon Tetrachloride	0.000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244
								chloroform	0.000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2920	0.2920
								vinyl chloride	0.000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0053	0.0053		

EU 03	Reciprocating Internal Combustion Engine #3	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 05, CD 06	EP 03	151.54 MMbtu/hr	PM	3.19	lb/hr	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497								
								PM10	0.00999	lb/MMBtu	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497								
								PM2.5	0.00999	lb/MMBtu	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497								
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903								
								NOx	4.08	lb/MMBtu	Manufacturer Data	100.00%	99.60%	618.2832	2.4600	2708.0804	13.30								
								VOC	0.118	lb/MMBtu	Manufacturer Data	100.00%	72.32%	17.8817	4.9500	78.3219	21.78								
								CO	0.317	lb/MMBtu	Manufacturer Data	100.00%	89.61%	48.0382	4.9900	210.4072	23.93								
								Pb	0.30	lb/hr	Manufacturer Data	-	-	0.0000	0.0000	0.0000	0.0000								
								NH3	2.02	lb/hr	Manufacturer Data	-	-	2.0200	2.0200	8.8476	8.8476								
								Formaldehyde, CH2O	0.0528	lb/MMBtu	Manufacturer Data	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950								
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	Manufacturer Data	100.00%	62.11%	1.2669	0.4800	5.5489	2.1024								
								Acrolein, C3H4O	0.00514	lb/MMBtu	Manufacturer Data	100.00%	13.98%	0.7789	0.6700	3.4117	2.9346								
								Methanol, CH3OH	0.0025	lb/MMBtu	Manufacturer Data	100.00%	28.73%	0.3789	0.2700	1.6594	1.1626								
								Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244								
								chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189								
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2920	0.2920								
								vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023	0.0099	0.0099								
								dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0153	0.0153								
								1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048	0.0211	0.0211								
								1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061	0.0265	0.0265								
								Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016	0.0069	0.0069								
								naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113	0.0494	0.0494								
								2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050	0.0220	0.0220								
								Biphenyl	0.0000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321	0.1407	0.1407								
								ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060	0.0264	0.0264								
								styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0157	0.0157								
								Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067	0.0294	0.0294								
								1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405	0.1772	0.1772								
								toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618	0.2708	0.2708								
								chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046	0.0202	0.0202								
								phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0159	0.0159								
								hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682	0.7368	0.7368								
								2,2,4-Trimethylpentane	0.00025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379	0.1659	0.1659								
								1,3-Dichloropropene	0.000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040	0.0175	0.0175								
								xylenes	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279	0.1221	0.1221								
								CO	136.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509	77643.1690	77643.1690								
								CH4	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.3341	0.3341	1.4633	1.4633								
								N2O	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.0334	0.0334	0.1463	0.1463								
								EU 04	Reciprocating Internal Combustion Engine #4	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 07, CD 08	EP 04	151.54 MMbtu/hr	PM	3.19	lb/hr	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497
																PM10	0.00999	lb/MMBtu	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497
																PM2.5	0.00999	lb/MMBtu	Manufacturer Data	-	-	3.1900	3.1900	14.2497	14.2497
																SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903
																NOx	4.08	lb/MMBtu	Manufacturer Data	100.00%	99.60%	618.2832	2.4600	2708.0804	13.30
																VOC	0.118	lb/MMBtu	Manufacturer Data	100.00%	72.32%	17.8817	4.9500	78.3219	21.78
CO	0.317	lb/MMBtu	Manufacturer Data	100.00%	89.61%	48.0382	4.9900									210.4072	23.93								
Pb	0.30	lb/hr	Manufacturer Data	-	-	0.0000	0.0000									0.0000	0.0000								
NH3	2.02	lb/hr	Manufacturer Data	-	-	2.0200	2.0200									8.8476	8.8476								
Formaldehyde, CH2O	0.0528	lb/MMBtu	Manufacturer Data	100.00%	96.88%	8.0013	0.2500									35.0457	1.0950								
Acetaldehyde, C2H4O	0.00836	lb/MMBtu	Manufacturer Data	100.00%	62.11%	1.2669	0.4800									5.5489	2.1024								
Acrolein, C3H4O	0.00514	lb/MMBtu	Manufacturer Data	100.00%	13.98%	0.7789	0.6700									3.4117	2.9346								
Methanol, CH3OH	0.0025	lb/MMBtu	Manufacturer Data	100.00%	28.73%	0.3789	0.2700									1.6594	1.1626								
Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056									0.0244	0.0244								
chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043									0.0189	0.0189								
benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667									0.2920	0.2920								
vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023									0.0099	0.0099								
dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036									0.0153	0.0153								
1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048									0.0211	0.0211								
1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061									0.0265	0.0265								
Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016									0.0069	0.0069								
naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113									0.0494	0.0494								
2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050									0.0220	0.0220								
Biphenyl	0.0000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321									0.1407	0.1407								
ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060									0.0264	0.0264								
styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036									0.0157	0.0157								
Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067									0.0294	0.0294								
1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405									0.1772	0.1772								
toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618									0.2708	0.2708								
chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046									0.0202	0.0202								
phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036									0.0159	0.0159								
hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682									0.7368	0.7368								
2,2,4-Trimethylpentane	0.00025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379									0.1659	0.1659								
1,3-Dichloropropene	0.000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040									0.0175	0.0175								
xylenes	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279									0.1221	0.1221								
CO	136.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509									77643.1690	77643.1690								
CH4	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.3341	0.3341									1.4633	1.4633								
N2O	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.0334	0.0334									0.1463	0.1463								
EU 05	Dew Point Heater	Process 2	Misc. Sources		CD 05	EP 05	1 MMbtu/hr									PM	0.00745098	lb/MMBtu	AP-42 1.4	-	-	0.0075	0.0075	0.0326	0.0326
																PM10	0.00745098	lb/MMBtu	AP-42 1.4	-	-	0.0075	0.0075	0.0326	0.0326
																PM2.5	0.00745098	lb/MMBtu	AP-42 1.4	-	-	0.0075	0.0075	0.0326	0.0326
																SO2	0.000586235	lb/MMBtu	AP-42 1.4	-	-	0.0006	0.0006	0.0026	0.0026
																NOx	0.098	lb/MMBtu	AP-42 1.4	-	-	0.0980	0.0980	0.4292	0.4292
																VOC	0.005362157	lb/MMBtu	AP-42 1.4	-	-	0.0054	0.0054	0.0236	0.0236
								CO	0.8624	lb/MMBtu	AP-42 1.4	-	-	0.8624	0.8624	3.3630	3.3630								
								CH4	-	lb/MMBtu	AP-42 1.4	-	-	0.0000	0.0000	0.0000	0.0000								
								Pb	0	lb/MMBtu	AP-42 1.4	-	-	0.0000	0.0000	0.0000	0.0000								

UTM Zone:

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Section N.3: Fugitive Information

UTM Zone:

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[illegible]

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Section N.4: Notes, Comments, and Explanations

[illegible]

[illegible]

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

☒ Section N.1: Emission Summary

☒ Section N.2: Stack Information

☒ Section N.3: Fugitive Information

☐ Section N.4: Notes, Comments, and Explanations

Additional Documentation

☒ Complete DEP7007AI

Source Name: Kentucky Municipal Energy Agency (KYMEA) Energy Center I

KY EIS (AFS) #: New Source

Permit #: New Source

Agency Interest (AI) ID: New Source

Date: 10/25/2024

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor	Uncontrolled Emission Factor Units	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU 01	Reciprocating Internal Combustion Engine #1	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 01, CD 02	EP 01	151.54 MMBtu/hr	PM	3.32	lb/hr	Mass Balance	-	-	3.3200	3.3200	14.5416	14.5416
								PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903
								NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2	100.00%	99.60%	618.2832	2.4891	2708.0804	10.9021
								VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2	100.00%	72.16%	17.8817	4.9781	78.3219	21.8042
								CO	0.317	lb/MMBtu	AP-42 Table 3.2-2	100.00%	89.64%	48.0382	4.9781	210.4072	21.8042
								Pb	0.00	lb/hr	Mass Balance	-	-	0.0000	0.0000	0.0000	0.0000
								NH3	3.18	lb/hr	Mass Balance	-	-	3.1848	3.1848	13.9493	13.9493
								Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	AP-42 Table 3.2-2	100.00%	58.16%	1.2669	0.5300	5.5489	2.3214
								Acrolein, C3H8O	0.00514	lb/MMBtu	AP-42 Table 3.2-2	100.00%	7.56%	0.7789	0.7200	3.4117	3.1536
								Methanol, CH3OH	0.0025	lb/MMBtu	AP-42 Table 3.2-2	100.00%	28.73%	0.3789	0.2700	1.6594	1.1826
								Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244
								chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2920	0.2920
								vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023	0.0099	0.0099
								dichloromethane	0.000002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0039	0.0039	0.0153	0.0153
								1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048	0.0211	0.0211
								1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061	0.0265	0.0265
								Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016	0.0069	0.0069
								naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113	0.0494	0.0494
								2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050	0.0220	0.0220
								Biphenyl	0.000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321	0.1407	0.1407
								ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060	0.0264	0.0264
								styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0157	0.0157
								Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067	0.0294	0.0294
								1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405	0.1772	0.1772
								toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618	0.2708	0.2708
								chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046	0.0202	0.0202
								phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0159	0.0159
								hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682	0.7368	0.7368
								2,2,4-Trimethylpentane	0.00025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379	0.1659	0.1659
								1,3-Dichloropropene	0.0000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040	0.0175	0.0175
								xylene	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279	0.1221	0.1221
								CO2	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509	77643.1690	77643.1690
								CH4	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.3341	0.3341	1.4633	1.4633
								N2O	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.0334	0.0334	0.1463	0.1463

EU 02	Reciprocating Internal Combustion Engine #2	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 03, CD 04	EP 02	151.54 MMBtu/hr	PM	3.32	lb/hr	Mass Balance	-	-	3.3200	3.3200	14.5416	14.5416
								PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903
								NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2	100.00%	99.60%	618.2832	2.4891	2708.0804	10.9021
								VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2	100.00%	72.16%	17.8817	4.9781	78.3219	21.8042
								CO	0.317	lb/MMBtu	AP-42 Table 3.2-2	100.00%	89.64%	48.0382	4.9781	210.4072	21.8042
								Pb	0.00	lb/hr	Mass Balance	-	-	0.0000	0.0000	0.0000	0.0000
								NH3	3.18	lb/hr	Mass Balance	-	-	3.1848	3.1848	13.9493	13.9493
								Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	AP-42 Table 3.2-2	100.00%	58.16%	1.2669	0.5300	5.5489	2.3214
								Acrolein, C3H8O	0.00514	lb/MMBtu	AP-42 Table 3.2-2	100.00%	7.56%	0.7789	0.7200	3.4117	3.1536
								Methanol, CH3OH	0.0025	lb/MMBtu	AP-42 Table 3.2-2	100.00%	28.73%	0.3789	0.2700	1.6594	1.1826
								Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244
								chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2920	0.2920
								vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023	0.0099	0.0099
								dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0030	0.0030	0.0133	0.0133
								1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048	0.0211	0.0211
								1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061	0.0265	0.0265
								Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016	0.0069	0.0069
								naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113	0.0494	0.0494
								2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050	0.0220	0.0220
								Biphenyl	0.000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321	0.1407	0.1407
								ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060	0.0264	0.0264
								styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0157	0.0157
								Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067	0.0294	0.0294
								1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405	0.1772	0.1772
								toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618	0.2708	0.2708
								chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046	0.0202	0.0202
								phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0159	0.0159
								hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682	0.7368	0.7368
								2,2,4-Trimethylpentane	0.000025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379	0.1659	0.1659
								1,3-Dichloropropene	0.0000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040	0.0175	0.0175
								xylenes	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279	0.1221	0.1221
								CO2	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509	77643.1690	77643.1690
								CH4	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.3341	0.3341	1.4633	1.4633
								N2O	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.0334	0.0334	0.1463	0.1463
EU 03	Reciprocating Internal Combustion Engine #3	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 05, CD 06	EP 03	151.54 MMBtu/hr	PM	3.32	lb/hr	Mass Balance	-	-	3.3200	3.3200	14.5416	14.5416
								PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903
								NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2	100.00%	99.60%	618.2832	2.4891	2708.0804	10.9021
								VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2	100.00%	72.16%	17.8817	4.9781	78.3219	21.8042
								CO	0.317	lb/MMBtu	AP-42 Table 3.2-2	100.00%	89.64%	48.0382	4.9781	210.4072	21.8042
								Pb	0.00	lb/hr	Mass Balance	-	-	0.0000	0.0000	0.0000	0.0000
								NH3	3.18	lb/hr	Mass Balance	-	-	3.1848	3.1848	13.9493	13.9493
								Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	AP-42 Table 3.2-2	100.00%	58.16%	1.2669	0.5300	5.5489	2.3214
								Acrolein, C3H8O	0.00514	lb/MMBtu	AP-42 Table 3.2-2	100.00%	7.56%	0.7789	0.7200	3.4117	3.1536
								Methanol, CH3OH	0.0025	lb/MMBtu	AP-42 Table 3.2-2	100.00%	28.73%	0.3789	0.2700	1.6594	1.1826
								Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244
								chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2920	0.2920
								vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023	0.0099	0.0099
								dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0030	0.0030	0.0133	0.0133
								1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048	0.0211	0.0211
								1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061	0.0265	0.0265
								Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016	0.0069	0.0069
								naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113	0.0494	0.0494
								2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050	0.0220	0.0220
								Biphenyl	0.000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321	0.1407	0.1407
								ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060	0.0264	0.0264
								styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0157	0.0157
								Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067	0.0294	0.0294
								1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405	0.1772	0.1772
								toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618	0.2708	0.2708
								chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046	0.0202	0.0202
								phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0159	0.0159
								hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682	0.7368	0.7368

EU 04	Reciprocating Internal Combustion Engine #4	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 07, CD 08	EP 04	151.54 MMBtu/hr	PM	3.32	lb/hr	Mass Balance	-	-	3.3200	3.3200	14.5416	14.5416
								PM10	0.00099	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								PM2.5	0.00099	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903
								NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2	100.00%	99.60%	618.2832	2.4891	2708.0804	10.9021
								VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2	100.00%	72.16%	17.8817	4.9781	78.3219	21.8042
								CO	0.317	lb/MMBtu	AP-42 Table 3.2-2	100.00%	89.64%	48.0382	4.9781	210.4072	21.8042
								Pb	0.00	lb/hr	Mass Balance	-	-	0.0000	0.0000	0.0000	0.0000
								NH3	3.18	lb/hr	Mass Balance	-	-	3.1848	3.1848	13.9493	13.9493
								Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	AP-42 Table 3.2-2	100.00%	58.16%	1.2669	0.5300	5.5489	2.3214
								Acrolein, C3H6O	0.00514	lb/MMBtu	AP-42 Table 3.2-2	100.00%	7.56%	0.7789	0.7200	3.4117	3.1536
								Methanol, CH3OH	0.0025	lb/MMBtu	AP-42 Table 3.2-2	100.00%	28.73%	0.3789	0.2700	1.6594	1.1826
								Carbon Tetrachloride	0.000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244
								chloroform	0.000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2820	0.2820
								vinyl chloride	0.000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023	0.0099	0.0099
								dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0030	0.0030	0.0133	0.0133
								1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048	0.0211	0.0211
								1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061	0.0265	0.0265
								Phenanthrene	0.0001014	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016	0.0069	0.0069
								naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113	0.0494	0.0494
								2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050	0.0220	0.0220
								Biphenyl	0.000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321	0.1407	0.1407
								ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060	0.0264	0.0264
								styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0157	0.0157
								Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067	0.0294	0.0294
								1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405	0.1772	0.1772
								toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618	0.2708	0.2708
								chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046	0.0202	0.0202
								phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0159	0.0159
								hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682	0.7368	0.7368
								2,2,4-Trimethylpentane	0.00025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379	0.1659	0.1659
								1,3-Dichloropropene	0.000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040	0.0175	0.0175
								xylene	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279	0.1221	0.1221
								CO2	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509	77643.1690	77643.1690
								CH4	0.002204624	lb/MMBtu							

UTM Zone:

[illegible]

Section N.3: Fugitive Information

UTM Zone:

[illegible]

[illegible]

[illegible]

[illegible]

Section N.4: Notes, Comments, and Explanations

[illegible]

[illegible]

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999 Source Name: Kentucky Municipal Energy Agency (KYM EA) Energy Center I KY EIS (AFS) #: New Source Permit #: New Source Agency Interest (AI) ID: New Source Date: 10/25/2024	DEP7007V Applicable Requirements and Compliance Activities ☒ Section V.1: Emission and Operating Limitation(s) ☒ Section V.2: Monitoring Requirements ☒ Section V.3: Recordkeeping Requirements ☒ Section V.4: Reporting Requirements ☒ Section V.5: Testing Requirements ☒ Section V.6: Notes, Comments, and Explanations	Additional Documentation _X_ Complete DEP7007AI					
Section V.1: Emission and Operating Limitation(s)							
Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
EU 01	Reciprocating Internal Combustion Engine #1	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O ₂ .	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NO _x	82 ppmvd at 15% O ₂	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
EU 02	Reciprocating Internal Combustion Engine #2	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O ₂ .	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NO _x	82 ppmvd at 15% O ₂	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O ₂	N/A	N/A	

		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
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EU 03	Reciprocating Internal Combustion Engine #3	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O ₂ .	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NO _x	82 ppmvd at 15% O ₂	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
EU 04	Reciprocating Internal Combustion Engine #4	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O ₂ .	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NO _x	82 ppmvd at 15% O ₂	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O ₂	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
EU 05	Dew Point Heater	40 CFR Part 63 Subpart DDDDD	N/A	N/A	N/A	Work Practice Standards	At all times, you must operate and maintain any affected source (as defined in § 63.7490), in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

Section V.2: Monitoring Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring
EU 01	Reciprocating Internal Combustion Engine #1	N/A	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Catalyst inlet temperature.	Installation of a CPMS to continuously monitor catalyst inlet temperature according to the requirements in § 63.6625(b).
EU 02	Reciprocating Internal Combustion Engine #2	N/A	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Catalyst inlet temperature.	Installation of a CPMS to continuously monitor catalyst inlet temperature according to the requirements in § 63.6625(b).
EU 03	Reciprocating Internal Combustion Engine #3	N/A	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Catalyst inlet temperature.	Installation of a CPMS to continuously monitor catalyst inlet temperature according to the requirements in § 63.6625(b).
EU 04	Reciprocating Internal Combustion Engine #4	N/A	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Catalyst inlet temperature.	Installation of a CPMS to continuously monitor catalyst inlet temperature according to the requirements in § 63.6625(b).
EU 05	Dew Point Heater	N/A	N/A	N/A	N/A

Section V.3: Recordkeeping Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping
EU 01	Reciprocating Internal Combustion Engine #1	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 02	Reciprocating Internal Combustion Engine #2	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 03	Reciprocating Internal Combustion Engine #3	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 04	Reciprocating Internal Combustion Engine #4	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Reporting	A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that you submitted, according to the requirements in § 63.10(b)(2)(xiv).
				Testing	Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in § 63.10(b)(2)(viii).

Section V.4: Reporting Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reporting	Description of Reporting
EU 01	Reciprocating Internal Combustion Engine #1	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).
EU 02	Reciprocating Internal Combustion Engine #2	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).

EU 03	Reciprocating Internal Combustion Engine #3	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).
EU 04	Reciprocating Internal Combustion Engine #4	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Tune up	If the facility is subject to the requirements of a tune up you must submit a compliance report with the information in paragraphs (c)(5)(i) through (iii) of this section. (§ 63.7550)

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Testing	Description of Testing
EU 01	Reciprocating Internal Combustion Engine #1	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart. According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date. According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde. Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing. According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6). Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b). Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
EU 02	Reciprocating Internal Combustion Engine #2	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart. According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date. According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde. Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing. According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6). Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b). Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).

		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(cccc)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
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EU 03	Reciprocating Internal Combustion Engine #3	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart. According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date. According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde. Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing. According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6). Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b). Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
EU 04	Reciprocating Internal Combustion Engine #4	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart. According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date. According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde. Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing. According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6). Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b). Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Performance Testing	Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity of less than or equal to 5 million Btu per hour must complete a tune-up every 5 years as specified in § 63.7540.

Section V.6: Notes, Comments, and Explanations

Gas Engine Emission Summary

Maximum Total Annual Engine Operating Hours, Per Engine

8760

Approximate Startup, Shutdown, Maintenance Hours, Per Engine (1)

197.5

Pollutant	Routine Emissions (lb/hr)	Startup/Shutdown Emissions (lb/hr)	Max Annual Emissions (ton/yr)
PM/PM ₁₀ /PM _{2.5}	3.32	6	14.81
NOx	2.49	27	13.33
VOC	4.98	6	21.91
CO	4.98	26	23.89
SO ₂	0.19	*	0.39
Lead	0.00	*	0.00
Ammonia	3.18	*	13.95
Formaldehyde, CH ₂ O	0.25	*	1.10
Acetaldehyde, C ₂ H ₄ O	0.53	*	2.32
Acrolein, C ₃ H ₈ O	0.72	*	3.15
Methanol, CH ₃ OH	0.27	*	1.18

Notes:

- (1) The approximate number of annual operating hours and hours in startup/shutdown are estimates for a basis of calculation and are not intended to be annual limits for compliance purposes.
 - (2) The maximum annual emissions per engine are the emissions from one engine if it operates continuously all year long (8,760 hrs).
- * Startup/Shutdown emission data not available at this time.



Doc. Name	Expected startup and unloading emissions 18V50SG		
Doc. ID	DETA00003582	Revision	-.4
Doc. Type	Data Sheet	Pages	1 (2)
Author	Lövholm, Markus - Energy Business	Status	Draft
Reviewed by	-		
Approved by	-		

Expected start up and unloading emissions after catalyst system

This document provides engineering estimates on the start-up and unloading emissions for one Wärtsilä® 18V50SG-B/D engine equipped with an efficient emission control system. The system includes a selective catalytic reduction system and an oxidation catalyst. The figures are best estimates only and shall not be considered as guarantee data.

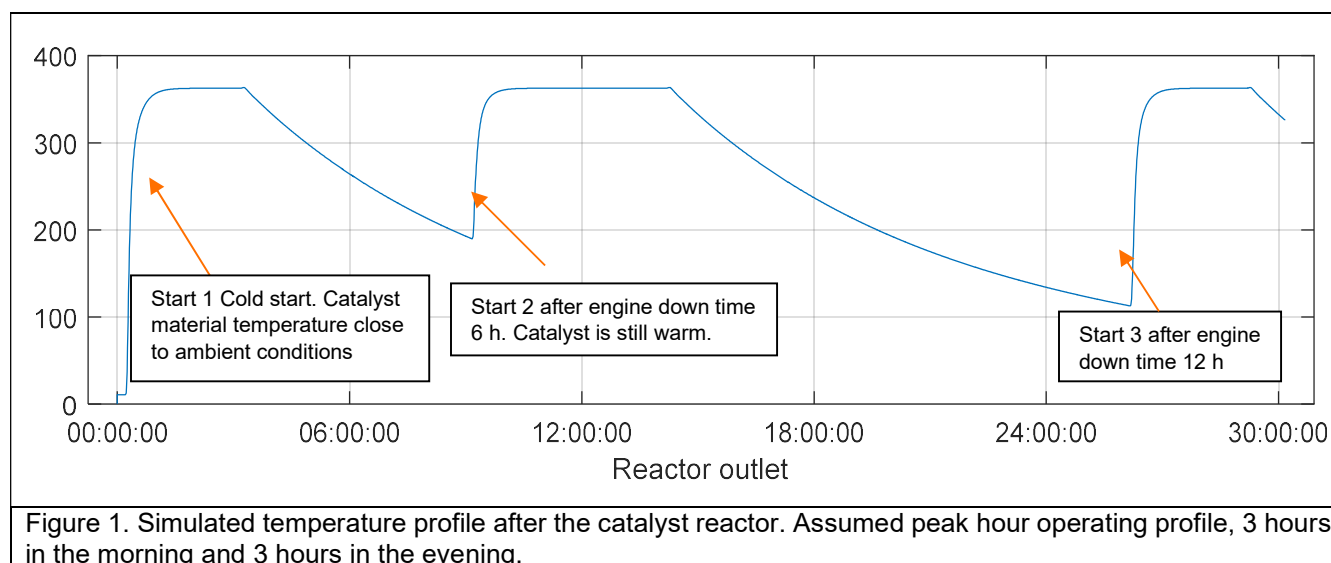
The fast start-up of the engine results in varying exhaust gas flow, nonstable temperature, high and low range emission and oxygen levels which make accurate measurement and prediction of emissions very challenging. The flue gas emission estimates herein are based on emission measurement for steady conditions at different loads together with limited measurements performed during startup. A standard catalyst volume loading has been selected and more accurate start up values can be estimated when final project specific catalyst design is known. The emission control performance in a startup situation is based on supplier estimates and laboratory data. The data assumes that the engines will reach full load within 5 minutes and continue operating at full engine load. The unloading time is assumed to be 60 seconds.

Furthermore, to calculate the emissions the following assumptions have been made:

Ambient conditions: 25 °C (77 °F), relative humidity:30%

Insulation: 100mm for exhaust gas duct up until reactor (and after reactor to silencer), reactor 200mm

Layout: exhaust gas ducting is assumed to be normal without extra ducting and silencer before mixing duct



The estimated cumulative start up flue gas emissions with optimized reagent injection are expressed as lb per a start period (30 min) of one (1) Wärtsilä® 18V50SG-B/D engine are given for 3 different conditions (see figure 1 above) in the tables 1 and 2 below. The warm startup numbers are given for a restart after 6 and 12 h engine down time. If the engine is expected to have shorter stops the expected emissions will be even lower.

A cold catalyst start is when the temperature of the catalyst material inside the reactor is close to ambient temperature. Cold catalyst starts are expected after overhaul periods or when the engine has not been operated during the last 2-3 days.

The emission control system will reach its full abatement efficiency within 10-30 minutes from the start.

Table 1. Expected flue gas emissions during start up to gas mode:

18V50SG-B/D					
Typical standby time before engine start	unit	NO _x (as NO ₂)	CO	VOC** (as CH ₄)	PM 10
> 2 days	lb / 30 min	13.5	13	3	3.0
6 hours	lb / 30 min	7	8.5	2.7	3.0
12 hours	lb / 30 min	11	11	2.5	3.0

****The VOC (volatile organic compounds) emissions depend on the composition of the fuel gas. The VOC emissions in table 1 above are based on max 0.5 vol-% VOC components in the feed fuel gas and are NOT including CH₂O.**

Table 2. Expected unloading emissions:

Components	Unit	18V50SG-B/D
NO _x (as NO ₂)	lb/min	0.045
CO	lb/min	0.085
VOC (as CH ₄)	lb/min	0.085

Stack emission measurements during start up sequences or heavy transient loads are challenging and the repeatability of startup emission measurement on site is low. The analyzer response time for the gaseous emissions needs special attention. Moreover, the particulate emissions will stay on a theoretical level since the particulates cannot be determinate by an isokinetic sampling reference method.

Doc. Name	Emission data sheet		
	6/6/2024		
Doc. ID	DESA00025696	Revision	a
Doc. Type	Data Sheet	Pages	1 (4)
Author	Raudaskoski, Riitta - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

This document provides flue gas emissions, i.e. maximum average values for emissions measured over a period of minimum 60 minutes. The emissions are based on the site conditions, gas composition and measurement methods specified in this document.

Engine: **Wärtsilä® 18V50SG-D, 514 rpm (constant speed), CR 11.5**

Site conditions:

Altitude above sea level	400 ft
Ambient temperature	-23/+105 °F
Average relative humidity	71-81 %

Gas composition:

The emissions are valid for following gas composition. It is understood that variations in the gas composition inside this specification will occur and are permitted; however sudden extreme changes in gas temperature, pressure or composition are not allowed.

Methane number:		92	
Methane, min	CH ₄	95.700 mol-%	
Ethane, max	C ₂ H ₆	2.268 mol-%	
Propane, max	C ₃ H ₈	0.101 mol-%	Note 1)
i-Butane, max	C ₄ H ₁₀	0.013 mol-%	Note 1)
n-Butane, max	C ₄ H ₁₀	0.010 mol-%	Note 1)
i-Pentane, max	C ₅ H ₁₂	0.004 mol-%	Note 1)
n-Pentane, max	C ₅ H ₁₂	0.002 mol-%	Note 1)
Hexane, max	C ₆ H ₁₄	0.000 mol-%	Note 1)
Heptane and higher hydro carbons, max		0.005 mol-%	
Nitrogen	N ₂	0.273 mol-%	
Carbon dioxide	CO ₂	1.624 mol-%	
Total sulphur, max S		5 mg/kg	

Note 1) VOC emissions in gas operation depend on the composition of the pipeline natural gas. This document includes a table with corrected VOC emissions after the emission control system for natural gas with concentrations of C₃ to C₆ hydrocarbons in excess of the values specified above.

Doc. Name	Emission data sheet		
	6/6/2024		
Doc. ID	DESA00025696	Revision	a
Doc. Type	Data Sheet	Pages	2 (4)
Author	Raudaskoski, Riitta - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

Other gas parameters according to Wärtsilä's specification. Aromatic hydrocarbons, silicon based compounds or impurities resulting from the operating and maintenance of the gas delivery systems are not allowed.

Lubricating oil quality according to Wärtsilä specifications for gas engines

SCR reducing agent according to Wärtsilä's specification DBAC197648 (rev d)

Flue gas emissions after emission control system² at steady load as 60 min averages:

Engine load	%	100
NO _x as NO ₂	ppm-v at 15% O ₂ , dry	4.5
CO	ppm-v at 15% O ₂ , dry	15
VOC (NMNEHC) as CH ₄ ^{Note 1)}	ppm-v at 15% O ₂ , dry	26
NH ₃	ppm-v at 15% O ₂ , dry	10
CH ₂ O, formaldehyde	ppm-v at 15% O ₂ , dry	0.7
C ₂ H ₄ O, acetaldehyde	ppm-v at 15% O ₂ , dry	1.0
C ₃ H ₈ O, acrolein	ppm-v at 15% O ₂ , dry	1.0
CH ₃ OH, methanol	ppm-v at 15% O ₂ , dry	0.7
PM ₁₀ (total)	mg/Nm ³ * at 15% O ₂ , dry	12

*mg/Nm³ defined at 0°C and 101.325 kPa (abs.)

Correction based upon the influence of gas composition on VOC emissions:

The VOC concentration of the flue gas in the stack is dependent on the composition of the natural gas. If the concentration = sum of propane + butane + pentane + hexane (C₃H₈ + C₄H₁₀ + C₅H₁₂ + C₆H₁₄) in the pipeline natural gas deviate the values specified in paragraph "Gas composition" in this document the VOC emissions shall be corrected according to the table below. In the table the sum of propane + butane + pentane + hexane is denoted C_{GasVOC}.

	VOC guarantee * factor
Concentration of VOC components in feed natural gas	Factor for VOC correction
0 mol-% ≤ C _{GasVOC} < 0.50 mol-%	1
0.50 mol-% ≤ C _{GasVOC} < 1.00 mol-%	1.3
1.00 mol-% ≤ C _{GasVOC} < 1.50 mol-%	1.6

² Minimum allowed engine load equipped with emission control system is 10%

Doc. Name	Emission data sheet		
	6/6/2024		
Doc. ID	DESA00025696	Revision	a
Doc. Type	Data Sheet	Pages	3 (4)
Author	Raudaskoski, Riitta - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

Time to reach compliance

The time required to reach compliance with the emission levels specified in this document will depend on operating conditions and on the temperature of the catalyst system at start. Compliance with emission data in this document will for a normal start sequence and under normal conditions be reached within 10 to 30 minutes from start signal.

Measurement methods

Emission data provided in this document is based upon the emission measurement methods listed below.

Emission data assumes that individual compounds identified above the sensitivity limit, but at concentrations below the lower limit of detection are reported as maximum one-half of the daily lower-limit of calibration. Measurements shall be performed so that minimum feasible detection limits are achieved if this is required for determining compliance with emission guarantees.

The flue gas stack emission measurements will be performed at steady operating condition of the engine. Prior to the start of the flue gas emission (stack) measurements, the engine shall have reached steady state operating conditions and the flue gas temperature measured after the emission control system shall be allowed to reach normal operating temperature.

Sufficiently long measurement sampling periods and number of samples shall be taken in order to get statistically representative results. To ensure accurate particulate matter (PM₁₀) emission results of 3 samples are to be collected with a minimum sampling time of 1 hour per sample. Based on the judgement of the measurement consultant, the results of individual samples with abnormally high deviation shall be excluded.

Oxygen (O₂): EPA Method 3A: Determination of Oxygen and Carbon Dioxide Emissions from Stationary Sources.

Nitrogen oxides (NO_x): EPA Method 7E: Determination of nitrogen oxides from stationary sources.

Carbon monoxide (CO): EPA Method 10: Determination of carbon monoxide emissions from stationary sources.

Volatile organic compounds (VOC defined as Non Methane Non Ethane Hydrocarbons): EPA Method 18: Measurement of gaseous organic compound emissions by gas chromatography. VOC is calculated as the sum of relevant components, which for a gas engine equipped with a high efficiency catalyst are considered to be: propane, n-butane, n-pentane and n-hexane (only if existing in NG fuel).

PM₁₀ (total): Total PM₁₀ is defined as the sum of the particulate matter measured with a combination of EPA 5 and 202 methods

EPA Method 5 (front half): Determination of particulate emissions from stationary sources

EPA Method 202 Determination of condensable particulate matter from stationary sources.



Doc. Name	Emission data sheet		
	6/6/2024		
Doc. ID	DESA00025696	Revision	a
Doc. Type	Data Sheet	Pages	4 (4)
Author	Raudaskoski, Riitta - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

Ammonia (NH₃): Bay Area Air Quality Management District (BAAQMD) test Method ST-1B: Ammonia integrated sampling.

Formaldehyde (HCHO): EPA Method 323: Measurement of formaldehyde emissions from natural gas-fired stationary sources-acetyl acetone derivatization method. In case formaldehyde guarantee is exceeded or if significant interference from acetaldehyde is suspected CARB Method 430: Determination of Formaldehyde and Acetaldehyde in Emissions from stationary sources shall be used.

HAP: Measurements shall be performed using method suitable for measuring low levels of specified HAP components. Methods include EPA Method 323: Measurement of formaldehyde emissions from natural gas-fired stationary sources-acetyl acetone derivatization method plus EPA Method 18: Measurement of gaseous organic compound emissions by gas chromatography, adsorption tube procedure only.

Speciated HAPs include formaldehyde, acetaldehyde, acrolein and methanol as identified in USA EPA "National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines: Signed Final Rule" February 2004.

Based upon mutual written consent, evaluation of emission levels can be made using alternative methods.

18V50SG Engine PTE

Parameter	Units	100%	75%
Genset Power Output	kW	18,817	14,113
Genset Heat Rate	Btu/kW-hr (HHV)	8,053	8,263
Exhaust Gas Temperature	°F	757	820
Exhaust Gas Flowrate	scf/min	120,060	99,000
Fuel Burn Rate	Btu/hr	151,535,183	116,618,542
Fuel Burn Rate	MMBtu/hr	151.54	116.62

NAAQS	Emission Factor	EF Units	Hours
PM	0.08	g/kWh	8760.0
PM10	0.08	g/kWh	8760.0
PM2.5	0.08	g/kWh	8760.0
SO2	0.000588	lb/MMBtu	8760.0
NOx	0.06	g/kWh	8760.0
VOC	0.12	g/kWh	8760.0
CO	0.12	g/kWh	8760.0
Pb	0.00	lb/hr	8760.0
Ammonia (NH ₃)	3.18	lb/hr	8760.0
GHG's			
CO ₂	116.9773717	lb/MMBtu	8760.0
CH ₄	0.002204624	lb/MMBtu	8760.0
N ₂ O	0.000220462	lb/MMBtu	8760.0
HAPs	Emission Factor	EF Units	Hours
Formaldehyde, CH ₂ O	0.25	lb/hr	8760.0
Acetaldehyde, C ₂ H ₄ O	0.53	lb/hr	8760.0
Acrolein, C ₃ H ₈ O	0.72	lb/hr	8760.0
Methanol, CH ₃ OH	0.27	lb/hr	8760.0
Carbon Tetrachloride	0.0000367	lb/MMBtu	8760.0
chloroform	0.0000285	lb/MMBtu	8760.0
benzene	0.00044	lb/MMBtu	8760.0
vinyl chloride	0.0000149	lb/MMBtu	8760.0
dichloromethane (methylene c	0.00002	lb/MMBtu	8760.0
1,1,2-Trichloroethane	0.0000318	lb/MMBtu	8760.0
1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	8760.0
Phenanthrene	0.0000104	lb/MMBtu	8760.0
naphthalene	0.0000744	lb/MMBtu	8760.0
2-Methylnaphthalene	0.0000332	lb/MMBtu	8760.0
Biphenyl	0.000212	lb/MMBtu	8760.0

ethyl benzene	0.0000397	lb/MMBtu	8760.0
styrene	0.0000236	lb/MMBtu	8760.0
Ethylene Dibromide	0.0000443	lb/MMBtu	8760.0
1,3-butadiene	0.000267	lb/MMBtu	8760.0
toluene	0.000408	lb/MMBtu	8760.0
chlorobenzene	0.0000304	lb/MMBtu	8760.0
phenol	0.000024	lb/MMBtu	8760.0
hexane	0.00111	lb/MMBtu	8760.0
2,2,4-Trimethylpentane	0.00025	lb/MMBtu	8760.0
1,3-Dichloropropene	0.0000264	lb/MMBtu	8760.0
xylenes	0.000184	lb/MMBtu	8760.0

* Per Engine. Does not include startup, shutdown emissions.

50%	40%	Notes/Source
9,409	7,527	From OEM (Wartsila ISO conditions for 18V50SG)
8,847	8,280	From OEM (Wartsila ISO conditions for 18V50SG)
824	821	From OEM (Wartsila ISO conditions for 18V50SG)
76,380	64,320	From OEM (Wartsila ISO conditions for 18V50SG)
83,244,246	62,321,302	From OEM (Wartsila ISO conditions for 18V50SG)
83.24	62.32	From OEM (Wartsila ISO conditions for 18V50SG)

From OEM

NOx
CO
VOC
PM10

lb/hr	ton/yr*	Notes/Source
3.32	14.54	PM=PM10=PM2.5
3.32	14.54	From OEM (Wartsila ISO conditions for 18V50SG)
3.32	14.54	PM=PM10=PM2.5
0.09	0.39	AP-42 Table 3.2-2
2.49	10.90	From OEM (Wartsila ISO conditions for 18V50SG)
4.98	21.80	From OEM (Wartsila ISO conditions for 18V50SG)
4.98	21.80	From OEM (Wartsila ISO conditions for 18V50SG)
0.00	0.00	AP-42 Table 3.2-2
3.18	13.95	From OEM (Wartsila ISO conditions for 18V50SG)
17726.2	77640.70	40 CFR 98, subp. C, Table C-1 and C-2
0.3	1.46	40 CFR 98, subp. C, Table C-1 and C-2
0.0	0.15	40 CFR 98, subp. C, Table C-1 and C-2
lb/hr	ton/yr*	Notes/Source
0.25	1.10	From OEM (Wartsila ISO conditions for 18V50SG)
0.53	2.32	From OEM (Wartsila ISO conditions for 18V50SG)
0.72	3.15	From OEM (Wartsila ISO conditions for 18V50SG)
0.27	1.18	From OEM (Wartsila ISO conditions for 18V50SG)
0.006	0.024	AP-42 Table 3.2-2
0.004	0.019	AP-42 Table 3.2-2
0.067	0.292	AP-42 Table 3.2-2
0.002	0.010	AP-42 Table 3.2-2
0.003	0.013	AP-42 Table 3.2-2
0.005	0.021	AP-42 Table 3.2-2
0.006	0.027	AP-42 Table 3.2-2
0.002	0.007	AP-42 Table 3.2-2
0.011	0.049	AP-42 Table 3.2-2
0.005	0.022	AP-42 Table 3.2-2
0.032	0.141	AP-42 Table 3.2-2

molar volume of air,

hrs. c

calcula

calculati

4 eng

0.006	0.026	AP-42 Table 3.2-2
0.004	0.016	AP-42 Table 3.2-2
0.007	0.029	AP-42 Table 3.2-2
0.040	0.177	AP-42 Table 3.2-2
0.062	0.271	AP-42 Table 3.2-2
0.005	0.020	AP-42 Table 3.2-2
0.004	0.016	AP-42 Table 3.2-2
0.168	0.737	AP-42 Table 3.2-2
0.038	0.166	AP-42 Table 3.2-2
0.004	0.018	AP-42 Table 3.2-2
0.028	0.122	AP-42 Table 3.2-2

1 lb 453.592 g

g/kWh	g/hr	lb/hr
0.06	1129.02	2.489065
0.12	2258.04	4.97813
0.12	2258.04	4.97813
0.08	1505.36	3.318753

HAP emissions from OEM after catalyst system

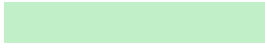
	ppm-v, 15% O2, dry	lb/hr
Formaldehyde	0.7	0.25
Acetaldehyde	1	0.53
Acrolein	1	0.72
Methanol	0.7	0.27

ppmv to lb/hr

constants:

ft³/lbmole 385.2 at 68 F, 1 atm
min/hour: 60

	NH3	
ppmv	10.0	From OEM
MW	17.03	
scfm	120,060	
operated/yr	8760.0	
ated lb/hr =	3.184769	
ed ton/yr =	13.94929	
ines ton/yr	55.79716	



Gas Engine Emission Summary

Maximum Total Annual Engine Operating Hours, Per Engine
Approximate Startup, Shutdown, Maintenance Hours, Per Engine (1)

8760
197.5

Pollutant	Routine Emissions (lb/hr)	Startup/Shutdown Emissions (lb/hr)	Max Annual Emissions (ton/yr)**
PM/PM ₁₀ /PM _{2.5}	3.32	6	14.81
NOx	2.49	27	13.33
VOC	4.98	6	21.91
CO	4.98	26	23.89
SO ₂	0.09	*	0.39
Lead	0.00	*	0.00
Ammonia	3.18	*	13.95
Formaldehyde, CH ₂ O	0.25	*	1.10
Acetaldehyde, C ₂ H ₄ O	0.53	*	2.32
Acrolein, C ₃ H ₈ O	0.72	*	3.15
Methanol, CH ₃ OH	0.27	*	1.18

Notes:

(1) The approximate number of annual operating hours and hours in startup/shutdown are estimates for a basis of calculation. They are not intended to be annual limits for compliance purposes.

(2) The maximum annual emissions per engine are the emissions from one engine if it operates continuously all year long.

* Startup/Shutdown emission data not available at this time.

** per engine.

Doc. Name	Emission data sheet - Kymea 18V50SG		
	8/2/2024		
Doc. ID	DESA00025696	Revision	f
Doc. Type	Data Sheet	Pages	1 (4)
Author	Linde, Eirik - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Lövhölm, Markus		

This document provides flue gas emissions, i.e. maximum average values for emissions measured over a period of minimum 60 minutes. The emissions are based on the site conditions, gas composition and measurement methods specified in this document.

Engine: **Wärtsilä® 18V50SG-D, 514 rpm (constant speed), CR 11.5**

Site conditions:

Altitude above sea level	400 ft
Ambient temperature	-23/+105 °F
Average relative humidity	71-81 %

Gas composition:

The emissions are valid for following gas composition. It is understood that variations in the gas composition inside this specification will occur and are permitted; however sudden extreme changes in gas temperature, pressure or composition are not allowed.

Methane number:		92	
Methane, min	CH ₄	95.700 mol-%	
Ethane, max	C ₂ H ₆	2.268 mol-%	
Propane, max	C ₃ H ₈	0.101 mol-%	Note 1)
i-Butane, max	C ₄ H ₁₀	0.013 mol-%	Note 1)
n-Butane, max	C ₄ H ₁₀	0.010 mol-%	Note 1)
i-Pentane, max	C ₅ H ₁₂	0.004 mol-%	Note 1)
n-Pentane, max	C ₅ H ₁₂	0.002 mol-%	Note 1)
Hexane, max	C ₆ H ₁₄	0.000 mol-%	Note 1)
Heptane and higher hydro carbons, max		0.005 mol-%	
Nitrogen	N ₂	0.273 mol-%	
Carbon dioxide	CO ₂	1.624 mol-%	
Total sulphur, max S		5 mg/kg	

Other gas parameters according to Wärtsilä's specification. Aromatic hydrocarbons, silicon based compounds or impurities resulting from the operating and maintenance of the gas delivery systems are not allowed.

Note 1) VOC emissions in gas operation depend on the composition of the pipeline natural gas. This document includes a table with corrected VOC emissions after the emission control system for natural gas with concentrations of C₃ to C₆ hydrocarbons in excess of the values specified above.



Doc. Name Emission data sheet - Kymea 18V50SG
8/2/2024

Doc. ID	DESA00025696	Revision	f
Doc. Type	Data Sheet	Pages	2 (4)
Author	Linde, Eirik - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Lövholm, Markus		

Lubricating oil quality according to Wärtsilä specifications for gas engines

SCR reducing agent according to Wärtsilä's specification DBAC197648 (rev d)

Flue gas emissions after emission control system² at steady load as 60 min averages:

Engine load	100 %	10 % - 100%
NO _x as NO ₂	4.5 ppm-v at 15% O ₂ , dry	2.46 lb/h
CO	15 ppm-v at 15% O ₂ , dry	4.99 lb/h
VOC (NMNEHC) as CH ₄ ^{Note 1)}	26 ppm-v at 15% O ₂ , dry	4.95 lb/h
NH ₃	10 ppm-v at 15% O ₂ , dry	2.02 lb/h
CH ₂ O, formaldehyde	0.7 ppm-v at 15% O ₂ , dry	0.25 lb/h
C ₂ H ₄ O, acetaldehyde	1.0 ppm-v at 15% O ₂ , dry	0.48 lb/h
C ₃ H ₈ O, acrolein	1.0 ppm-v at 15% O ₂ , dry	0.67 lb/h
CH ₃ OH, methanol	0.7 ppm-v at 15% O ₂ , dry	0.27 lb/h
PM ₁₀ (total)	12 mg/Nm ³ * at 15% O ₂ , dry	3.19 lb/h

*mg/Nm³ defined at 0°C and 101.325 kPa (abs.)

Indicative emissions after emission control system at steady load as 60 min averages:**

Engine load	75	50	30	10 %	Unit
NO _x as NO ₂	4.5	6	6	10	ppm-v at 15% O ₂ , dry
CO	15	15	15	15	ppm-v at 15% O ₂ , dry
VOC (NMNEHC) as CH ₄ ^{Note 1)}	26	40	50	140	ppm-v at 15% O ₂ , dry
NH ₃	10	10	10	10	ppm-v at 15% O ₂ , dry
CH ₂ O, formaldehyde	0.9	1.4	2.0	4.2	ppm-v at 15% O ₂ , dry
PM ₁₀ (total)	12	20	24	25	mg/Nm ³ * at 15% O ₂ , dry

*mg/Nm³ defined at 0°C and 101.325 kPa (abs.)

**not guaranteed

² Minimum allowed engine load equipped with emission control system is 10%

Doc. Name	Emission data sheet - Kymea 18V50SG		
	8/2/2024		
Doc. ID	DESA00025696	Revision	f
Doc. Type	Data Sheet	Pages	3 (4)
Author	Linde, Eirik - Energy Business	Status	Finalized
Opportunity	KYPEA 75MW_4x18V50SG (OP845811) Lövhölm, Markus		

Correction based upon the influence of gas composition on VOC emissions:

The VOC concentration of the flue gas in the stack is dependent on the composition of the natural gas. If the concentration = sum of propane + butane + pentane + hexane ($C_3H_8 + C_4H_{10} + C_5H_{12} + C_6H_{14}$) in the pipeline natural gas deviate the values specified in paragraph "Gas composition" in this document the VOC emissions shall be corrected according to the table below. In the table the sum of propane + butane + pentane + hexane is denoted C_{GasVOC} .

	VOC guarantee * factor
Concentration of VOC components in feed natural gas	Factor for VOC correction
$0 \text{ mol-\%} \leq C_{GasVOC} < 0.50 \text{ mol-\%}$	1
$0.50 \text{ mol-\%} \leq C_{GasVOC} < 1.00 \text{ mol-\%}$	1.3
$1.00 \text{ mol-\%} \leq C_{GasVOC} < 1.50 \text{ mol-\%}$	1.6

Time to reach compliance

The time required to reach compliance with the emission levels specified in this document will depend on operating conditions and on the temperature of the catalyst system at start. Compliance with emission data in this document will for a normal start sequence and under normal conditions be reached within 10 to 30 minutes from start signal.

Measurement methods

Emission data provided in this document is based upon the emission measurement methods listed below.

Emission data assumes that individual compounds identified above the sensitivity limit, but at concentrations below the lower limit of detection are reported as maximum one-half of the daily lower-limit of calibration. Measurements shall be performed so that minimum feasible detection limits are achieved if this is required for determining compliance with emission guarantees.

The flue gas stack emission measurements will be performed at steady operating condition of the engine. Prior to the start of the flue gas emission (stack) measurements, the engine shall have reached steady state operating conditions and the flue gas temperature measured after the emission control system shall be allowed to reach normal operating temperature.

Sufficiently long measurement sampling periods and number of samples shall be taken in order to get statistically representative results. To ensure accurate particulate matter (PM10) emission results of 3 samples are to be collected with a minimum sampling time of 1 hour per sample. Based on the judgement of the measurement consultant, the results of individual samples with abnormally high deviation shall be excluded.

Doc. Name	Emission data sheet - Kymea 18V50SG		
	8/2/2024		
Doc. ID	DESA00025696	Revision	f
Doc. Type	Data Sheet	Pages	4 (4)
Author	Linde, Eirik - Energy Business	Status	Finalized
Opportunity	KYPEA 75MW_4x18V50SG (OP845811) Lövhölm, Markus		

Oxygen (O₂): EPA Method 3A: Determination of Oxygen and Carbon Dioxide Emissions from Stationary Sources.

Nitrogen oxides (NO_x): EPA Method 7E: Determination of nitrogen oxides from stationary sources.

Carbon monoxide (CO): EPA Method 10: Determination of carbon monoxide emissions from stationary sources.

Volatile organic compounds (VOC defined as Non Methane Non Ethane Hydrocarbons): EPA Method 18: Measurement of gaseous organic compound emissions by gas chromatography. VOC is calculated as the sum of relevant components, which for a gas engine equipped with a high efficiency catalyst are considered to be: propane, n-butane, n-pentane and n-hexane (only if existing in NG fuel).

PM₁₀ (total): Total PM₁₀ is defined as the sum of the particulate matter measured with a combination of EPA 5 and 202 methods

EPA Method 5 (front half): Determination of particulate emissions from stationary sources

EPA Method 202 Determination of condensable particulate matter from stationary sources.

Ammonia (NH₃): Bay Area Air Quality Management District (BAAQMD) test Method ST-1B: Ammonia integrated sampling.

Formaldehyde (HCHO): EPA Method 323: Measurement of formaldehyde emissions from natural gas-fired stationary sources-acetyl acetone derivatization method. In case formaldehyde guarantee is exceeded or if significant interference from acetaldehyde is suspected CARB Method 430: Determination of Formaldehyde and Acetaldehyde in Emissions from stationary sources shall be used.

HAP: Measurements shall be performed using method suitable for measuring low levels of specified HAP components. Methods include EPA Method 323: Measurement of formaldehyde emissions from natural gas-fired stationary sources-acetyl acetone derivatization method plus EPA Method 18: Measurement of gaseous organic compound emissions by gas chromatography, adsorption tube procedure only.

Speciated HAPs include formaldehyde, acetaldehyde, acrolein and methanol as identified in USA EPA "National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines: Signed Final Rule" February 2004.

Based upon mutual written consent, evaluation of emission levels can be made using alternative methods.

Thurman, Kayla (EEC)

From: James, Jeremy <JamesJeremy@stanleygroup.com>
Sent: Monday, February 17, 2025 11:05 AM
To: Thurman, Kayla (EEC)
Subject: RE: KYMEA Air Permit Calculations Questions
Attachments: Wartsila 18V50SG Emissions Data.pdf

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

This Message Originated from Outside the Organization

This Message Is From an External Sender.

Report Suspicious

Hi Kayla,

See attached for the updated emissions data sheet for the engines.

Thanks,



Jeremy James, CHMM, Senior Environmental Scientist
STANLEYCONSULTANTS, 100 Court Ave STE 300, Des Moines, IA 50309
T: 515.447.4424 | stanleyconsultants.com

From: Thurman, Kayla (EEC) <kayla.thurman@ky.gov>
Sent: Friday, February 14, 2025 1:12 PM
To: James, Jeremy <JamesJeremy@stanleygroup.com>
Cc: Daniels, Stacie (EEC) <stacie.daniels@ky.gov>
Subject: KYMEA Air Permit Calculations Questions

***** EXTERNAL EMAIL - Use caution and verify authenticity before trusting any contents. *****

Good afternoon,

I am reviewing the provided calculations and have some additional questions:

1. When applying the sample calculation provided to convert ammonia's emission rate from ppm-v to lb/hr to other pollutants, the emission rates I obtained is different from those provided in the table. I've attached a screenshot where I included "my" values for each pollutant to show this difference. Was this the same calculation utilized to convert formaldehyde, acetaldehyde, acrolein, and methanol? I ensured that I updated the ppm-v from the manufacturer's data sheet and the molecular weight as appropriate.

	NH3	CH2O	C2H4O	C3H4O	CH3OH
ppmv	10.0	0.7	1.0	1.0	0.7
MW	17.03	30.0256	44.0522	56.0632	32.0412
scfm	120,060	120,060	120,060	120,060	120,060
hrs. operated/yr	8760.0	8760.0	8760.0	8760.0	8760.0
calculated lb/hr =	3.184769	0.393055	0.823817	1.048434	0.41944027
calculated ton/yr =	13.94929	1.72158	3.60832	4.592142	1.837148381
4 engines ton/yr	55.79716	6.886319	14.43328	18.36857	7.348593522

	ppm-v, 15% O2, dry	lb/hr	lb/hr
Formaldehyde	0.7	0.25	0.393055
Acetaldehyde	1	0.53	0.82
Acrolein	1	0.72	1.05
Methanol	0.7	0.27	0.41944

- On the spreadsheet there is a conversion from g/kWh to lb/hr for NO_x, CO, VOC, and PM₁₀. What is the source for the values in g/kWh? The manufacturer sheet provides values for NO_x, CO and VOC in ppm-v and PM₁₀ in mg/Nm³. It also appears that utilizing the sample calculation to convert the manufacturer's CO value in ppm-v to lb/hr gives a higher emission rate than the g/kWh provided (7.9 lb/hr compared to 4.98 lb/hr).
- It appears that the g/kWh values for CO, NO_x, and VOC were utilized to determine a yearly emission rate in tons/year and with the AP-42 emission factor to calculate a control efficiency for these pollutants. Is that correct?

Thanks,
Kayla

Kayla Thurman
Environmental Engineer Technologist II
(502)564-5203

Combustion Section
Division for Air Quality
300 Sower Blvd
Frankfort, KY 40601

CONFIDENTIALITY NOTICE: The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or privileged information and may be legally protected from disclosure. If you are not the intended recipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notified that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited. E-mail cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. Neither the sender nor Stanley Consultants, Inc. accept liability for any errors or omissions in the contents of this message, which arise as a result of e-mail transmission.



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KYMEA Title V Operating Permit Application

Kentucky Municipal Energy Agency (KYMEA) Energy
Center I

Madisonville, Kentucky

31825.01

October, 2024

October 25, 2024

Zachary Bittner
Branch Manager
Division for Air Quality
300 Sower Boulevard, Second Floor
Frankfort, KY 40601

Subject: Initial Title V Operating Permit Application
Kentucky Municipal Energy Agency (KYMEA) Energy Center I
1757 AC Slaton Road
Madisonville, KY 42431

Dear Mr. Bittner,

The Kentucky Municipal Energy Agency (KYMEA) is a Kentucky Interlocal agency which provides all requirements power to ten participating municipal utilities in Kentucky including Frankfort, Madisonville, Corbin, Providence, Bardwell, Barbourville, Paris, Berea, Falmouth and Benham.

KYMEA desires to construct a natural gas electric generating facility in Madisonville, Kentucky with a capacity of approximately 75 net megawatts. The plant site will be located at 1757 AC Slaton Road in Madisonville, Kentucky.

The project will install a new electric generating unit comprised of four Wärtsilä 18V50SG reciprocating internal combustion engine (RICE) generators. Each RICE generator would have nominal capacity of 18.8 MW. The Project will be designed for both continuous and peaking service with the capability of multiple quick starts and stops per day. Site development is expected to begin in June 2025 with a proposed in-service date for the Project of June 2027. The Project is expected to have an operating life of not less than 30 years.

The enclosed application package contains all required supporting documentation, including:

- | | |
|-------------------------|----------------------------------|
| DEP Forms | • Equipment Specification Sheets |
| • PTE Calculations | • Certification of Authority |
| • Emission Factor Basis | • Facility Layout Map |
| • Flow Diagram | |
| • Topographic Map | |

KENTUCKY MUNICIPAL ENERGY AGENCY
1700 EASTPOINT PKWY, SUITE 220
LOUISVILLE, KY 40223



PHONE: (502) 242-5635
FAX: (502) 242-5640
EMAIL: CONTACT@KYMEA.ORG

If you have questions relating to this submittal or require additional information, please contact me at (502) 242-5635 or dburesh@kymea.org.

Sincerely,

A handwritten signature in black ink that reads "Doug Buresh".

Doug Buresh
President/CEO

DISCOVER THE POWER



OF ENERGY OPTIONS

Application Forms

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007AI**Administrative Information**

- ☐ Section AI.1: Source Information
☐ Section AI.2: Applicant Information
☐ Section AI.3: Owner Information
☐ Section AI.4: Type of Application
☐ Section AI.5: Other Required Information
☐ Section AI.6: Signature Block
☐ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

☐ Additional Documentation attached

Source Name: Kentucky Municipal Energy Agency (KYMEA) Energy Center I

KY EIS (AFS) #: 21- New Source

Permit #: New Source

Agency Interest (AI) ID: New Source

Date: 25-Oct-24

Section AI.1: Source Information

Physical Location	Street:	<u>1757 AC Slaton Road</u>		
Address:	City:	<u>Madisonville</u>	County:	<u>Hopkins</u>
			Zip Code:	<u>42431</u>
Mailing Address:	Street or P.O. Box:	<u>1700 Eastpoint Parkway, Suite 220</u>		
	City:	<u>Louisville</u>	State:	<u>Kentucky</u>
			Zip Code:	<u>40223</u>

Standard Coordinates for Source Physical Location

Longitude: 87°33'4.00"W (decimal degrees)
 Latitude: 37°19'11.04"N (decimal degrees)

Primary (NAICS) Category: 22- Utilities
Primary NAICS #: 221112- Fossil Fuel Electric Power Generation

Classification (SIC) Category: Electric Services Primary SIC #: 4911

Briefly discuss the type of business conducted at this site: Kentucky Municipal Energy Agency (KYMEA) is a joint public agency that serves the current and future electric power and energy requirements of the state of Kentucky.

Description of Area Surrounding Source: ☒ Rural Area ☐ Industrial Park ☐ Residential Area ☐ Urban Area ☐ Industrial Area ☐ Commercial Area Is any part of the source located on federal land? ☐ Yes ☒ No Number of Employees: 15

Approximate distance to nearest residence or commercial property: 0.15 miles Property Area: 13.5 Acres Is this source portable? ☐ Yes ☒ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES: ☐ Currently Hold ☒ Need ☐ N/A

Solid Waste: ☐ Currently Hold ☐ Need ☒ N/A

RCRA: ☐ Currently Hold ☐ Need ☒ N/A

UST: ☐ Currently Hold ☐ Need ☒ N/A

Type of Regulated Waste Activity: ☐ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: ☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☒ N/A

Section AI.2: Applicant Information

Applicant Name: Doug Buresh

Title: (if individual) President/CEO

Mailing Address: **Street or P.O. Box:** 1700 Eastpoint Parkway
City: Louisville **State:** Kentucky **Zip Code:** 40223

Email: (if individual) dburesh@kymea.org

Phone: 502-242-5635

Technical Contact

Name: Jeremy James

Title: Environmental Consultant

Mailing Address: **Street or P.O. Box:** 100 Court Ave STE 300
City: Des Moines **State:** Iowa **Zip Code:** 50309

Email: jamesjeremy@stanleygroup.com

Phone: 515-447-4424

Air Permit Contact for Source

Name: Doug Buresh

Title: President/CEO

Mailing Address: **Street or P.O. Box:** 1700 Eastpoint Parkway
City: Louisville **State:** Kentucky **Zip Code:** 40223

Email: dburesh@kymea.org

Phone: 502 242-5635

Section AI.3: Owner Information

EP7007AI

☒ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____
City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name

Position

Section AI.4: Type of Application

Current Status:	☐ Title V	☐ Conditional Major	☐ State-Origin	☐ General Permit	☐ Registration	☒ None
Requested Action: (check all that apply)	☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment		
	☐ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☒ Initial Source-wide Operating Permit		
	☐ 502(b)(10) Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice		
	☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities		
	☐ Ownership Change	☐ Closure				
Requested Status:	☒ Title V	☐ Conditional Major	☐ State-Origin	☐ PSD	☐ NSR	☐ Other: _____

Is the source requesting a limitation of potential emissions?☐ Yes☒ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter	_____	☐ Single HAP	_____
☐ Volatile Organic Compounds (VOC)	_____	☐ Combined HAPs	_____
☐ Carbon Monoxide	_____	☐ Air Toxics (40 CFR 68, Subpart F)	_____
☐ Nitrogen Oxides	_____	☐ Carbon Dioxide	_____
☐ Sulfur Dioxide	_____	☐ Greenhouse Gases (GHG)	_____
☐ Lead	_____	☐ Other	_____

For New Construction:
Proposed Start Date of Construction:
 (MM/YYYY)

06/2025

Proposed Operation Start-Up Date: (MM/YYYY)

04/2027

For Modifications:
Proposed Start Date of Modification:
 (MM/YYYY)

Proposed Operation Start-Up Date: (MM/YYYY)

Applicant is seeking coverage under a permit shield.
☐ Yes☒ No
Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

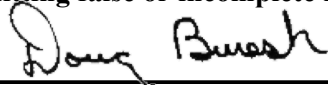
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- | | |
|--|--|
| ☐ DEP7007A Indirect Heat Exchangers and Turbines | ☐ DEP7007CC Compliance Certification |
| ☐ DEP7007B Manufacturing or Processing Operations | ☒ DEP7007DD Insignificant Activities |
| ☐ DEP7007C Incinerators and Waste Burners | ☒ DEP7007EE Internal Combustion Engines |
| ☐ DEP7007F Episode Standby Plan | ☐ DEP7007FF Secondary Aluminum Processing |
| ☐ DEP7007J Volatile Liquid Storage | ☒ DEP7007GG Control Equipment |
| ☐ DEP7007K Surface Coating or Printing Operations | ☐ DEP7007HH Haul Roads |
| ☐ DEP7007L Mineral Processes | ☐ Confidentiality Claim |
| ☐ DEP7007M Metal Cleaning Degreasers | ☐ Ownership Change Form |
| ☒ DEP7007N Source Emissions Profile | ☐ Secretary of State Certificate |
| ☐ DEP7007P Perchloroethylene Dry Cleaning Systems | ☐ Flowcharts or diagrams depicting process |
| ☐ DEP7007R Emission Offset Credit | ☐ Digital Line Graphs (DLG) files of buildings, roads, etc. |
| ☐ DEP7007S Service Stations | ☐ Site Map |
| ☐ DEP7007T Metal Plating and Surface Treatment Operations | ☐ Map or drawing depicting location of facility |
| ☒ DEP7007V Applicable Requirements and Compliance Activities | ☐ Safety Data Sheet (SDS) |
| ☐ DEP7007Y Good Engineering Practice and Stack Height Determination | ☐ Emergency Response Plan |
| ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units | ☐ Other: _____ |
| ☐ DEP7007BB Certified Progress Report | |

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

10/23/2024

Date

Doug Buersh

Type or Printed Name of Signatory

President/CEO

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	DEP7007DD Insignificant Activities ☒ Section DD.1: Table of Insignificant Activities ☒ Section DD.2: Signature Block ☒ Section DD.3: Notes, Comments, and Explanations			
Source Name: KY EIS (AFS) #: Permit #: Agency Interest (AI) ID: Date:	Kentucky Municipal Energy Agency (KYMEA) Energy Center I 21- New Source New Source New Source 10/25/2024			
Section DD.1: Table of Insignificant Activities				
*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3... etc.				
Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions (ton/yr)
IA 1	Water Heater (20,000 Btu/hr)	Water Heater	Indirect heat exchangers or water heaters rated at 1 million BTU per hour or less actual heat input that use #2 fuel oil, wood, natural gas, LP gas or refinery fuel gas.	PM: 0.0007, PM10: 0.0007, PM2.5: 0.0007, SOx: 0.0001, NOx: 0.0086, VOC: 0.0005, CO: 0.0072, CO2: 10.512, CH4: 0.0002, Hexane: 0.0002
IA 2	Circuit Breakers/Switchgear (200 lbs)	Circuit Breakers	N/A	Sulfur Hexafluoride: 11.4
IA 3	Space Heaters (14 Heaters, 1.35 Total MMBtu/hr)	Space Heaters	Indirect heat exchangers or water heaters rated at 1 million BTU per hour or less actual heat input that use #2 fuel oil, wood, natural gas, LP gas or refinery fuel gas.	PM: 0.0441, PM10: 0.0441, PM2.5: 0.0441, SOx: 0.0035, NOx: 0.5795, VOC: 0.0319, CO: 0.4872, CO2: 709.56, CH4: 0.0136, N2O: 0.0013, Formaldehyde: 0.0004, Hexane: 0.0002
IA 4	Maintenance water (Water-glycol) Tank (2,700 Gallons)	Glycol Tank	Storage vessels having less than 10,567 gallons capacity that contain petroleum or organic liquids with a vapor pressure of 1.5 psia or less at storage temperature.	VOC: 0.0001

[illegible]

Section EE.2: Operating Information					
Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency, Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? <i>(Yes/No)</i>	Rental Time Period <i>(hrs)</i>	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EU 01	Non-emergency	8760	No	N/A	N/A
EU 02	Non-emergency	8760	No	N/A	N/A
EU 03	Non-emergency	8760	No	N/A	N/A
EU 04	Non-emergency	8760	No	N/A	N/A

Section EE.3: Design Information							
Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power (bhp)	Maximum Engine Speed (rpm)	Total Displacement (L)	Number of Cylinders
EU 01	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18
EU 02	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18
EU 03	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18
EU 04	Stationary	Spark	4-stroke, Lean Burn	25,574	514	2049.9	18

Section EE.4: Fuel Information									
Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used (%)	Maximum Fuel Consumption (Btu/Hp-hr)	Heat Content (Btu/scf)	Sulfur Content (%)	SCC Code	SCC Units
EU 01	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202
EU 02	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202
EU 03	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202
EU 04	Primary	Natural Gas	130	100	10,791	1,020	0.01	ICE EGU NatGas Recip	20100202

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EU 01, EU 02, EU 03, EU 04	Natural Gas	PM	3.32	lb/hr	Mass Balance
		PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2
		PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2
		SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2
		NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2
		VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2
		CO	0.317	lb/MMBtu	AP-42 Table 3.2-2
		Pb	0.00	lb/hr	Mass Balance
		NH ₃	3.18	lb/hr	Mass Balance
		Formaldehyde, CH ₂ O	0.0528	lb/MMBtu	AP-42 Table 3.2-2
		CO ₂	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2
		Nitrous Oxide (N ₂ O)	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2
		Methane (CH ₄)	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	DEP7007GG Control Equipment	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; padding: 2px;">Additional Documentation</th> </tr> <tr> <td style="padding: 2px;"> ☒ Complete Sections GG.1 through GG.12, as applicable </td> </tr> <tr> <td style="padding: 2px;"> ☒ Attach manufacturer's specifications for each control device </td> </tr> <tr> <td style="padding: 2px;"> ☒ Complete DEP7007AI </td> </tr> </table>	Additional Documentation	☒ Complete Sections GG.1 through GG.12, as applicable	☒ Attach manufacturer's specifications for each control device	☒ Complete DEP7007AI
Additional Documentation						
☒ Complete Sections GG.1 through GG.12, as applicable						
☒ Attach manufacturer's specifications for each control device						
☒ Complete DEP7007AI						

Source Name:	<u>Kentucky Municipal Energy Agency (KYPEA) Energy Center I</u>
KY EIS (AFS) #:	<u>New Source</u>
Permit #:	<u>New Source</u>
Agency Interest (AI) ID:	<u>New Source</u>
Date:	<u>10/25/2024</u>

[illegible]

Section GG.10: Selective Catalytic Reduction (SCR) / Selective Non-catalytic Reduction (SNCR)

[illegible]

Section GG.11: Other Control Equipment		
Control Device ID #	Identify all Emission Units and Control Devices that Feed to Control Equipment	Type of Control Equipment (provide description and a diagram with dimensions)
CD 02	EU 01	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).
CD 04	EU 02	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).
CD 06	EU 03	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).
CD 08	EU 04	Oxidation (CO) Catalyst (SCR and oxidation catalyst elements are installed in same reactor. Details can be provided when available from supplier).

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

☒ Section N.1: Emission Summary

☒ Section N.2: Stack Information

☒ Section N.3: Fugitive Information

☐ Section N.4: Notes, Comments, and Explanations

Additional Documentation

☒ Complete DEP7007AI

Source Name:

Kentucky Municipal Energy Agency (KYMEA) Energy Center I

KY EIS (AFS) #:

New Source

Permit #:

New Source

Agency Interest (AI) ID:

New Source

Date:

10/25/2024

N.1: Emission Summary

EU 02	Reciprocating Internal Combustion Engine #2	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 03, CD 04	EP 02	151.54 MMBtu/hr	PM	3.32	lb/hr	Mass Balance	-	-	3.3200	3.3200	14.5416	14.5416								
								PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308								
								PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308								
								SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891	0.3903	0.3903								
								NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2	100.00%	99.60%	618.2832	2.4891	2708.0804	10.9021								
								VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2	100.00%	72.16%	17.8817	4.9781	78.3219	21.8042								
								CO	0.317	lb/MMBtu	AP-42 Table 3.2-2	100.00%	89.64%	48.0382	4.9781	210.4072	21.8042								
								Pb	0.00	lb/hr	Mass Balance	-	-	0.0000	0.0000	0.0000	0.0000								
								NH3	3.18	lb/hr	Mass Balance	-	-	3.1848	3.1848	13.9493	13.9493								
								Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2	100.00%	96.88%	8.0013	0.2500	35.0457	1.0950								
								Acetaldehyde, C2H4O	0.00836	lb/MMBtu	AP-42 Table 3.2-2	100.00%	58.16%	1.2669	0.5300	5.5489	2.3214								
								Acrolein, C3H8O	0.00514	lb/MMBtu	AP-42 Table 3.2-2	100.00%	7.56%	0.7789	0.7200	3.4117	3.1536								
								Methanol, CH3OH	0.0025	lb/MMBtu	AP-42 Table 3.2-2	100.00%	28.73%	0.3789	0.2700	1.6594	1.1826								
								Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056	0.0244	0.0244								
								chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043	0.0189	0.0189								
								benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667	0.2920	0.2920								
								vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023	0.0099	0.0099								
								dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0030	0.0030	0.0133	0.0133								
								1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048	0.0211	0.0211								
								1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061	0.0265	0.0265								
								Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016	0.0069	0.0069								
								naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113	0.0494	0.0494								
								2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050	0.0220	0.0220								
								Biphenyl	0.000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321	0.1407	0.1407								
								ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060	0.0264	0.0264								
								styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0157	0.0157								
								Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067	0.0294	0.0294								
								1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405	0.1772	0.1772								
								toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618	0.2708	0.2708								
								chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046	0.0202	0.0202								
								phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036	0.0159	0.0159								
								hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682	0.7368	0.7368								
								2,2,4-Trimethylpentane	0.00025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379	0.1659	0.1659								
								1,3-Dichloropropene	0.0000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040	0.0175	0.0175								
								xylenes	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279	0.1221	0.1221								
								CO2	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509	77643.1690	77643.1690								
								CH4	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.3341	0.3341	1.4633	1.4633								
								N2O	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.0334	0.0334	0.1463	0.1463								
								EU 03	Reciprocating Internal Combustion Engine #3	Process 1	Engines	Selective Catalytic Reduction (SCR), Oxidation (CO) Catalyst	CD 05, CD 06	EP 03	151.54 MMBtu/hr	PM	3.32	lb/hr	Mass Balance	-	-	3.3200	3.3200	14.5416	14.5416
																PM10	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139	6.6308	6.6308
PM2.5	0.00999	lb/MMBtu	AP-42 Table 3.2-2	-	-	1.5139	1.5139									6.6308	6.6308								
SO2	0.000588	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0891	0.0891									0.3903	0.3903								
NOx	4.08	lb/MMBtu	AP-42 Table 3.2-2	100.00%	99.60%	618.2832	2.4891									2708.0804	10.9021								
VOC	0.118	lb/MMBtu	AP-42 Table 3.2-2	100.00%	72.16%	17.8817	4.9781									78.3219	21.8042								
CO	0.317	lb/MMBtu	AP-42 Table 3.2-2	100.00%	89.64%	48.0382	4.9781									210.4072	21.8042								
Pb	0.00	lb/hr	Mass Balance	-	-	0.0000	0.0000									0.0000	0.0000								
NH3	3.18	lb/hr	Mass Balance	-	-	3.1848	3.1848									13.9493	13.9493								
Formaldehyde, CH2O	0.0528	lb/MMBtu	AP-42 Table 3.2-2	100.00%	96.88%	8.0013	0.2500									35.0457	1.0950								
Acetaldehyde, C2H4O	0.00836	lb/MMBtu	AP-42 Table 3.2-2	100.00%	58.16%	1.2669	0.5300									5.5489	2.3214								
Acrolein, C3H8O	0.00514	lb/MMBtu	AP-42 Table 3.2-2	100.00%	7.56%	0.7789	0.7200									3.4117	3.1536								
Methanol, CH3OH	0.0025	lb/MMBtu	AP-42 Table 3.2-2	100.00%	28.73%	0.3789	0.2700									1.6594	1.1826								
Carbon Tetrachloride	0.0000367	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0056	0.0056									0.0244	0.0244								
chloroform	0.0000285	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0043	0.0043									0.0189	0.0189								
benzene	0.00044	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0667	0.0667									0.2920	0.2920								
vinyl chloride	0.0000149	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0023	0.0023									0.0099	0.0099								
dichloromethane	0.00002	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0030	0.0030									0.0133	0.0133								
1,1,2-Trichloroethane	0.0000318	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0048	0.0048									0.0211	0.0211								
1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0061	0.0061									0.0265	0.0265								
Phenanthrene	0.0000104	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0016	0.0016									0.0069	0.0069								
naphthalene	0.0000744	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0113	0.0113									0.0494	0.0494								
2-Methylnaphthalene	0.0000332	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0050	0.0050									0.0220	0.0220								
Biphenyl	0.000212	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0321	0.0321									0.1407	0.1407								
ethyl benzene	0.0000397	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0060	0.0060									0.0264	0.0264								
styrene	0.0000236	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036									0.0157	0.0157								
Ethylene Dibromide	0.0000443	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0067	0.0067									0.0294	0.0294								
1,3-butadiene	0.000267	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0405	0.0405									0.1772	0.1772								
toluene	0.000408	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0618	0.0618									0.2708	0.2708								
chlorobenzene	0.0000304	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0046	0.0046									0.0202	0.0202								
phenol	0.000024	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0036	0.0036									0.0159	0.0159								
hexane	0.00111	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.1682	0.1682									0.7368	0.7368								
2,2,4-Trimethylpentane	0.00025	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0379	0.0379									0.1659	0.1659								
1,3-Dichloropropene	0.0000264	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0040	0.0040									0.0175	0.0175								
xylenes	0.000184	lb/MMBtu	AP-42 Table 3.2-2	-	-	0.0279	0.0279									0.1221	0.1221								
CO2	116.9773717	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	17726.7509	17726.7509									77643.1690	77643.1690								
CH4	0.002204624	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.3341	0.3341									1.4633	1.4633								
N2O	0.000220462	lb/MMBtu	40 CFR 98, subp. C, Table C-1 and C-2	-	-	0.0334	0.0334									0.1463	0.1463								

[illegible]

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007V

Applicable Requirements and Compliance Activities

☒ Section V.1: Emission and Operating Limitation(s)

☒ Section V.2: Monitoring Requirements

☒ Section V.3: Recordkeeping Requirements

☒ Section V.4: Reporting Requirements

☒ Section V.5: Testing Requirements

☒ Section V.6: Notes, Comments, and Explanations

Additional Documentation

☒ Complete DEP7007AI

Source Name:

Kentucky Municipal Energy Agency (KYMEA) Energy Center I

KY EIS (AFS) #:

New Source

Permit #:

New Source

Agency Interest (AI) ID:

New Source

Date:

10/25/2024

Section V.1: Emission and Operating Limitation(s)

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
EU 01	Reciprocating Internal Combustion Engine #1	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O2.	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NOx	82 ppmvd at 15% O2	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
EU 02	Reciprocating Internal Combustion Engine #2	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O2.	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NOx	82 ppmvd at 15% O2	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.

EU 03	Reciprocating Internal Combustion Engine #3	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O2.	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NOx	82 ppmvd at 15% O2	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
EU 04	Reciprocating Internal Combustion Engine #4	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Formaldehyde	Limit concentration of formaldehyde to 14 ppmvd or less at 15 percent O2.	N/A	N/A	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Pressure drop	Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test.
		40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	N/A	N/A	N/A	Catalyst inlet temperature	Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1,350 °F.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	NOx	82 ppmvd at 15% O2	N/A	N/A	Purchasing a non-certified engine and demonstrating compliance with the emission standards. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	CO	270 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	VOC	60 ppmvd at 15% O2	N/A	N/A	
		40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	All	N/A	N/A	Minimize engine idle	Must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission standards apply.
EU 05	Dew Point Heater	40 CFR Part 63 Subpart DDDDD	N/A	N/A	N/A	Work Practice Standards	At all times, you must operate and maintain any affected source (as defined in § 63.7490), in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

Section V.3: Recordkeeping Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping
EU 01	Reciprocating Internal Combustion Engine #1	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 02	Reciprocating Internal Combustion Engine #2	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 03	Reciprocating Internal Combustion Engine #3	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 04	Reciprocating Internal Combustion Engine #4	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must comply with the applicable recordkeeping requirements in 40 CFR 63.6655(a), (b), and (d), and 40 CFR 63.6660, including keeping records for at least 5 years.
		N/A	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Maintenance.	Maintenance conducted on the engine.
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	The engine is not a certified engine, facility must keep documentation that the engine meets the emission standards. 40 CFR 60.4245(a)(4).
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Reporting	A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that you submitted, according to the requirements in § 63.10(b)(2)(xiv).
				Testing	Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in § 63.10(b)(2)(viii).

Section V.4: Reporting Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reporting	Description of Reporting
EU 01	Reciprocating Internal Combustion Engine #1	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).
EU 02	Reciprocating Internal Combustion Engine #2	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).

EU 03	Reciprocating Internal Combustion Engine #3	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).
EU 04	Reciprocating Internal Combustion Engine #4	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Operating and emission limitations	A compliance report must be submitted semiannually according to the requirements in § 63.6650(b). If there are no deviations from any emission limitations or operating limitations that apply to you, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or there is a deviation from any emission limitation or operating limitation during the reporting period, the information in § 63.6650(d). If there were periods during which the CMS was out-of-control, as specified in § 63.8(c)(7), the information in § 63.6650(e); or if there is a malfunction during the reporting period, the information in § 63.6650(c)(4).
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Tune up	If the facility is subject to the requirements of a tune up you must submit a compliance report with the information in paragraphs (c)(5)(i) through (iii) of this section. (§ 63.7550)

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Testing	Description of Testing
EU 01	Reciprocating Internal Combustion Engine #1	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
					According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date.
					According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde.
					Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing.
					According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6).
					Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b).
					Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
EU 02	Reciprocating Internal Combustion Engine #2	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
					According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date.
					According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde.
					Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing.
					According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6).
					Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b).
					Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
		NOx, CO, VOC	40 CFR Part 60 Subpart JJJJ, 401 KAR 60:005 Section 2(2)(eeee)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.

EU 03	Reciprocating Internal Combustion Engine #3	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
					According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date.
					According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde.
					Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing.
					According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6).
					Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b).
					Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
EU 04	Reciprocating Internal Combustion Engine #4	Formaldehyde	40 CFR Part 63 Subpart ZZZZ, 401 KAR 63:002 Section 2(4)(eeee)	Emission standard.	Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
					According to 40 CFR 63.6600, Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to this subpart.
					According to 40 CFR 63.6610(a), you must conduct the initial performance tests or other applicable initial compliance demonstrations in Table 4 to subpart ZZZZ within 180 days after the compliance date.
					According to 40 CFR 63.6615 and Table 3 to subpart ZZZZ, you must conduct the subsequent performance tests semiannually if you are complying with the requirement to limit the concentration of formaldehyde.
					Must conduct the performance tests in accordance with 40 CFR 63.6620 to demonstrate compliance with applicable emission standards. You are required to notify the Administrator 60 days prior to the test date and are required to submit a stack test report to the Administrator within 60 days after the completion of the testing.
					According to 40 CFR 63.6625(b) and Table 5 to subpart ZZZZ, if you are required to install a continuous parameter monitoring system (CPMS), you must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (6).
					Must demonstrate initial compliance with applicable emission limitations, operating limitations, and other requirements in 40 CFR 63.6630(a), and (b).
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Performance Testing	Must demonstrate continuous compliance with applicable emission limitations, operating limitations, and other requirements in pursuant to 40 CFR 63.6605, 6635, 6640(a), (b), (d), and (e).
					Must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance in accordance with 40 CFR 60.4244.
EU 05	Dew Point Heater	N/A	40 CFR Part 63 Subpart DDDDD	Performance Testing	Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity of less than or equal to 5 million Btu per hour must complete a tune-up every 5 years as specified in § 63.7540.

Attachments

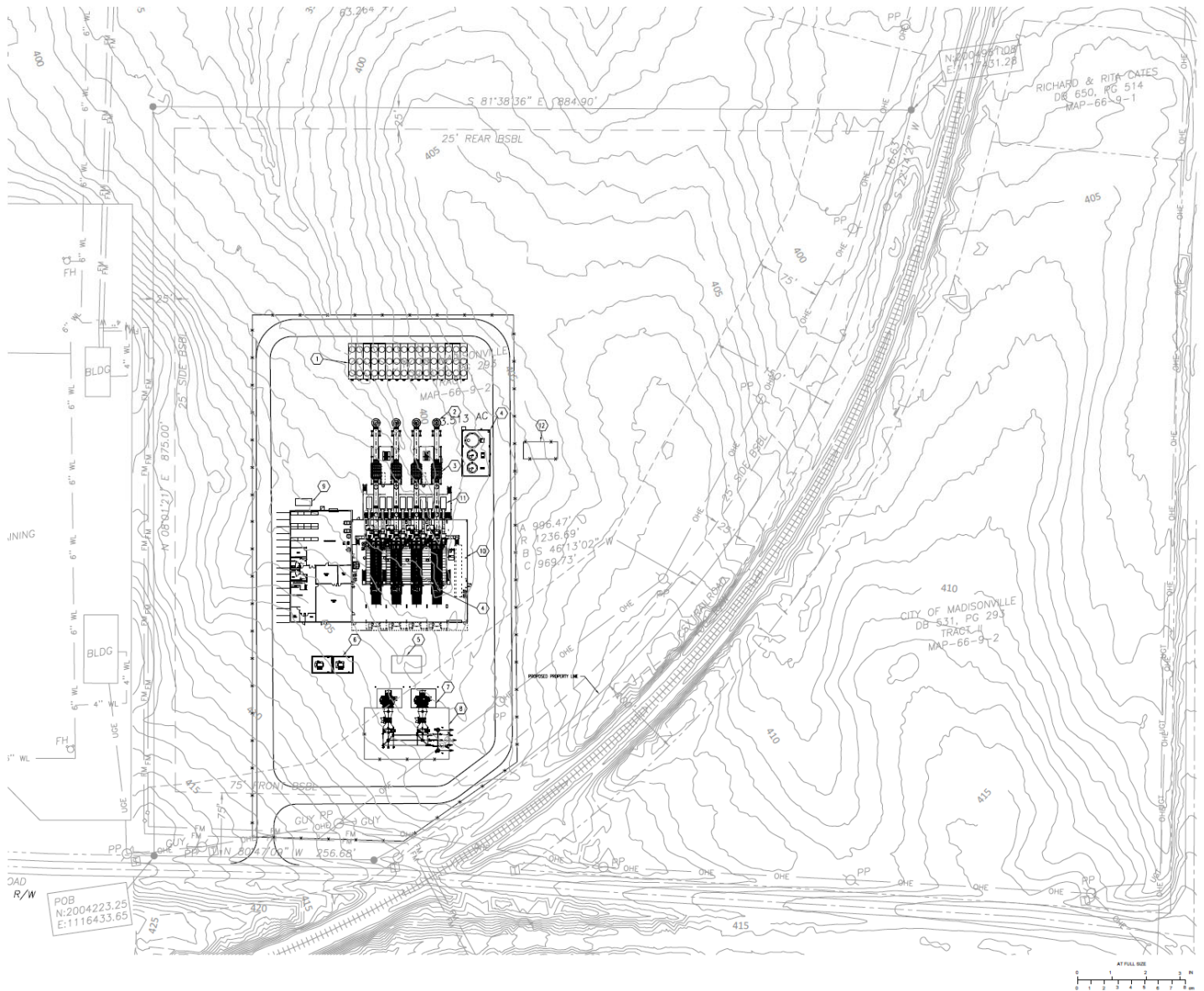


Facility Layout Map

Kentucky Municipal Energy Agency (KYMEA) Energy Center I

1757 AC Slaton Road

Madisonville, KY 42431



Topographical Map

Kentucky Municipal Energy Agency (KYMEA) Energy Center I

1757 AC Slaton Road

Madisonville, KY 42431

Facility PTE Summary
Kentucky Municipal Energy Agency (KYMEA)

Stack ID	Emission Unit #	Emission Unit Name	Potential or Permitted Emission Rate (tons/yr)										
			PM	PM10	PM2.5	SO2	NOX	VOC	CO	Pb	HAP	THAP	
EP 01	EU 01	Reciprocating Internal Combustion Engine #1	14.54	6.63	6.63	0.39	10.90	21.80	21.80	0.00	3.15	0.00	
EP 02	EU 02	Reciprocating Internal Combustion Engine #2	14.54	6.63	6.63	0.39	10.90	21.80	21.80	0.00	3.15	0.00	
EP 03	EU 03	Reciprocating Internal Combustion Engine #3	14.54	6.63	6.63	0.39	10.90	21.80	21.80	0.00	3.15	0.00	
EP 04	EU 04	Reciprocating Internal Combustion Engine #4	14.54	6.63	6.63	0.39	10.90	21.80	21.80	0.00	3.15	0.00	
EP 05	EU 05	Dew Point Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			58.14	26.52	26.52	1.56	43.61	87.22	87.22	0.00	12.61	0.00	Total PTE

Kentucky Municipal Energy Agency (KYMEDIA)

Wartsila Engines PTE

Parameter	Units	100%	75%	50%	40%		Notes/Source
Genset Power Output	kW	18,817	14,113	9,409	7,527		At ISO conditions for 18V50SG
Genset Heat Rate	Btu/kW-hr (HHV)	8,053	8,263	8,847	8,280		At ISO conditions for 18V50SG
Exhaust Gas Temperature	*F	757	820	824	821		
Exhaust Gas Flowrate	scf/min	120,060	99,000	76,380	64,320		
Fuel Burn Rate	Btu/hr	151,535,183	116,618,542	83,244,246	62,321,302		18V50SG
Fuel Burn Rate	MMBtu/hr	151.54					18V50SG

NAAQS	Emission Factor	EF Units	Mol. Weight	Hours	lb/hr	ton/yr	4 engines ton/yr	Notes/Source
PM	3.32	lb/hr		8760.0	3.32	14.54	58.14	18V50SG
PM10	0.00999	lb/MMBtu		8760.0	1.51	6.63	26.52	AP-42 Table 3.2-2
PM2.5	0.00999	lb/MMBtu		8760.0	1.51	6.63	26.52	AP-42 Table 3.2-2
SO2	0.000588	lb/MMBtu		8760.0	0.09	0.39	1.56	AP-42 Table 3.2-2
NOx	2.49	lb/hr		8760.0	2.49	10.90	43.61	18V50SG
VOC	4.98	lb/hr		8760.0	4.98	21.80	87.22	18V50SG
CO	4.98	lb/hr		8760.0	4.98	21.80	87.22	18V50SG
Pb	0.00	lb/hr		8760.0	0.00	0.00	0.00	AP-42 Table 3.2-2
Ammonia (NH3)	3.18	lb/hr	17.03	8760.0	3.18	13.95	55.80	18V50SG
GHG's								
CO2	116.9773717	lb/MMBtu		8760.0	17726.2	77640.70	310562.80	40 CFR 98, subp. C, Table C-1 and C-2
CH4	0.002204624	lb/MMBtu		8760.0	0.3	1.46	5.85	40 CFR 98, subp. C, Table C-1 and C-2
N2O	0.000220462	lb/MMBtu		8760.0	0.0	0.15	0.59	40 CFR 98, subp. C, Table C-1 and C-2
HAPs	Emission Factor	EF Units	Mol. Weight	Hours	lb/hr	ton/yr	4 engines ton/yr	Notes/Source
Formaldehyde, CH2O	0.25	lb/hr	30.0	8760.0	0.25	1.10	4.38	18V50SG
Acetaldehyde, C2H4O	0.53	lb/hr	44.1	8760.0	0.53	2.32	9.29	18V50SG
Acrolein, C3H8O	0.72	lb/hr	56.1	8760.0	0.72	3.15	12.61	18V50SG
Methanol, CH3OH	0.27	lb/hr	32.0	8760.0	0.27	1.18	4.73	18V50SG
Carbon Tetrachloride	0.0000367	lb/MMBtu		8760.0	0.006	0.024	0.097	AP-42 Table 3.2-2
chloroform	0.0000285	lb/MMBtu		8760.0	0.004	0.019	0.076	AP-42 Table 3.2-2
benzene	0.00044	lb/MMBtu		8760.0	0.067	0.292	1.168	AP-42 Table 3.2-2
vinyl chloride	0.0000149	lb/MMBtu		8760.0	0.002	0.010	0.040	AP-42 Table 3.2-2
dichloromethane (methylene chloride)	0.00002	lb/MMBtu		8760.0	0.003	0.013	0.053	AP-42 Table 3.2-2
1,1,2-Trichloroethane	0.0000318	lb/MMBtu		8760.0	0.005	0.021	0.084	AP-42 Table 3.2-2
1,1,2,2-Tetrachloroethane	0.00004	lb/MMBtu		8760.0	0.006	0.027	0.106	AP-42 Table 3.2-2
Phenanthrene	0.0000104	lb/MMBtu		8760.0	0.002	0.007	0.028	AP-42 Table 3.2-2
naphthalene	0.0000744	lb/MMBtu		8760.0	0.011	0.049	0.198	AP-42 Table 3.2-2
2-Methylnaphthalene	0.0000332	lb/MMBtu		8760.0	0.005	0.022	0.088	AP-42 Table 3.2-2
Biphenyl	0.000212	lb/MMBtu		8760.0	0.032	0.141	0.563	AP-42 Table 3.2-2
ethyl benzene	0.0000397	lb/MMBtu		8760.0	0.006	0.026	0.105	AP-42 Table 3.2-2
styrene	0.0000236	lb/MMBtu		8760.0	0.004	0.016	0.063	AP-42 Table 3.2-2
Ethylene Dibromide	0.0000443	lb/MMBtu		8760.0	0.007	0.029	0.118	AP-42 Table 3.2-2
1,3-butadiene	0.000267	lb/MMBtu		8760.0	0.040	0.177	0.709	AP-42 Table 3.2-2
toluene	0.000408	lb/MMBtu		8760.0	0.062	0.271	1.083	AP-42 Table 3.2-2
chlorobenzene	0.0000304	lb/MMBtu		8760.0	0.005	0.020	0.081	AP-42 Table 3.2-2
phenol	0.000024	lb/MMBtu		8760.0	0.004	0.016	0.064	AP-42 Table 3.2-2
hexane	0.00111	lb/MMBtu		8760.0	0.168	0.737	2.947	AP-42 Table 3.2-2
2,2,4-Trimethylpentane	0.00025	lb/MMBtu		8760.0	0.038	0.166	0.664	AP-42 Table 3.2-2
1,3-Dichloropropene	0.0000264	lb/MMBtu		8760.0	0.004	0.018	0.070	AP-42 Table 3.2-2
xylenes	0.000184	lb/MMBtu		8760.0	0.028	0.122	0.489	AP-42 Table 3.2-2

Kentucky Municipal Energy Agency (KYMEA)

Dew Point Heater PTE (1000 Btu/hr)

Pollutant	GWP	b	c	d	e	Emission Factor Source	Potential Emissions
		Rated Output	Actual Annual Throughput	Potential Annual Hours	Emission Factor		(ton/yr)
		(MMBtu/hr)	(MMBtu/yr)	(hr/yr)	(lbs/MMBtu)		(b * d * e) / 2000
		0.001	8.76	8760	by pollutant		
Criteria Air Pollutants							
PM					0.0075	AP-42 1.4	0.0000
PM10					0.0075	AP-42 1.4	0.0000
PM2.5					0.0075	AP-42 1.4	0.0000
SOx					0.0006	AP-42 1.4	0.0000
NOx					0.0980	AP-42 1.4	0.0004
VOC					0.0054	AP-42 1.4	0.0000
CO					0.0824	AP-42 1.4	0.0004
Lead						AP-42 1.4	0.0000
Greenhouse Gas Emissions							
CO2	1				120.0000	AP-42 1.4	0.5256
CH4	25				0.0023	AP-42 1.4	0.0000
N2O	298				0.0002	AP-42 1.4	0.0000
GHG total (CO2e)							0.5256
Hazardous Air Pollutants							
1,1,2,2-tetrachloroethane							0.0000
1,1,2-trichloroethane							0.0000
1,3-butadiene							0.0000
1,3-dichloropropene							0.0000
Acetaldehyde							0.0000
Acrolein							0.0000
Benzene					0.0000	AP-42 1.4	0.0000
Biphenyl							0.0000
Carbon tetrachloride							0.0000
Chlorobenzene							0.0000
Chloroform							0.0000
Ethylbenzene							0.0000
Ethylene dibromide							0.0000
Formaldehyde					0.0001	AP-42 1.4	0.0000
Hexane					0.0018	AP-42 1.4	0.0000
Methanol							0.0000
Methylene chloride							0.0000
Naphthalene							0.0000
PAH							0.0000
Phenol							0.0000
Styrene							0.0000
Tetrachloroethane							0.0000
Toluene					0.0000	AP-42 1.4	0.0000
Vinyl chloride							0.0000
Xylene							0.0000
HAP total							0.0000

Kentucky Municipal Energy Agency (KYMEA)

Space Heaters PTE (1350 MMBtu/hr, multiple units)

Pollutant	GWP	b	c	d	e	Emission Factor Source	Potential Emissions			
		Rated Output	Actual Annual Throughput	Potential Annual Hours	Emission Factor		(ton/yr)			
		(MMBtu/hr)	(MMBtu/yr)	(hr/yr)	(lbs/MMBtu)		(b * d * e) / 2000			
		1.35	11826	8760	by pollutant					
Criteria Air Pollutants										
PM					0.0075	AP-42 1.4	0.0441			
PM10					0.0075	AP-42 1.4	0.0441			
PM2.5					0.0075	AP-42 1.4	0.0441			
SOx					0.0006	AP-42 1.4	0.0035			
NOx					0.0980	AP-42 1.4	0.5795			
VOC					0.0054	AP-42 1.4	0.0319			
CO					0.0824	AP-42 1.4	0.4872			
Lead						AP-42 1.4	0.0000			
Greenhouse Gas Emissions										
CO2	1				120.0000	AP-42 1.4	709.5600			
CH4	25				0.0023	AP-42 1.4	0.0136			
N2O	298				0.0002	AP-42 1.4	0.0013			
GHG total (CO2e)							709.5749			
Hazardous Air Pollutants										
1,1,2,2-tetrachloroethane							0.0000			
1,1,2-trichloroethane							0.0000			
1,3-butadiene							0.0000			
1,3-dichloropropene							0.0000			
Acetaldehyde							0.0000			
Acrolein							0.0000			
Benzene					0.0000	AP-42 1.4	0.0000			
Biphenyl							0.0000			
Carbon tetrachloride							0.0000			
Chlorobenzene							0.0000			
Chloroform							0.0000			
Ethylbenzene							0.0000			
Ethylene dibromide							0.0000			
Formaldehyde					0.0001	AP-42 1.4	0.0004			
Hexane					0.0018	AP-42 1.4	0.0104			
Methanol							0.0000			
Methylene chloride							0.0000			
Naphthalene							0.0000			
PAH							0.0000			
Phenol							0.0000			
Styrene							0.0000			
Tetrachloroethane							0.0000			
Toluene					0.0000	AP-42 1.4	0.0000			
Vinyl chloride							0.0000			
Xylene							0.0000			
HAP total							0.0109			

Kentucky Municipal Energy Agency (KYMEA)

Circuit Breakers PTE (200 lbs, SF6 containing equipment)

Emission Unit #	Emission Unit Name	Process ID	Process Name	Maximum Capacity (lbs)	Emission Factor	Emission Factor Units	GWP	PTE lb/yr	PTE ton/yr	GHG total (CO ₂ e) PTE ton/yr
IA 3	Circuit Breakers	Process 3	Insignificant	200	0.5	% loss per year	22800	1	0.0005	11.4

Kentucky Municipal Energy Agency (KYMEA)

Water Heater PTE (20 MBtu/hr)

Pollutant	GWP	b	c	d	e	Emission Factor Source	Potential Emissions
		(MMBtu/hr)	(MMBtu/yr)	(hr/yr)	(lbs/MMBtu)		(ton/yr)
		0.02	175.2	8760	by pollutant		(b * d * e) / 2000
Criteria Air Pollutants							
PM					0.0075	AP-42 1.4	0.0007
PM10					0.0075	AP-42 1.4	0.0007
PM2.5					0.0075	AP-42 1.4	0.0007
SOx					0.0006	AP-42 1.4	0.0001
NOx					0.0980	AP-42 1.4	0.0086
VOC					0.0054	AP-42 1.4	0.0005
CO					0.0824	AP-42 1.4	0.0072
Lead						AP-42 1.4	0.0000
Greenhouse Gas Emissions							
CO2	1				120.0000	AP-42 1.4	10.5120
CH4	25				0.0023	AP-42 1.4	0.0002
N2O	298				0.0002	AP-42 1.4	0.0000
GHG total (CO2e)							10.5122
Hazardous Air Pollutants							
1,1,2,2-tetrachloroethane							0.0000
1,1,2-trichloroethane							0.0000
1,3-butadiene							0.0000
1,3-dichloropropene							0.0000
Acetaldehyde							0.0000
Acrolein							0.0000
Benzene					0.0000	AP-42 1.4	0.0000
Biphenyl							0.0000
Carbon tetrachloride							0.0000
Chlorobenzene							0.0000
Chloroform							0.0000
Ethylbenzene							0.0000
Ethylene dibromide							0.0000
Formaldehyde					0.0001	AP-42 1.4	0.0000
Hexane					0.0018	AP-42 1.4	0.0002
Methanol							0.0000
Methylene chloride							0.0000
Naphthalene							0.0000
PAH							0.0000
Phenol							0.0000
Styrene							0.0000
Tetrachloroethane							0.0000
Toluene					0.0000	AP-42 1.4	0.0000
Vinyl chloride							0.0000
Xylene							0.0000
HAP total							0.0002

Kentucky Municipal Energy Agency (KYMEDIA)

Glycol Tank (2700 Gal)

INPUT SUMMARY

Identification

Tank type Vertical Fixed Roof

Meteorological Data:

Nearest major city: Paducah, KY

Tank Contents:

Data source Calculator Database

Liquid category Other Organic Liquids

Liquid name Propylene glycol (1,2) {1,2 propanediol}

Tank Dimensions:

Tank shell height, ft HS 10

Tank diameter, ft D 7

Maximum liquid height, ft HLX 9

Minimum liquid height, ft HLN 1

Liquid height, ft HL 5

Number of turnovers per year, dimensionless N 5

Annual net throughput, gal/yr 11,516.56

Annual net throughput, bbl/yr Q 274.2038

Flashing/vapor balanced unloading? No

Paint Characteristics:

Shell color/shade Gray: Dark

Shell condition New

Roof color/shade Gray: Dark

Roof condition New

Roof Characteristics:

Roof type Dome Roof

Tank roof height, ft HR 0

Tank dome roof radius, ft RR 7

Breather Vent Settings:

Breather vent vacuum setting, psig PBV -0.03

Breather vent pressure setting, psig PBP 0.03

Insulation Characteristics:

Tank insulation None

Tank heating No

EMISSIONS SUMMARY

Total Losses

Standing losses, lb/yr LS 0.0795

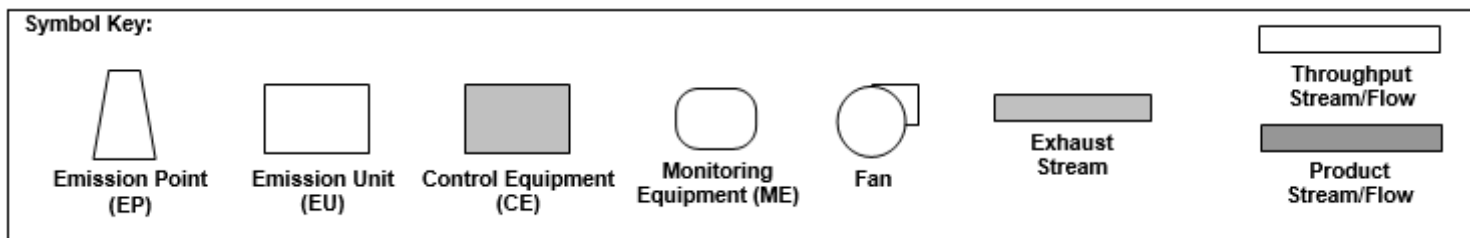
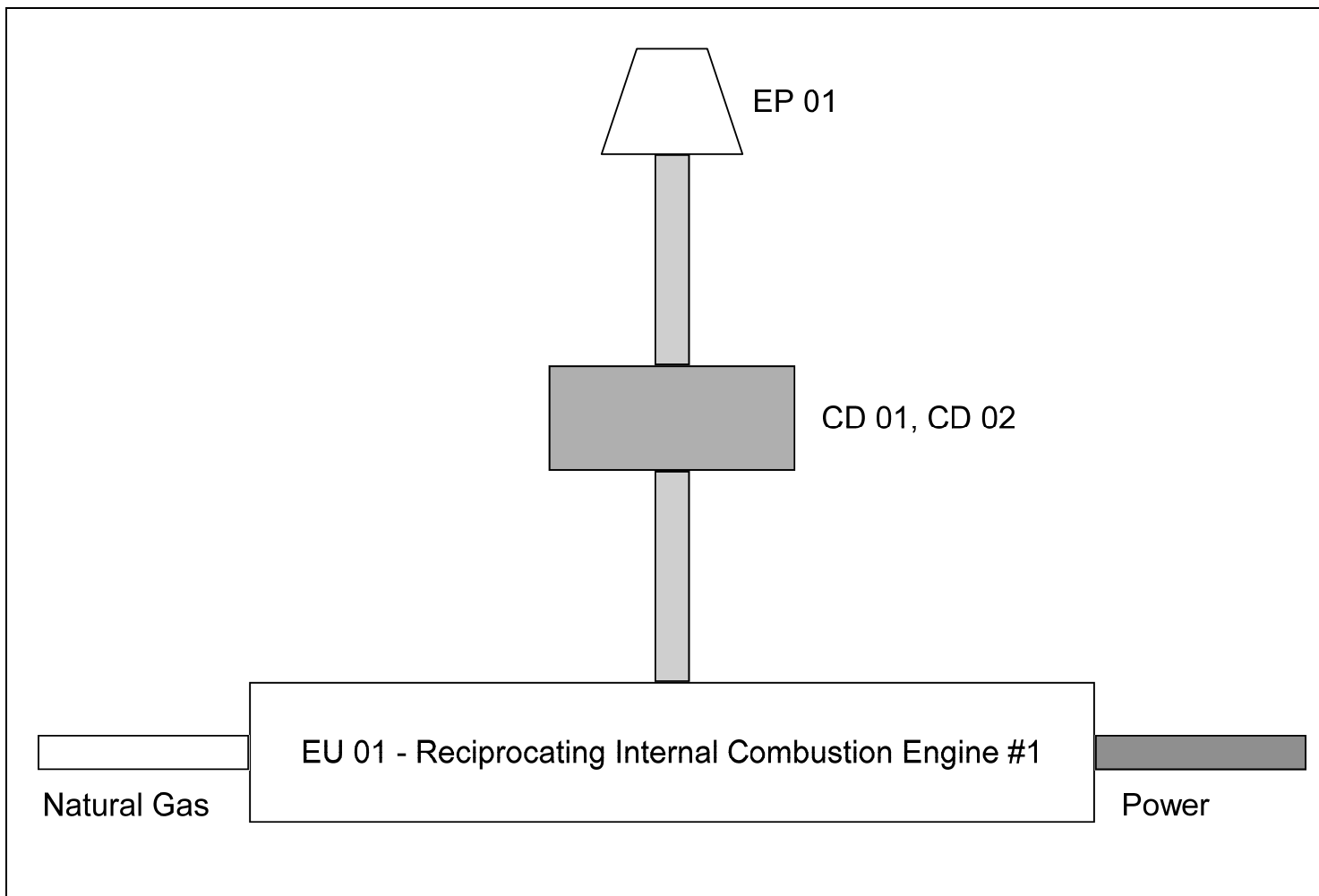
Working losses, lb/yr LW 0.0252

Total routine losses, lb/yr LT 0.1048

Total routine losses, ton/yr LT 0.0000524

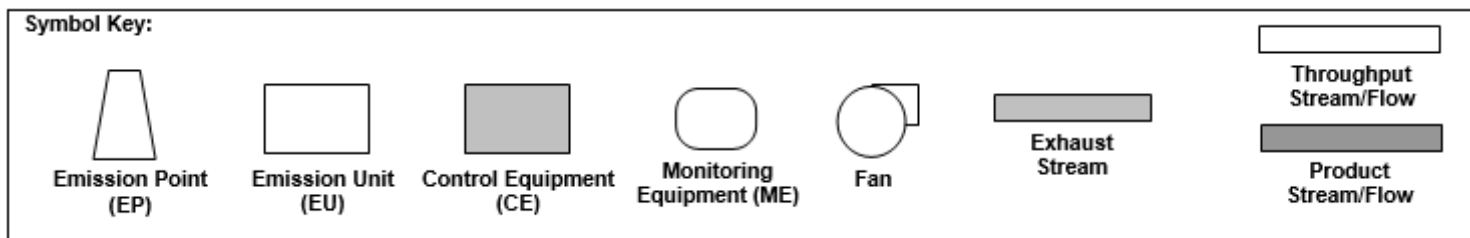
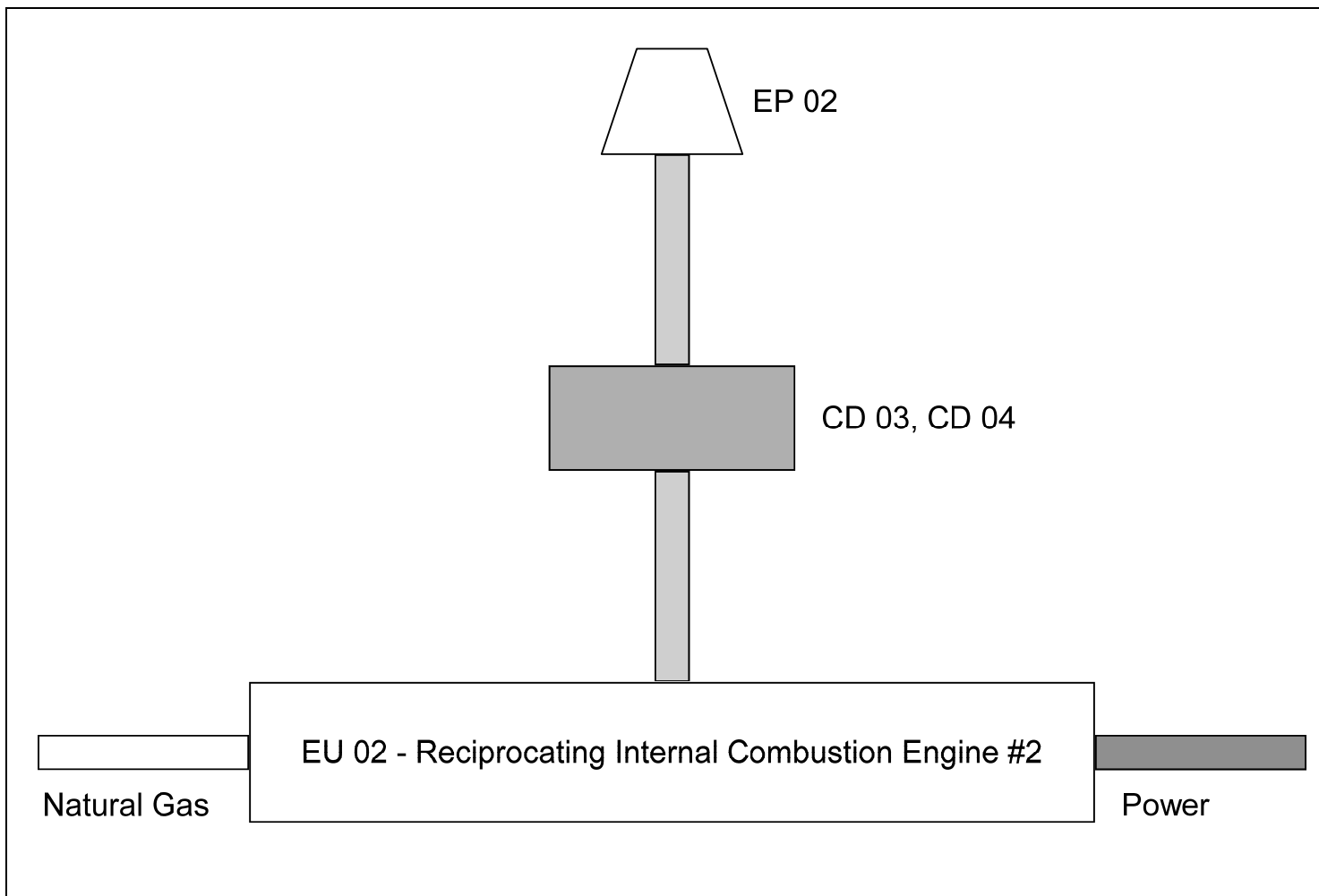
Title V Operating Permit Application
SCHEMATIC - PROCESS FLOW DIAGRAM

Company/Facility Name Kentucky Municipal Energy Agency (KYMEA)



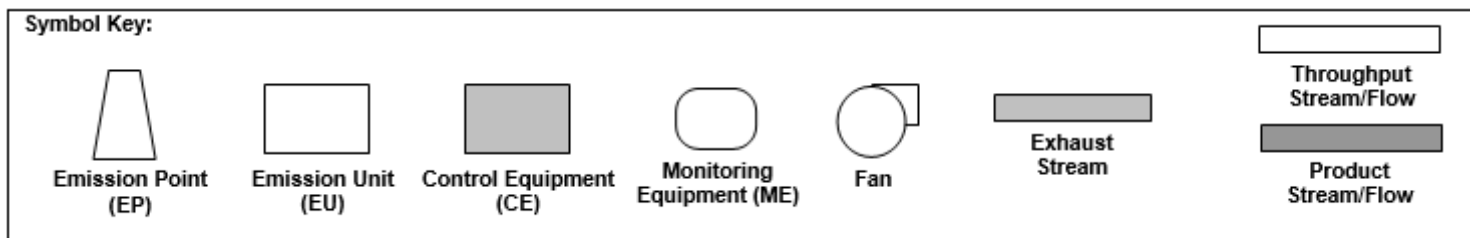
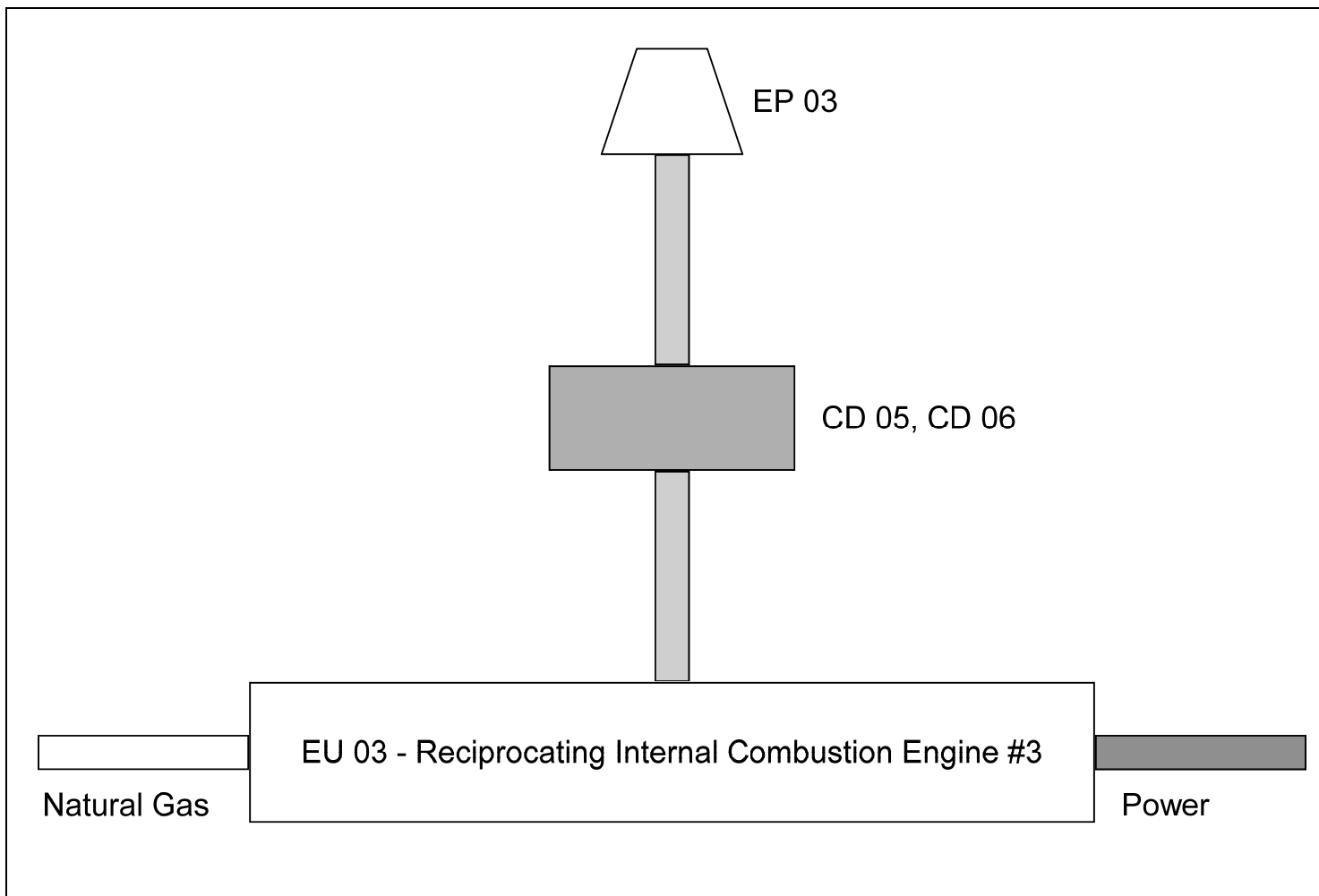
Title V Operating Permit Application
SCHEMATIC - PROCESS FLOW DIAGRAM

Company/Facility Name Kentucky Municipal Energy Agency (KYMEDIA)



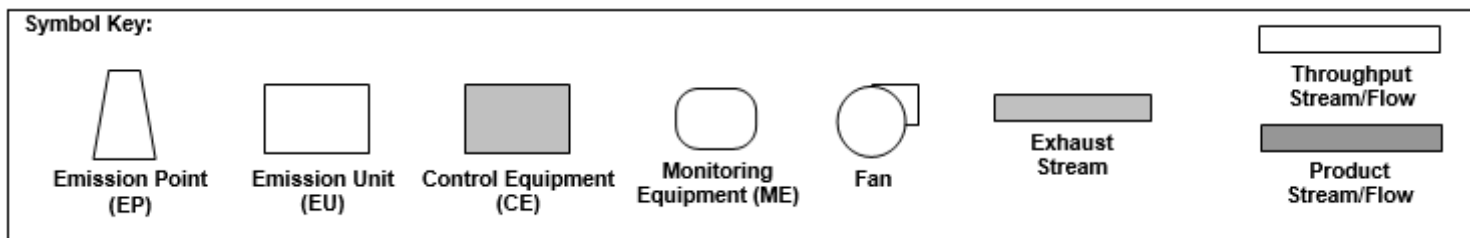
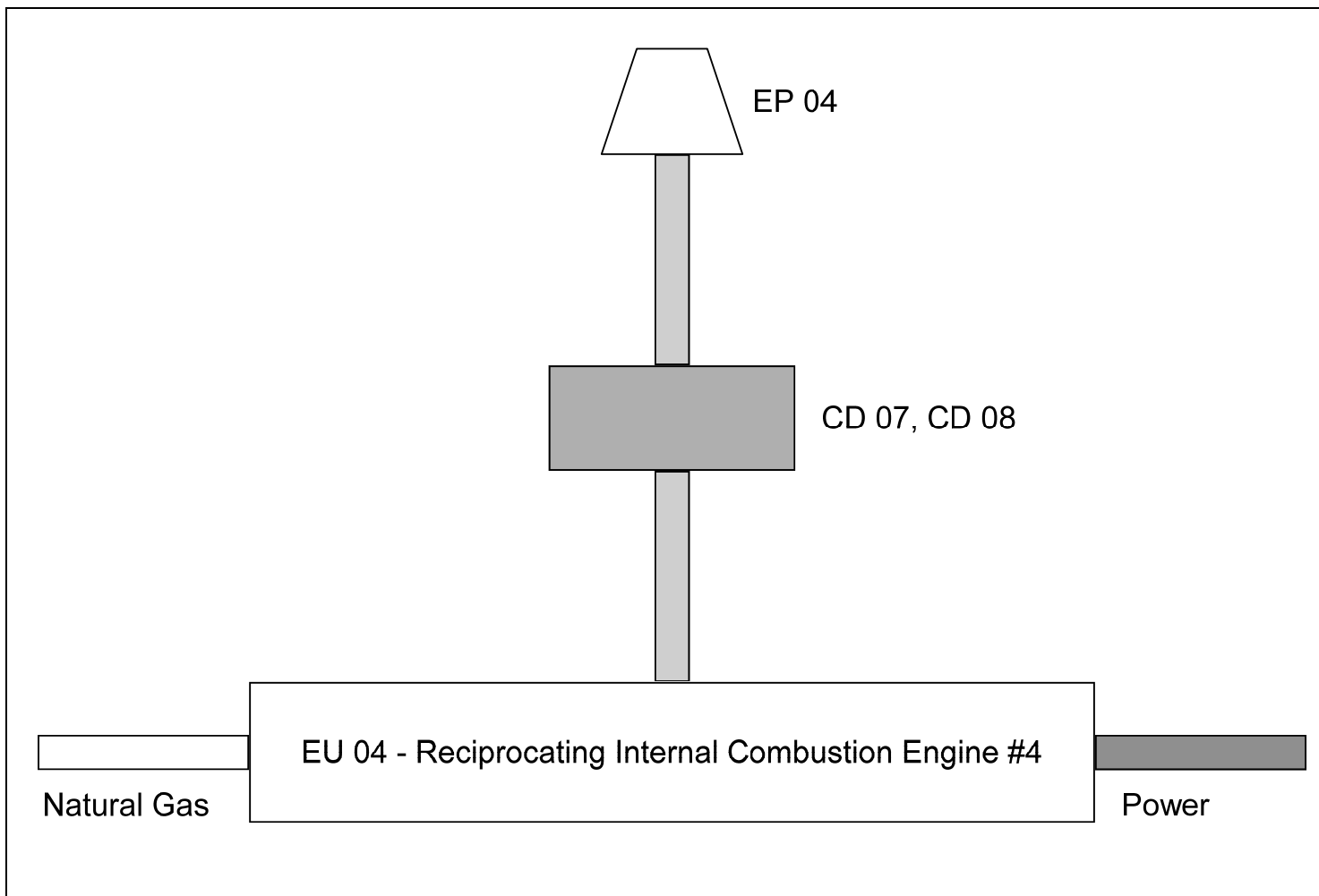
Title V Operating Permit Application
SCHEMATIC - PROCESS FLOW DIAGRAM

Company/Facility Name Kentucky Municipal Energy Agency (KYMEDIA)



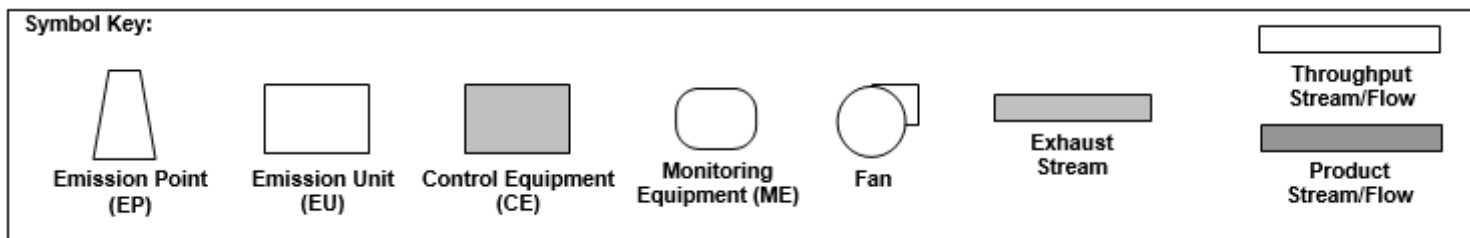
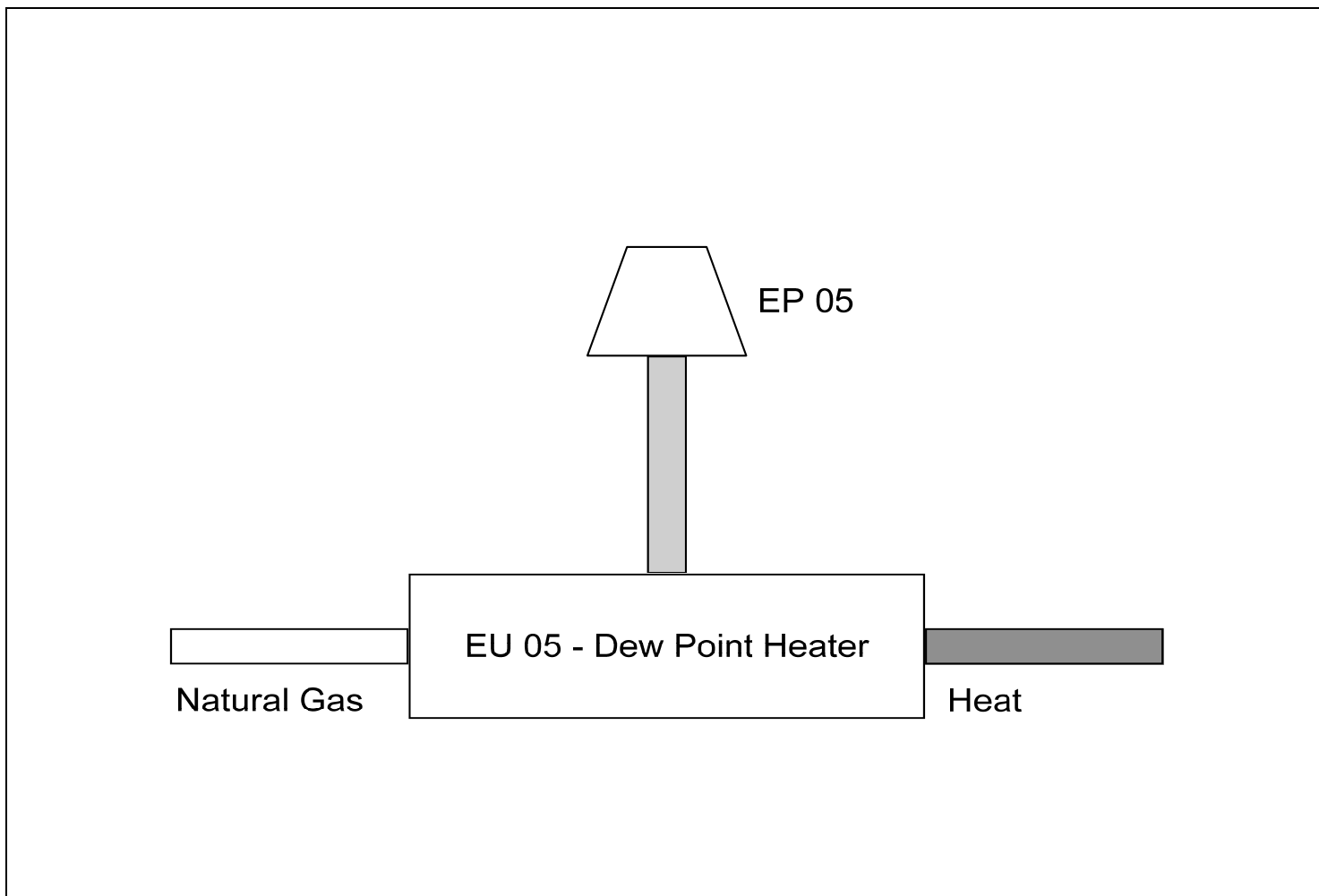
Title V Operating Permit Application
SCHEMATIC - PROCESS FLOW DIAGRAM

Company/Facility Name Kentucky Municipal Energy Agency (KYMEDIA)



Title V Operating Permit Application
SCHEMATIC - PROCESS FLOW DIAGRAM

Company/Facility Name Kentucky Municipal Energy Agency (KYMEDIA)



Doc. Name	Emission data sheet		
	6/6/2024		
Doc. ID	DESA00025696	Revision	a
Doc. Type	Data Sheet	Pages	1 (4)
Author	Raudaskoski, Riitta - Energy Business	Status	Finalized
Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

This document provides flue gas emissions, i.e. maximum average values for emissions measured over a period of minimum 60 minutes. The emissions are based on the site conditions, gas composition and measurement methods specified in this document.

Engine: **Wärtsilä® 18V50SG-D, 514 rpm (constant speed), CR 11.5**

Site conditions:

Altitude above sea level	400 ft
Ambient temperature	-23/+105 °F
Average relative humidity	71-81 %

Gas composition:

The emissions are valid for following gas composition. It is understood that variations in the gas composition inside this specification will occur and are permitted; however sudden extreme changes in gas temperature, pressure or composition are not allowed.

Methane number:		92	
Methane, min	CH ₄	95.700 mol-%	
Ethane, max	C ₂ H ₆	2.268 mol-%	
Propane, max	C ₃ H ₈	0.101 mol-%	Note 1)
i-Butane, max	C ₄ H ₁₀	0.013 mol-%	Note 1)
n-Butane, max	C ₄ H ₁₀	0.010 mol-%	Note 1)
i-Pentane, max	C ₅ H ₁₂	0.004 mol-%	Note 1)
n-Pentane, max	C ₅ H ₁₂	0.002 mol-%	Note 1)
Hexane, max	C ₆ H ₁₄	0.000 mol-%	Note 1)
Heptane and higher hydro carbons, max		0.005 mol-%	
Nitrogen	N ₂	0.273 mol-%	
Carbon dioxide	CO ₂	1.624 mol-%	
Total sulphur, max S		5 mg/kg	

Note 1) VOC emissions in gas operation depend on the composition of the pipeline natural gas. This document includes a table with corrected VOC emissions after the emission control system for natural gas with concentrations of C₃ to C₆ hydrocarbons in excess of the values specified above.

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	6/6/2024		
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Other gas parameters according to Wärtsilä's specification. Aromatic hydrocarbons, silicon based compounds or impurities resulting from the operating and maintenance of the gas delivery systems are not allowed.

Lubricating oil quality according to Wärtsilä specifications for gas engines

SCR reducing agent according to Wärtsilä's specification DBAC197648 (rev d)

Flue gas emissions after emission control system² at steady load as 60 min averages:

Engine load	%	100
NO _x as NO ₂	ppm-v at 15% O ₂ , dry	4.5
CO	ppm-v at 15% O ₂ , dry	15
VOC (NMNEHC) as CH ₄ ^{Note 1)}	ppm-v at 15% O ₂ , dry	26
NH ₃	ppm-v at 15% O ₂ , dry	10
CH ₂ O, formaldehyde	ppm-v at 15% O ₂ , dry	0.7
C ₂ H ₄ O, acetaldehyde	ppm-v at 15% O ₂ , dry	1.0
C ₃ H ₈ O, acrolein	ppm-v at 15% O ₂ , dry	1.0
CH ₃ OH, methanol	ppm-v at 15% O ₂ , dry	0.7
PM ₁₀ (total)	mg/Nm ³ * at 15% O ₂ , dry	12

*mg/Nm³ defined at 0°C and 101.325 kPa (abs.)

Correction based upon the influence of gas composition on VOC emissions:

The VOC concentration of the flue gas in the stack is dependent on the composition of the natural gas. If the concentration = sum of propane + butane + pentane + hexane (C₃H₈ + C₄H₁₀ + C₅H₁₂ + C₆H₁₄) in the pipeline natural gas deviate the values specified in paragraph "Gas composition" in this document the VOC emissions shall be corrected according to the table below. In the table the sum of propane + butane + pentane + hexane is denoted C_{GasVOC}.

	VOC guarantee * factor
Concentration of VOC components in feed natural gas	Factor for VOC correction
0 mol-% ≤ C _{GasVOC} < 0.50 mol-%	1
0.50 mol-% ≤ C _{GasVOC} < 1.00 mol-%	1.3
1.00 mol-% ≤ C _{GasVOC} < 1.50 mol-%	1.6

² Minimum allowed engine load equipped with emission control system is 10%

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Doc. ID	DESA00025696	Revision	a
Doc. Type	Data Sheet	Pages	3 (4)
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Opportunity	KYMEA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

Time to reach compliance

The time required to reach compliance with the emission levels specified in this document will depend on operating conditions and on the temperature of the catalyst system at start. Compliance with emission data in this document will for a normal start sequence and under normal conditions be reached within 10 to 30 minutes from start signal.

Measurement methods

Emission data provided in this document is based upon the emission measurement methods listed below.

Emission data assumes that individual compounds identified above the sensitivity limit, but at concentrations below the lower limit of detection are reported as maximum one-half of the daily lower-limit of calibration. Measurements shall be performed so that minimum feasible detection limits are achieved if this is required for determining compliance with emission guarantees.

The flue gas stack emission measurements will be performed at steady operating condition of the engine. Prior to the start of the flue gas emission (stack) measurements, the engine shall have reached steady state operating conditions and the flue gas temperature measured after the emission control system shall be allowed to reach normal operating temperature.

Sufficiently long measurement sampling periods and number of samples shall be taken in order to get statistically representative results. To ensure accurate particulate matter (PM₁₀) emission results of 3 samples are to be collected with a minimum sampling time of 1 hour per sample. Based on the judgement of the measurement consultant, the results of individual samples with abnormally high deviation shall be excluded.

Oxygen (O₂): EPA Method 3A: Determination of Oxygen and Carbon Dioxide Emissions from Stationary Sources.

Nitrogen oxides (NO_x): EPA Method 7E: Determination of nitrogen oxides from stationary sources.

Carbon monoxide (CO): EPA Method 10: Determination of carbon monoxide emissions from stationary sources.

Volatile organic compounds (VOC defined as Non Methane Non Ethane Hydrocarbons): EPA Method 18: Measurement of gaseous organic compound emissions by gas chromatography. VOC is calculated as the sum of relevant components, which for a gas engine equipped with a high efficiency catalyst are considered to be: propane, n-butane, n-pentane and n-hexane (only if existing in NG fuel).

PM₁₀ (total): Total PM₁₀ is defined as the sum of the particulate matter measured with a combination of EPA 5 and 202 methods

EPA Method 5 (front half): Determination of particulate emissions from stationary sources

EPA Method 202 Determination of condensable particulate matter from stationary sources.



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Opportunity	KYMEDIA 75MW_4x18V50SG (OP845811) Raudaskoski, Riitta		

Ammonia (NH₃): Bay Area Air Quality Management District (BAAQMD) test Method ST-1B: Ammonia integrated sampling.

Formaldehyde (HCHO): EPA Method 323: Measurement of formaldehyde emissions from natural gas-fired stationary sources-acetyl acetone derivatization method. In case formaldehyde guarantee is exceeded or if significant interference from acetaldehyde is suspected CARB Method 430: Determination of Formaldehyde and Acetaldehyde in Emissions from stationary sources shall be used.

HAP: Measurements shall be performed using method suitable for measuring low levels of specified HAP components. Methods include EPA Method 323: Measurement of formaldehyde emissions from natural gas-fired stationary sources-acetyl acetone derivatization method plus EPA Method 18: Measurement of gaseous organic compound emissions by gas chromatography, adsorption tube procedure only.

Speciated HAPs include formaldehyde, acetaldehyde, acrolein and methanol as identified in USA EPA "National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines: Signed Final Rule" February 2004.

Based upon mutual written consent, evaluation of emission levels can be made using alternative methods.



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