From:	Merritt McGlynn
To:	Bailey, Brian (P.E.); Piktel, Joseph; Zaman, Muhammad; Hackenberg, Martha
Cc:	Lily Hassan; Debra Raggio; John Slade; Colleen Nagel
Subject:	[External] RE: KDI Wyalusing Power LLC Plan Approval 08-00060A Technical Deficiency Letter 04-23-2025
Date:	Tuesday, May 6, 2025 10:05:35 AM
Attachments:	image001.png KDI Wyalusing Energy Center Technical Deficiency Letter Response (05.06.2025).pdf Klondike Emissions Inventory (04-25-2025).xlsx

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Good morning,

Following up from our discussion last week regarding your April 23 letter requesting additional information for the pending Plan Approval, please see attached for a letter response and a revised spreadsheet.

To address the Department's concerns regarding potential emissions and major source applicability, and to establish practically enforceable limits, the Facility is proposing the following:

- Short-term maximum emissions rates presented in Table E-3 in lb/hr and lb/MMBtu based on the maximum potential emissions rate across all operating scenarios provided by the equipment vendor.
- Annual emissions rate presented in Table E-5, based on GE Case Number 5, with the combustion turbines operating at maximum load at an average temperature of 59 degrees F.
- Annual emissions are based on a proposed annual equivalent fuel usage of 18,560 million standard cubic feet of natural gas, for all eight proposed CTs combined, on a rolling 12-consecutive month period.
- For each CT: the facility will install both NOx and CO CEMS, as well as individual fuel flow meters to monitor emissions and fuel use, respectively.
- Compliance with short-term emissions rates will be demonstrated by initial stack testing and NOx and CO CEMS data.
- Ongoing compliance with annual emissions rates will be based on fuel consumption and emissions rates established during the initial stack testing, and NOx and CO CEMS data.
- The facility will calculate actual emissions and fuel consumption to document minor source status.

Please review the attached materials and let us know if you have any questions or if you would like to set up a meeting to discuss. We appreciate your attention to this project and look forward to hearing from you soon.

Thank you,

Merritt

Merritt McGlynn / Senior Managing Consultant
610.422.1133 / Profile / LinkedIn

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From: "Bailey, Brian (P.E.)" <bribailey@pa.gov>
Date: April 23, 2025 at 3:35:26 PM EDT
To: Debra Raggio <draggio@newfortressenergy.com>
Cc: "Piktel, Joseph" <jpiktel@pa.gov>, "Zaman, Muhammad" <mzaman@pa.gov>, "Hackenberg, Martha" <mahackenbe@pa.gov>
Subject: KDI Wyalusing Power LLC Plan Approval 08-00060A Technical Deficiency Letter 04-23-2025

Ms. Raggio,

Please see the attached technical deficiency letter regarding KDI Wyalusing Power LLC.

Sincerely,

Brian K. Bailey, P.E. | Environmental Engineer Manager
Department of Environmental Protection | Air Quality
North Central Regional Office
208 West Third Street Suite 101 | Williamsport PA 17701
Phone: 570.974.2604 | Fax: 570.327.3420
www.dep.pa.gov

111 W 19th Street, 8th Floor
New York, NY 10011

May 6, 2025

Brian K. Bailey, P.E.
Chief, Facilities Permitting Section, Air Quality Program
Pennsylvania Department of Environmental Protection
Northcentral Regional Office
208 West Third Street, Suite 101
Williamsport, PA 17701

Re: Tech Deficiency Letter: Need Additional Justification
Plan Approval 08-00060A
Wyalusing Township, Bradford County

Dear Mr. Bailey:

KDI Wyalusing Power LLC (KDI) is submitting this letter in response to the Pennsylvania Department of Environmental Protection (PADEP) Northcentral Regional Office's April 23, 2025 letter requesting additional information and clarifications on Plan Approval 08-00060A for the KDI Wyalusing Energy Center (Facility). KDI is proposing to construct and operate the Facility, a natural gas power generation facility, to be located in Wyalusing Township, Bradford County, Pennsylvania.

To continue the review of Plan Approval 08-00060A application, additional information, and/or clarification with respect to the following has been provided:

1. **The application requests emission limits based upon the "worst case scenario" regarding atmospheric conditions for all air contaminants from the combustion turbines (i.e. VOC 2.19 lb/hr). However, the potential emissions summarized in the table listed in Table E-5 of Appendix E of the application calculates the potential emissions from the turbines using the emission characteristics during the average atmospheric conditions of the facility's location (i.e. VOC 1.31 lb/hr). The facility would be major for VOCs and CO by using the maximum allowable emission factors when taking into account startup and shutdown emissions. Assuming the turbines are operated for the maximum requested hours in any 12 consecutive month period (55,370 hours), the calculations show that VOC emission are in excess of 50 TPY and CO emissions are in excess of 100 TPY. consequently, the facility, as proposed, will become a major (Title V) facility.**

   The proposed simple-cycle combustion turbines (CTs) at this facility are intended to produce a constant and steady power load to sustain the operations of the planned adjacent data center. There is not sufficient electrical power from the local electric transmission grid to accommodate the power demand of the planned data center, requiring the construction and operation of a dedicated, constant, and reliable power supply. The simple-cycle CTs will generate and provide reliable, constant power for the proposed data center, and do not plan to sell power to the grid.

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Simple-cycle CTs are more responsive, with faster startup times, compared to combined-cycle CTs. The proposed operating profile of the simple-cycle CTs differs from combined-cycle CTs that are dedicated base-load units supplying power directly to the regional electric grid (i.e., PJM). The proposed data center has a required and constant power draw from the CTs; while dedicated grid units generate a power load in response to the variations in regional grid demand, and can be called to start-up, increase or decrease load, or shut down by the grid operator.

For the project, KDI developed a potential-to-emit (PTE) basis for both short-term (i.e., lb/hr) and annual (i.e., tpy) emissions. KDI analyzed the CT operating profiles across varying operating load and ambient conditions. For compliance purposes, KDI proposed short-term emissions rates for each pollutant based on the maximum value across all CT steady-state operating conditions. The proposed maximum short-term emissions rate represents the most conservative value to demonstrate compliance on a short-term basis, including required compliance stack tests and continuous emissions monitoring systems (CEMS) data. Selecting a maximum short-term value provides a reasonable compliance margin to account for any potential upsets in operation, varying ambient conditions which affect maximum firing rates, or variations in operating loads.

To establish annual emissions totals, KDI selected emissions rates from a specific operating case at average ambient conditions of 59 degrees Fahrenheit (°F) and a maximum operating load. The emissions rates at this operating case are used to establish an annual PTE for the project that accounts for the variability of operating loads and ambient conditions throughout the year, as stated in footnote (b) of Table E-5 of the Plan Approval Application. Average ambient conditions were utilized to account for the variations in simple-cycle CT operating loads that are dependent upon the ambient conditions (e.g., temperature, relative humidity) to produce the megawatt capacity required to sustain the power demand of the facility.

For the proposed project, it is not appropriate or representative of projected operations to establish an annual emissions limitation over a 12-consecutive month period based on a maximum short-term emissions rate. To demonstrate compliance with short-term emissions limits, the facility will monitor emissions compliance by stack testing and CEMS data. To demonstrate compliance with annual emissions limits, the facility will use CEMS data for NOx and CO and will monitor natural gas fuel use via CT fuel flow monitors and emissions factors resulting from the stack test program. The emissions monitoring and total fuel consumption limit will confirm KDI's compliance with emission limits.

In response to PADEP's recent request for additional information, the facility is providing a revised emissions calculations spreadsheet, specifically Tables E-5 and E-6. The emissions calculations have been updated to reflect the proposed cumulative total heat input as million British thermal units (MMBtu) per year (yr) and total annual natural gas fuel use in million standard cubic feet (MMSCF) per year, as shown in Table 1 below. The equivalent heat input and fuel use limitations will be monitored by each CT fuel meter for a rolling 12-consecutive month period.

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Table 1
Single-Cycle CT Annual Heat Input

Number of CTs Operating Simultaneously	Operating Time (hr/yr)	Equivalent Heat Input (MMBtu/yr)	Equivalent Fuel Use (MMSCF/yr)
6	6,000	2,061,180	2,011
7	2,710	930,966	908
8	50	17,177	17
Cumulative Total	55,370	19,021,256	18,560

2. **The plan approval will need a practically enforceable limit that restricts the emissions below major emissions thresholds. Please provide the Department with a proposal to limit the CO and VOC potential emissions below the major emissions thresholds.**

   In addition to establishing an annual fuel throughput limitation, monitored by fuel flow meters, the CTs will be equipped with a nitrogen oxides (NO_X) CEMS. In response to PADEP's request to establish practically enforceable limits for carbon monoxide (CO) and volatile organic compounds (VOC), KDI proposes to install a CO CEMS. The CO CEMS will be used as a surrogate to indicate continuous compliance with VOC limits. KDI will submit quarterly CEMS reports for NO_X and CO, and will track fuel use at each CT. Emissions data will be reported annually to demonstrate that the facility does not trigger major source emissions thresholds.

Should you have any questions about this submittal, please feel free to contact me at 703-778-0841 x123 or draggio@newfortressenergy.com.

Sincerely,
KDI Wyalusing Power LLC

Debra Raggio
Executive Vice President, Head of Regulatory

cc: Joseph L. Piktel (PADEP)
Lily Hassan (KDI)
Merritt McGlynn (ALL4 LLC)
John Slade (ALL4 LLC)

Table E-1

Performance/Emissions Specifications for Single-Cycle Combustion Turbine [a]

KDI Wyalusing Power LLC - Wyalusing, PA

Specifications																								
Case Number		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Case Description		-10°F, 100% Load	0°F, 100% Load	10°F, 98.4% Load	32°F, 93.7% Load	59°F, 99.5% Load	70°F, 100% Load	92°F, 100% Load	105°F, 100% Load	-10°F, 75% Load	0°F, 75% Load	10°F, 75% Load	32°F, 75% Load	59°F, 75% Load	70°F, 75% Load	92°F, 75% Load	105°F, 75% Load	-10°F, 50% Load	0°F, 50% Load	10°F, 50% Load	32°F, 50% Load	59°F, 50% Load	70°F, 50% Load	92°F, 50% Load	105°F, 50% Load
Site Conditions																								
Ambient Temperature	°F	-10	0	10	32	59	70	92	105	-10	0	10	32	59	70	92	105	-10	0	10	32	59	70	92	105
Ambient Relative Humidity	%	90%	70%	65%	60%	60%	50%	45%	35%	90%	70%	65%	60%	60%	50%	45%	35%	90%	70%	65%	60%	60%	50%	45%	35%
Plant Status																									
Gas Turbine Load	%	100.00	100.00	98.40	93.70	99.50	100.00	100.00	100.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Gas Turbines Operating	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fuel Data (Natural Gas)																									
Combustion Turbine Heat Consumption	MMBtu/hr, HHV	328.60	330.80	329.30	322.30	312.30	294.60	254.00	232.10	257.10	258.60	261.10	266.50	248.30	235.60	206.00	189.90	192.90	194.00	195.70	199.40	187.40	179.10	159.30	148.40
Pre-Control Exhaust Gas																									
Ar	%Vol	0.87	0.87	0.87	0.86	0.86	0.86	0.85	0.85	0.88	0.88	0.88	0.87	0.87	0.87	0.86	0.86	0.89	0.89	0.89	0.88	0.88	0.88	0.87	0.87
CO_2	%Vol	3.17	3.21	3.24	3.28	3.35	3.30	3.20	3.14	2.79	2.82	2.87	2.98	3.02	3.00	2.95	2.91	2.47	2.50	2.54	2.65	2.70	2.70	2.67	2.66
H_2O	%Vol	9.85	10.03	10.22	10.65	11.49	11.43	11.78	11.84	8.25	8.40	8.66	9.32	10.01	10.14	10.74	10.89	6.99	7.13	7.35	7.95	8.70	8.89	9.64	9.88
N_2	%Vol	72.82	72.70	72.58	72.28	71.68	71.68	71.33	71.24	73.77	73.68	73.52	73.09	72.58	72.46	71.95	71.81	74.51	74.42	74.28	73.90	73.36	73.20	72.60	72.40
O_2	%Vol	13.28	13.17	13.08	12.91	12.62	12.72	12.83	12.92	14.29	14.21	14.06	13.72	13.52	13.52	13.50	13.52	15.12	15.04	14.92	14.61	14.37	14.32	14.21	14.19
Molecular Weight	lb/lbmol	28.16	28.14	28.12	28.07	28.00	27.99	27.95	27.93	28.29	28.28	28.26	28.19	28.13	28.11	28.04	28.02	28.40	28.39	28.37	28.32	28.25	28.22	28.13	28.11
Temperature	°F	816.80	829.80	845.40	877.00	921.90	926.60	948.60	963.20	749.10	761.60	781.50	827.80	874.60	890.80	923.00	942.90	713.30	725.50	744.90	790.30	842.80	863.10	903.00	927.80
Mass Flow	lb/hr	758,880.00	754,920.00	743,760.00	715,680.00	679,680.00	651,600.00	578,880.00	538,560.00	672,840.00	669,240.00	663,120.00	649,440.00	597,240.00	569,160.00	506,520.00	471,960.00	560,520.00	557,280.00	551,880.00	539,640.00	496,800.00	474,120.00	424,800.00	397,440.00
Standard Volume Flow	Standard ft^3/min (SCFM)	173,109.81	172,321.55	169,864.68	163,727.56	155,929.44	149,491.72	133,035.27	123,822.30	152,734.42	151,974.16	150,712.29	147,948.68	136,371.43	130,047.60	116,012.32	108,187.05	126,748.62	126,071.01	124,939.17	122,397.71	112,964.26	107,908.82	96,977.17	90,807.35
Dry Standard Volume Flow	DSCFM	156,058.50	155,037.70	152,504.51	146,290.58	138,013.15	132,404.81	117,363.71	109,161.74	140,133.83	139,208.33	137,660.61	134,159.86	122,720.65	116,860.78	103,552.60	96,405.48	117,888.89	117,082.15	115,756.14	112,667.09	103,136.37	98,315.72	87,628.57	81,835.59
Dry Standard Volume Flow	DSCFM @ 15% O_2	201,553.52	203,125.67	202,133.09	198,112.15	193,686.25	183,571.42	160,529.69	147,645.88	156,997.39	157,848.09	159,592.97	163,265.73	153,504.82	146,175.01	129,879.53	120,588.55	115,491.15	116,288.37	117,325.72	120,114.57	114,149.23	109,647.03	99,361.88	93,070.64
Pre-Control Exhaust Gas Emissions																									
NO_x	ppmvd @ 15% O_2	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
NO_x	lb/hr	29.21	29.46	29.29	28.63	27.81	26.27	22.64	20.68	22.64	22.75	23.00	23.49	21.88	20.76	18.15	16.75	16.61	16.72	16.85	17.19	16.15	15.46	13.76	12.80
CO	ppmvd @ 15% O_2	100.10	96.60	91.30	82.70	60.60	49.60	29.90	25.10	101.30	97.20	90.60	72.30	50.90	44.90	32.50	31.10	158.40	155.20	145.90	113.20	85.90	82.20	74.10	80.90
CO	lb/hr	71.21	69.30	65.14	57.67	41.05	31.73	16.48	12.64	55.86	53.86	50.75	41.35	27.12	22.70	14.36	12.69	64.07	63.18	59.86	47.39	33.78	30.95	24.82	25.21
VOC	ppmvd @ 15% O_2 as CH_4	12.00	11.60	11.00	9.90	7.30	5.50	2.50	2.00	12.20	11.70	10.90	8.70	5.70	4.80	2.90	2.70	19.00	18.60	17.50	13.60	10.30	9.90	8.90	9.70
VOC	ppmvd @ 15% O_2 as C_3H_8	4.00	3.87	3.67	3.30	2.43	1.83	0.83	0.67	4.07	3.90	3.63	2.90	1.90	1.60	0.97	0.90	6.33	6.20	5.83	4.53	3.43	3.30	2.97	3.23
VOC	lb/hr as methane	4.89	4.77	4.49	3.95	2.83	2.02	0.79	0.58	3.85	3.71	3.50	2.85	1.74	1.39	0.73	0.63	4.40	4.34	4.11	3.26	2.32	2.13	1.71	1.73
VOC	lb/hr as propane	4.48	4.37	4.12	3.62	2.60	1.85	0.72	0.53	3.53	3.40	3.21	2.61	1.59	1.27	0.67	0.58	4.04	3.98	3.77	2.99	2.13	1.96	1.57	1.59
Catalyst Inlet Exhaust Gas																									
Tempering Air Flow	Actual ft^3/min (ACFM)	4,750.00	4,750.00	4,750.00	11,750.00	22,000.00	22,750.00	26,250.00	28,500.00	4,750.00	4,750.00	4,750.00	4,750.00	9,750.00	12,750.00	18,000.00	21,000.00	4,750.00	4,750.00	4,750.00	4,750.00	4,750.00	6,250.00	12,000.00	15,250.00
Tempering Air Flow	lb/hr	24,529.44	23,991.31	23,473.16	55,384.33	97,905.64	98,852.58	108,498.37	114,120.53	24,529.44	23,991.31	23,473.16	22,389.41	43,390.00	55,400.89	74,398.88	84,088.81	24,529.44	23,991.31	23,473.16	22,389.41	21,138.72	27,157.30	49,599.26	61,064.50
Ar	%Vol	0.87	0.87	0.87	0.86	0.87	0.87	0.86	0.85	0.88	0.88	0.88	0.87	0.87	0.87	0.86	0.86	0.89	0.89	0.89	0.88	0.88	0.88	0.87	0.87
CO_2	%Vol	3.07	3.11	3.14	3.05	2.94	2.88	2.71	2.60	2.70	2.73	2.78	2.88	2.82	2.74	2.58	2.48	2.37	2.40	2.44	2.55	2.59	2.56	2.40	2.31
H_2O	%Vol	9.55	9.73	9.92	9.95	10.28	10.27	10.71	11.01	7.97	8.12	8.38	9.04	9.46	9.47	10.00	10.32	6.71	6.85	7.06	7.66	8.42	8.55	9.15	9.51
N_2	%Vol	72.98	72.86	72.74	72.65	72.31	72.26	71.79	71.47	73.92	73.83	73.67	73.24	72.86	72.78	72.24	71.92	74.65	74.56	74.43	74.04	73.50	73.36	72.77	72.42
O_2	%Vol	13.51	13.40	13.31	13.46	13.60	13.71	13.93	14.06	14.52	14.44	14.29	13.95	13.99	14.12	14.31	14.41	15.36	15.28	15.16	14.85	14.62	14.65	14.80	14.89
Molecular Weight at Inlet	lb/lbmol	28.18	28.16	28.15	28.13	28.09	28.08	28.02	27.98	28.32	28.30	28.28	28.22	28.17	28.16	28.09	28.04	28.42	28.41	28.39	28.34	28.27	28.24	28.16	28.12
Temperature at Inlet	°F	793.75	807.10	822.76	822.60	823.58	823.99	824.11	823.45	724.81	737.67	757.64	803.98	824.58	824.46	824.78	824.38	685.43	698.04	717.50	762.70	813.68	823.78	824.33	824.96
Mass Flow at Inlet	lb/hr	783,409.44	778,911.31	767,233.16	771,064.33	777,585.64	750,452.58	687,378.37	652,680.53	697,369.44	693,231.31	686,593.16	671,829.41	640,630.00	624,560.89	580,918.88	556,048.81	585,049.44	581,271.31	575,353.16	562,029.41	517,938.72	501,277.30	474,399.26	458,504.50
Standard Volume Flow at Inlet	Standard ft^3/min (SCFM)	178,552.10	177,645.53	175,075.38	176,040.84	177,784.80	171,623.13	157,553.97	149,830.30	158,176.71	157,298.13	155,922.99	152,926.39	146,057.33	142,450.93	132,825.15	127,350.84	132,190.91	131,394.99	130,149.87	127,375.42	117,683.03	113,988.88	108,185.72	104,723.92
Dry Standard Volume Flow at Inlet	DSCFM	161,496.67	160,354.79	157,703.95	158,527.71	159,499.85	153,993.06	140,684.28	133,331.25	145,572.00	144,525.41	142,860.05	139,106.79	132,243.16	128,959.68	119,543.83	114,214.59	123,327.06	122,399.23	120,955.58	117,614.01	107,775.53	104,246.55	98,289.39	94,768.39
Dry Standard Volume Flow at Inlet	DSCFM @ 15% O_2	202,192.42	203,778.20	202,800.92	199,820.39	197,336.85	187,537.95	166,100.94	154,652.26	157,451.08	158,312.88	160,083.53	163,837.99	154,899.72	148,150.09	133,459.15	125,539.80	115,816.73	116,625.77	117,684.94	120,551.75	114,724.28	110,499.19	101,586.97	96,514.32

Table E-1

Performance/Emissions Specifications for Single-Cycle Combustion Turbine [a]

KDI Wyalusing Power LLC - Wyalusing, PA

Specifications																								
Case Number		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Case Description		-10°F, 100% Load	0°F, 100% Load	10°F, 98.4% Load	32°F, 93.7% Load	59°F, 99.5% Load	70°F, 100% Load	92°F, 100% Load	105°F, 100% Load	-10°F, 75% Load	0°F, 75% Load	10°F, 75% Load	32°F, 75% Load	59°F, 75% Load	70°F, 75% Load	92°F, 75% Load	105°F, 75% Load	-10°F, 50% Load	0°F, 50% Load	10°F, 50% Load	32°F, 50% Load	59°F, 50% Load	70°F, 50% Load	92°F, 50% Load	105°F, 50% Load
Post-Control Exit Exhaust Gas Emissions																								
NO_x	ppmvd @ 15% O_2	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
NO_x	lb/hr	2.82	2.85	2.83	2.64	2.40	2.26	1.89	1.69	2.18	2.19	2.22	2.26	2.03	1.88	1.57	1.41	1.59	1.60	1.61	1.65	1.54	1.46	1.23	1.10
NO_x	lb/MMBtu	8.59E-03	8.61E-03	8.60E-03	8.19E-03	7.70E-03	7.66E-03	7.42E-03	7.28E-03	8.47E-03	8.47E-03	8.49E-03	8.50E-03	8.17E-03	7.98E-03	7.62E-03	7.44E-03	8.23E-03	8.24E-03	8.23E-03	8.25E-03	8.24E-03	8.14E-03	7.69E-03	7.44E-03
CO	ppmvd @ 15% O_2	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CO	lb/hr	3.44	3.47	3.45	3.22	2.93	2.75	2.30	2.06	2.65	2.67	2.70	2.76	2.47	2.29	1.91	1.72	1.93	1.95	1.96	2.00	1.88	1.77	1.49	1.34
CO	lb/MMBtu	0.010	0.010	0.010	9.98E-03	9.37E-03	9.32E-03	9.04E-03	8.87E-03	0.010	0.010	0.010	0.010	9.95E-03	9.71E-03	9.28E-03	9.05E-03	0.010	0.010	0.010	0.010	0.010	9.91E-03	9.36E-03	9.05E-03
VOC	ppmvd @ 15% O_2 as CH_4	5.70	5.40	4.90	4.10	3.70	2.80	1.20	1.00	6.60	6.20	5.70	4.40	2.80	2.30	1.40	1.30	10.30	10.00	9.30	7.00	4.90	4.60	4.10	4.50
VOC	ppmvd @ 15% O_2 as C_3H_8	1.90	1.80	1.63	1.37	1.23	0.93	0.40	0.33	2.20	2.07	1.90	1.47	0.93	0.77	0.47	0.43	3.43	3.33	3.10	2.33	1.63	1.53	1.37	1.50
VOC	lb/hr as methane	2.32	2.22	2.00	1.64	1.43	1.02	0.38	0.29	2.08	1.97	1.83	1.44	0.85	0.67	0.35	0.30	2.39	2.33	2.18	1.68	1.10	0.99	0.79	0.80
VOC	lb/hr as propane	2.13	2.03	1.83	1.50	1.31	0.94	0.35	0.26	1.91	1.80	1.68	1.32	0.78	0.61	0.32	0.28	2.19	2.14	2.00	1.54	1.01	0.91	0.72	0.74
VOC	lb/MMBtu as propane	6.48E-03	6.15E-03	5.57E-03	4.65E-03	4.21E-03	3.19E-03	1.37E-03	1.14E-03	7.43E-03	6.97E-03	6.42E-03	4.96E-03	3.15E-03	2.59E-03	1.57E-03	1.46E-03	0.01	0.01	0.01	7.71E-03	5.40E-03	5.07E-03	4.52E-03	4.95E-03
NH_3 Slip	ppmvd @ 15% O_2	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
NH_3 Slip	lb/hr	2.16	2.18	2.17	2.12	2.06	1.94	1.67	1.53	1.68	1.68	1.70	1.74	1.62	1.54	1.34	1.24	1.23	1.24	1.25	1.27	1.20	1.14	1.02	0.95
CO_2	lb/hr	38,438.34	38,695.69	38,520.22	37,701.39	36,531.63	34,461.15	29,711.92	27,150.15	30,074.55	30,250.01	30,542.45	31,174.12	29,045.16	27,559.56	24,097.07	22,213.76	22,564.69	22,693.36	22,892.22	23,325.03	21,921.32	20,950.42	18,634.29	17,359.25
CO_2	lb/MMBtu	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98	116.98
SO_x	lb/hr as SO_2	0.46	0.46	0.46	0.45	0.44	0.41	0.35	0.32	0.36	0.36	0.36	0.37	0.35	0.33	0.29	0.26	0.27	0.27	0.27	0.28	0.26	0.25	0.22	0.21
SO_2 [c]	lb/MMBtu	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03
$PM_{10}/PM_{2.5}$	lb/hr	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
$PM_{10}/PM_{2.5}$	lb/MMBtu	9.13E-03	9.07E-03	9.11E-03	9.31E-03	9.61E-03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.013	0.015	0.016	0.016	0.015	0.015	0.015	0.016	0.017	0.019	0.020
PM filterable	lb/hr	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PM filterable	lb/MMBtu	9.13E-03	9.07E-03	9.11E-03	9.31E-03	9.61E-03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Sulfuric Acid Mist [d]	lb/hr	0.07	0.07	0.07	0.07	0.07	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03
Sulfuric Acid Mist [d]	lb/MMBtu	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04	2.13E-04
Formaldehyde [e]	lb/hr	0.09	0.09	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04
Formaldehyde [e]	lb/MMBtu	2.62E-04	2.62E-04	2.62E-04	2.64E-04	2.69E-04	2.71E-04	2.78E-04	2.84E-04	2.61E-04	2.60E-04	2.61E-04	2.62E-04	2.65E-04	2.68E-04	2.76E-04	2.81E-04	2.55E-04	2.56E-04	2.56E-04	2.57E-04	2.60E-04	2.63E-04	2.71E-04	2.77E-04
CO_2 [b]	lb/MWh gross	1,239.93	1,242.76	1,249.14	1,265.23	1,281.68	1,294.89	1,350.94	1,395.10	1,293.51	1,295.35	1,299.16	1,307.61	1,351.65	1,380.75	1,460.86	1,521.92	1,455.77	1,457.65	1,460.63	1,467.56	1,530.20	1,574.44	1,694.52	1,783.99
CH_4 [b]	lb/hr	0.72	0.73	0.73	0.71	0.69	0.65	0.56	0.51	0.57	0.57	0.58	0.59	0.55	0.52	0.45	0.42	0.43	0.43	0.43	0.44	0.41	0.39	0.35	0.33
N_2O [b]	lb/hr	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03
GHG/CO_2e [b]	lb/hr	38,477.82	38,735.43	38,559.79	37,740.11	36,569.15	34,496.55	29,742.44	27,178.03	30,105.44	30,281.08	30,573.82	31,206.14	29,074.99	27,587.87	24,121.82	22,236.57	22,587.86	22,716.67	22,915.73	23,348.99	21,943.83	20,971.93	18,653.43	17,377.08
GHG/CO2e [b]	lb/MMBtu	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10	117.10
Heat and Mass Balance Summary																									
Plant Gross Output	kW	31,000.50	31,137.00	30,837.30	29,798.10	28,502.90	26,613.20	21,993.50	19,461.10	23,250.40	23,352.70	23,509.30	23,840.60	21,488.70	19,959.90	16,495.10	14,595.90	15,500.20	15,568.50	15,672.80	15,893.70	14,325.80	13,306.60	10,996.80	9,730.60
Generator Output, Gross	MW	31.00	31.14	30.84	29.80	28.50	26.61	21.99	19.46	23.25	23.35	23.51	23.84	21.49	19.96	16.50	14.60	15.50	15.57	15.67	15.89	14.33	13.31	11.00	9.73

[a] As supplied by Sisu Energy & Environmental in file "C24-127 TM2500 SAC Emissions Design REV2 non-calc.xlsx" provided 12/19/2024.

[b] CO_2 and CO_2e emissions factors obtained from 40 CFR Part 98, Subpart C, Tables C-1 and C-2. Global warming potentials obtained from Part 98, Subpart A, Table A-1.

	BTU/MW	10.60	10.62	10.68	10.82	10.96	11.07	11.55	11.93	11.06	11.07	11.11	11.18	11.55	11.80	12.49	13.01	12.45	12.46	12.49	12.55	13.08	13.46	14.49	15.25

40 CFR Part 98, Subpart A, Table A-1	
Pollutant	Global Warming Potential
CO_2	1
CH_4	28
N_2O	265

40 CFR Part 98, Subpart C, Tables C-1 and C-2				
Pollutant	**Value**	**Unit**	**Fuel**	**Reference**
CO_2	53.06	kg/MMBtu	NG	40 CFR Part 98, Subpart C, Table C-1
CH_4	1.00E-03	kg/MMBtu	NG	40 CFR Part 98, Subpart C, Table C-2
N_2O	1.00E-04	kg/MMBtu	NG	40 CFR Part 98, Subpart C, Table C-2

[c] Sulfur emissions factors calculated based on natural gas specifications as provided in Roberts Corrosion Services Natural Gas Analysis Report (attached) dated 01/08/2024.

[d] H_2SO_4 emissions factors conservatively calculated based on 10% molar conversion of SO_2 to SO_3 and 100% conversion of SO_3 to H_2SO_4.

[e] Although the facility is not a major source HAP, formaldehyde emissions conservatively calculated based on 40 CFR Part 63, Subpart YYYY using 91 parts per billion emissions standard.

Table E-2

Natural Gas Specifications

KDI Wyalusing Power LLC - Wyalusing, PA

Natural Gas Fuel Parameter	Value	Units
High Heating Value @ 60°F [(a)]	1,025	Btu/SCF
Sulfur Content [(a)]	0.003	ppm
Sulfur Content [(b)]	0.5	grains/100 scf
SO_2 emissions factor from gas combustion	0.0014	lb/MMBtu

[(a)] Natural gas specifications as provided in Roberts Corrosion Services Natural Gas Analysis Report (attached) dated 01/08/2024.

[(b)] As defined in 40 CFR §72.2 for "pipeline quality natural gas".

Table E-3

Maximum Hourly Heat Input and Post-Control Emissions During Steady-State Operations

KDI Wyalusing Power LLC - Wyalusing, PA

Gross Maximum Electrical Capacity [(a)]	31.1	MW total	
Maximum CT Heat Input (Natural Gas) [(a)]	330.80	MMBtu/hr	
Maximum Short Term Emissions Rates Per CT [(b)]			
Pollutant	**Post-Control Emissions Rate**		
	(ppmvd @ 15% O_2)	**(lb/hr)**	**(lb/MMBtu)** [(c)]
NO_X	2.5	2.85	8.61E-03
CO	5.0	3.47	0.01
VOC as propane	3.4	2.19	0.01
NH_3 Slip	5.0	2.18	6.59E-03
CO_2e	--	38,735.43	117.10
SO_2	--	0.46	1.39E-03
PM	--	3.00	0.02
PM_{10} and $PM_{2.5}$	--	3.00	0.02
Formaldehyde	--	0.09	2.62E-04
H_2SO_4	--	0.07	2.13E-04

[(a)] For compliance purposes, KDI has provided a worst-case short-term emissions rate, per CT, based on the maximum emissions rate across all operating loads and ambient conditions.

[(b)] No emissions of fluoride (F), hydrogen sulfide (H_2S), total reduced sulfur (TRS), or lead (Pb) are expected to occur.

[(c)] Lb/MMBtu emissions rates based on higher heating value (HHV) fuel basis.

Table E-4
Combustion Turbine Startup Emissions
KDI Wyalusing Power LLC - Wyalusing, PA

CT Startup Emissions Rates Per CT									
Event	Maximum Duration	NO_X	CO	VOC as Propane	$PM/PM_{10}/PM_{2.5}$	NO_X	CO	VOC as Propane	$PM/PM_{10}/PM_{2.5}$
	(min)	(lb/hr)				(lb/event)			
Startup Phase 1 [(a)]	10	16.20	97.20	3.30	3.00	2.70	16.20	0.55	0.50
Startup Phase 2 [(b)]	20	8.88	17.87	1.57	3.00	2.96	5.96	0.52	1.00
Total Startup	**30**	**25.08**	**115.07**	**4.87**	**6.00**	**5.66**	**22.16**	**1.07**	**1.50**

[(a)] Startup Phase 1 includes the duration of time from the turbine being turned on, to achieving NO_X emissions of 25 parts per million (ppm) with water injection.

[(b)] Startup Phase 2 includes the duration of time after Phase 1 for the turbine's flow to reach the temperature required for the optimum control guaranteed by the selective catalytic reduction and oxidation catalyst control technology. It is assumed that the average control efficiency during Phase 2 of NO_X, CO, and VOC is equal to half of the following guaranteed reductions during steady state operation at 59 °F and 50% load:

Pollutant	Phase 2 Control Efficiency
NO_X	45%
CO	47%
VOC	26%

Table E-6

Fire Water Pump Engine Emissions [a]

KDI Wyalusing Power LLC - Wyalusing, PA

Pollutant	Emissions Factor	Emissions Factor Units	Emissions Factor Source	PTE	
				(lb/hr)	(tpy)
NO_X	2.85	g/bhp-hr	40 CFR Part 60, Subpart IIII Table 4 [c]	0.79	0.20
CO	3.70	g/bhp-hr	40 CFR Part 60, Subpart IIII Table 4	1.02	0.25
VOC	0.15	g/bhp-hr	40 CFR Part 60, Subpart IIII Table 4 [c]	0.04	0.01
PM	0.22	g/bhp-hr	40 CFR Part 60, Subpart IIII Table 4 [d]	0.06	0.02
$PM_{10}/PM_{2.5}$	0.24	g/bhp-hr	(d)	0.07	0.02
SO_2	5.50E-03	g/bhp-hr	AP-42 Table 3.4-1 [e]	1.52E-03	3.79E-04
H_2SO_4	8.43E-04	g/bhp-hr	(f)	2.32E-04	5.81E-05
CO_2	73.96	kg/MMBtu	(g)	142.67	35.67
CH_4	3.00E-03	kg/MMBtu	(g)	5.79E-03	1.45E-03
N_2O	6.00E-04	kg/MMBtu	(g)	1.16E-03	2.89E-04
CO_2e	-	-	(g)	143.14	35.79
Pb	9.00E-06	lb/MMBtu	AP-42 Table 1.3-10	7.88E-06	1.97E-06

[a] Pump engine PTE calculated using the following parameters:

Parameter	Value
Fuel	Ultra Low Sulfur Diesel
Number of units	1
BHP	125
Conversion (Btu/hp-hr)	7,000
MMBtu/hr[b]	0.88
Diesel sulfur content, wt. %	0.0015
Max. hrs/yr	500

[b] Calculated from pump engine horsepower and Btu/hp-hr conversion factor found in AP-42 Chapter 3.3.

[c] Published emissions factor is for NO_X+NMHC. Assumed that NO_X emissions are 95% of this factor and VOC emissions are 5% based on "CARB Emission Factor for CI Diesel Engines - Percent HC in Relation to NMHC + NO_X" policy.

[d] It is assumed that $PM_{10} = PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions factors account for both the filterable and condensable portions of PM. The filterable portion of PM_{10} and $PM_{2.5}$ is based on 40 CFR Part 60, Subpart IIII Table 4. The condensable portion of PM_{10} and $PM_{2.5}$ was obtained from AP-42 Chapter 3.4 Table 3.4-2 (10/96).

[e] AP-42 Chapter 3.4 (Large Stationary Diesel and ALL Stationary Duel-fuel Engines) utilized in lieu of AP-42 Chapter 3.3 (Gasoline and Diesel Industrial Engines) since AP-42 Chapter 3.3 SO_2 emissions factor utilizes higher sulfur content than proposed for the Fire Water Pump Engine.

[f] H_2SO_4 emissions factor conservatively based on 10% conversion of SO_2 to SO_3 and 100% conversion of SO_3 to H_2SO_4.

[g] The CO_2 emissions factor is obtained from Table C-1 to 40 CFR Part 98, Subpart C, while CH_4 and N_2O emissions factors are obtained using Table C-2 to 40 CFR Part 98, Subpart C. CO_2e is carbon dioxide equivalent, calculated according to 40 CFR Part 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

GHG_i = Mass emissions of each greenhouse gas

GWP_i = Global warming potential for each

n = Number of greenhouse gases emitted.

Pollutant	GWP (100 year)
CO_2	1
CH_4	28
N_2O	265

Table E-7
HAP Potential Emissions
KDI Wyalusing Power LLC - Wyalusing, PA

Emissions Unit Description	Combustion Turbines [a]	Fire Water Pump
Cumulative Operating Time, hr/yr	55,370	500
Fuel Type	Natural Gas	ULSD
Heat Input, Max. MMBtu/hr each unit	312.30	0.88

Emissions Factor Reference (unless otherwise noted)		Emissions Factors for Natural Gas-Fired Turbines	Emissions Factors for Small Diesel Engines	Annual Emissions		
		AP-42 Ch 3.1 Table 3.1-3	AP-42 Ch. 3.3 Table 3.3-2	CTs	Fire Water Pump Engine	Combined Annual Emissions
HAP	CAS Number	(lb/MMBtu)	(lb/MMBtu)	(tpy)		
1,3-Butadiene	106-99-0	4.30E-07	3.91E-05	3.72E-03	8.55E-06	3.73E-03
Acenaphthene	83-32-9	-	1.42E-06	-	3.11E-07	3.11E-07
Acenaphthylene	208-96-8	-	5.06E-06	-	1.11E-06	1.11E-06
Acetaldehyde	75-07-0	4.00E-05	7.67E-04	0.35	1.68E-04	0.35
Anthracene	120-12-7	-	1.87E-06	-	4.09E-07	4.09E-07
Acrolein	107-02-8	6.40E-06	9.25E-05	0.06	2.02E-05	0.06
Benz(a)anthracene	56-55-3	-	1.68E-06	-	3.68E-07	3.68E-07
Benzene	71-43-2	1.20E-05	9.33E-04	0.10	2.04E-04	0.10
Benzo(a)pyrene	50-32-8	-	1.88E-07	-	4.11E-08	4.11E-08
Benzo(b)fluoranthene	205-99-2	-	9.91E-08	-	2.17E-08	2.17E-08
Benzo(g,h,i)perylene	191-24-2	-	4.89E-07	-	1.07E-07	1.07E-07
Benzo(k)fluoranthene	207-08-9	-	1.55E-07	-	3.39E-08	3.39E-08
Chrysene	218-01-9	-	3.53E-07	-	7.72E-08	7.72E-08
Dibenz(a,h)anthracene	53-70-3	-	5.83E-07	-	1.28E-07	1.28E-07
Ethylbenzene	100-41-4	3.20E-05	-	0.28	-	0.28
Fluoranthene	206-44-0	-	7.61E-06	-	1.66E-06	1.66E-06
Fluorene	86-73-7	-	2.92E-05	-	6.39E-06	6.39E-06
Formaldehyde [b]	50-00-0	2.69E-04	1.18E-03	2.32	2.58E-04	2.32
Indeno(1,2,3-cd)pyrene	193-39-5	-	3.75E-07	-	8.20E-08	8.20E-08
Lead [c]	7439-92-1	-	9.00E-06	-	1.97E-06	1.97E-06
Naphthalene	91-20-3	1.30E-06	8.48E-05	0.01	1.86E-05	0.01
Phenanthrene	85-01-8	-	2.94E-05	-	6.43E-06	6.43E-06
Polycyclic Aromatic Hydrocarbons	Various	2.20E-06	-	0.02	-	0.02
Propylene Oxide	75-56-9	2.90E-05	-	0.25	-	0.25
Pyrene	129-00-0	-	4.78E-06	-	1.05E-06	1.05E-06
Toluene	108-88-3	1.30E-04	4.09E-04	1.12	8.95E-05	1.12
Xylenes	1330-20-7	6.40E-05	2.85E-04	0.55	6.23E-05	0.55
		Maximum Individual HAP (tpy)				**2.32**
		Total HAP (tpy)		**5.07**	**8.49E-04**	
						5.07

[a] Annual potential emissions for the CTs assume representative average annual operating conditions of 99.5% load at 59 °F.

[b] Combustion turbine formaldehyde emissions factor based on a maximum exhaust concentration of 91 parts per billion (ppb) as listed in Table 1 to 40 CFR Part 63, Subpart YYYY.

[c] Pump engine lead emissions factor from AP-42 Chapter 1.3 Table 1.3-10.

Table E-5 - Revised

Combustion Turbine Annual Potential Emissions [(a)(b)]

KDI Wyalusing Power LLC - Wyalusing, PA

Pollutant	PTE (tpy)
NO_X	74.24
CO	93.18
VOC	40.22
PM	91.63
$PM_{10}/PM_{2.5}$	91.63
CO_2e	1,113,658.66
SO_2	13.26
H_2SO_4	2.03

[(a)] Annual potential emissions for the CTs are based on the following assumptions:
- short-term emissions factors for each pollutant in "lb/MMBtu" obtained from CT reliability data supplied by KDI and GE in file "TM2500 at Wyalusing 12112024.xlsx."
- operating profiles for each proposed turbine, resulting in a facility-wide annual heat input limit of 19,021,256 MMBtu/yr
- 365 startup events per year

[(b)] For annual emissions totals, KDI selected emissions rates corresponding to the average ambient conditions of 59 degrees Fahrenheit (°F) and maximum operating load. This operating case establishes an annual potential-to-emit (PTE) that considers the variability of operations and ambient conditions throughout the year. Operating conditions of 59°F at 99.5% load were assumed to be representative of average annual climate conditions based on average temperature data for Binghamton, NY, which is 46°F, obtained from the Cornell Northeast Regional Climate Center: https://www.nrcc.cornell.edu/wxstation/comparative/comparative.html#.

Number of CTs Operating Simultaneously	Operating Time (hr/yr)	Equivalent Heat Input (MMBtu/yr)	Equivalent Fuel Usage (MMSCF/yr)
6	6,000	2,061,180	2,011
7	2,710	930,966	908
8	50	17,177	17
Cumulative Total	55,370	19,021,256	18,560

Conversion Factors:

2000 lb/ton
365 startup events/yr
1.1 Contingency Factor

Table E-8
Emissions Summary and Major Source Threshold Applicability Table
KDI Wyalusing Power LLC - Wyalusing, PA

Source	PM	PM_{10}	$PM_{2.5}$	CO	VOC [a]	NO_X [a]	SO_2	Pb	Individual HAP [b]	Total HAP	CO_2e [c]
	(tpy)										
Combustion Turbines	91.63	91.63	91.63	93.18	40.22	74.24	13.26	-	2.32	5.07	1,113,658.66
Fire Water Pump Engine	0.02	0.02	0.02	0.25	0.01	0.20	3.79E-04	1.97E-06	2.58E-04	8.49E-04	35.79
Total Project Emissions	**91.65**	**91.65**	**91.65**	**93.44**	**40.23**	**74.43**	**13.26**	**1.97E-06**	**2.32**	**5.07**	**1,113,694.44**
PSD/NNSR Major Source Threshold	250	250	250	250	50	100	250	250	N/A	N/A	N/A
PSD/NNSR Major Source?	No	No	No	No	No	No	No	No	N/A	N/A	N/A
Title V Major Source Threshold	100	100	100	100	50	100	100	100	10	25	N/A
Title V Major Source?	No	No	No	No	No	No	No	No	No	No	N/A

[a] Major Source Threshold for the ozone transport region (OTR) pursuant to 25 Pa. Code §127.201(c).

[b] The individual HAP with the highest total project emissions is formaldehyde.

[c] Per the June 23, 2014 Supreme Court decision in Utility Air Regulatory Group v. U.S. EPA, U.S. EPA may not treat GHGs as an air pollutant for the specific purpose of determining whether a source is required to obtain a PSD or Title V Operating Permit.