

Commonwealth of Kentucky
Division for Air Quality
STATEMENT OF BASIS / SUMMARY

Title V, Construction / Operating
Permit: V-23-007 R1

Lightning Renewables, LLC
9120 Sulphur Road
Sulphur, KY 40070

July 31, 2026
Amy K. Tempus-Doom, PE, Reviewer

SOURCE ID:	21-223-00022
AGENCY INTEREST:	175095
ACTIVITY:	APE20250002

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 4925, Mixed, Manufactured, or Liquefied Petroleum Gas Production and/or Distribution

Single Source Det. ☒ Yes ☐ No If Yes, Affiliated Source AI: 4059

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Trimble

Nonattainment Area ☒ N/A ☐ PM₁₀ ☐ PM_{2.5} ☐ CO ☐ NO_x ☐ SO₂ ☐ Ozone ☐ Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No

If yes, for what pollutant(s)?

☐ PM₁₀ ☐ PM_{2.5} ☒ CO ☐ NO_x ☐ SO₂ ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No

If yes, for what pollutant(s)?

☐ PM₁₀ ☐ PM_{2.5} ☐ CO ☐ NO_x ☐ SO₂ ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No

If yes, list which pollutant(s):

PTE* greater than 25 tpy for combined HAP ☒ Yes ☐ No

*PTE does not include self-imposed emission limitations, but does include the contributions from AI 4059.

Description of Facility:

Lightning Renewables, LLC is a new source to be co-located at Valley View Landfill in Sulphur, Kentucky. These sources are considered a “single source” for Title V and PSD, and because Valley View Landfill is required to obtain a Title V permit by 401 KAR 52:020, Section 1(4), Lightning Renewables must also obtain a Title V permit. Because Valley View Landfill is a major source of HAPs and a Title V major source of CO, Lightning Renewables is considered the same.

Lightning Renewables, LLC is a renewable natural gas plant that receives collected landfill gas (LFG) from the adjacent Valley View Landfill. The LFG will be initially filtered by Valley View Landfill prior to entering the gas plant, where it will then be further treated during the refinement process. Each step of the process allows landfill gas to be destroyed by either the non-assisted shrouded flare (EU 02) or the thermal recuperative oxidizer (TRO). The facility will also have one stationary diesel compression-ignition reciprocating internal combustion engine (CI RICE) for emergency use. No emissions may be vented directly to the atmosphere at any time.

In the absence of an approved state plan implementing 40 CFR Part 60, Subpart Cf, the source is subject to the federal plan under 40 CFR Part 62, Subpart OOO. Upon approval of Kentucky's state plan, the 40 CFR 60, Subpart Cf requirements implemented via 401 KAR 61:036 will apply in lieu of the federal plan.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-23-007 R1

Activities: APE20250002

Received: 11/25/2025

Application Complete Date(s): 1/24/2026

Permit Action: ☐ Initial ☐ Renewal ☒ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒ Yes ☐ No NSR Applicable? ☐ Yes ☒ No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐ Yes ☒ No

Description of Action:

Lightning Renewables submitted a significant revision application to revise planned design of the facility on November 25, 2025. In this significant revision, the following changes were made:

- The design capacity of the RNG facility (EU 01) was reduced to 3,200 dscfm of untreated LFG from 6,400 dscfm.
- The back-up flare (EU 02) design was changed from an open candlestick flare to a non-assisted shrouded flare. This shrouded flare does not meet the definition of an enclosed combustor in 40 CFR 63, Subpart AAAA.
- Emission calculations for the flare were updated to use the current version of AP-42, Chapter 2.4 (May 2025).
- Added 2 LFG condensate storage tanks to the insignificant activities list in Section C of the permit. These tanks hold LFG condensate for testing and analysis prior to sending it back to Valley View Landfill's condensate system.
- As requested by Lightning Renewables, added an operating limit for the flare (EU 02) of 400,000 MMBtu/yr of waste gas to limit the PTE.
- Added the requirements of 40 CFR 60, Subpart Cf. The requirements from 40 CFR 60, Subpart Cf are included in Section B and co-cited with the corresponding requirements from 40 CFR 63, Subpart AAAA where appropriate.
- Removed the site-wide operating limitations for VOC, Toluene, and HAPs. The facility PTE is the controlled PTE because, pursuant to 40 CFR 60, Subpart Cf and 40 CFR 63, Subpart AAAA, the facility is prohibited from venting any landfill gas through any process unit vent directly to the atmosphere and must operate the flare, TRO, and/or control and treatment system at all times when collected gas is routed to the system. Additionally, due to the PTE of Valley View Landfill, the site is a major source of HAPs and a Title V major source of CO.
- Revised the construction commencement dates and reauthorized construction in Section G to reflect that as of this revision application, construction had not yet commenced at the site.

V-23-007 R1 Emission Summary					
Pollutant	2025 Actual (tpy) ³	PTE V-23-007 (tpy) ²	Change	PTE V-23-007 R1 (tpy) ²	Combined Facility PTE (tpy) ¹
CO	0	62.79		167.6	182.87
NO _x	0	45.44	-7.35	38.09	40.57
PT	0	16.35	-6.91	9.44	9.98
PM ₁₀	0	16.35	-6.91	9.44	9.98
PM _{2.5}	0	16.35	-6.91	9.44	9.98
SO ₂	0	14.20	+7.08	21.28	26.65
VOC	0	4.80	+15.06	19.86	3.84
Lead	0	0.0000075	-0.0000035	0.000004	0.000004
Greenhouse Gases (GHGs)					
Carbon Dioxide	0	307,826	-164,999	142,827	119,274
Methane	0	783	-391	392	483
Nitrous Oxide	0	1.35	-0.81	0.54	1.29
CO ₂ Equivalent (CO ₂ e)	0	327,801	-173,855	153,946	133,133
Hazardous Air Pollutants (HAPs)					
2,4,5-Trichlorophenol	- ⁴	0	0	0	6.01
2-Methylphenol	- ⁴	0	0	0	3.01
3-Methylphenol	- ⁴	0	0	0	3.01
4-Methylphenol	- ⁴	0	0	0	3.01
Chlorobenzene	0	0.004	-0.002	0.002	1.53
Cresol	- ⁴	0	0	0	3.01
Dichloromethane	0	0.04	+0.02	0.06	1.21
Hexane	- ⁴	0.05	0	0.05	0.60
Hydrochloric Acid	0	6.08	-1.46	4.62	4.08
Pentachloro-Phenol	- ⁴	0	0	0	1.50
Tetrachloroethylene (PCE)	- ⁴	0.03	0	0.03	0.64
Toluene	0	0.20	0	0.20	3.67
Xylenes (Total)	0	0.07	0	0.07	1.30
Combined HAPs:	0	6.63	-1.21	5.42	36.61

¹**Note:** The “combined facility PTE” includes both emissions from Valley View Landfill and Lightning Renewables – Valley View RNG. Because they are considered a “single source” their emissions must be counted together. The worst-case emissions for the combined facility PTE occur when the RNG facility does not operate and all landfill gas emissions are destroyed in Valley View Landfill’s flare. Therefore, the flare and RNG plant at Lightning Renewables are not counted toward the combined facility PTE because the landfill can only generate a set quantity of gas.

²**Note:** This is the individual PTE for Valley View Landfill that does not include Lightning Renewables – Valley View RNG.

³**Note:** The actual reported emissions include emissions from fugitive sources not otherwise counted toward the Title V PTE.

⁴**Note:** Pollutant was not tracked in EIS for the 2025 inventory.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit 01 - Renewable Natural Gas Plant & Emission Unit 02 - LFG Flare				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Opacity (EU 01)	< 20%	401 KAR 59:010, Section 3(1)(a)	-	Daily qualitative observations and recordkeeping.
PM (EU 01)	Process Weight Rate (P): ≤ 0.5 tons/hour: 2.34 lbs/hr ≤ 30 tons/hour: 3.59p ^{0.62}	401 KAR 59:010, Section 3(2)	AP 42 Table 2.4-5 AP 42 Table 1.4-2	Assumed to be in compliance based on the maximum process weight rate and emission factors provided by the application.
Opacity (EU 02)	< 20%	401 KAR 63:015, Section 3	-	Daily qualitative observations and recordkeeping.

Initial Construction Date: 2026

Process Description:

Emission Unit 01 (EU 01) – Renewable Natural Gas (RNG) Plant

The RNG facility receives LFG from Valley View Landfill's gas collection system. In the event that the RNG facility is entirely offline, LFG from the landfill is not accepted by the RNG plant and is routed to the landfill's flare for destruction. Waste gas from the Temperature Swing Adsorption (TSA) vessels and Pressure Swing Adsorption (PSA) system is routed to the TRO for destruction.

Emission Unit 02 (EU 02) – LFG Flare

EU 02 operates in one of four modes which are characterized as follows:

Flare mode 1 – LFG from Valley View Landfill is received during a plant outage and sent to EU 02 after sulfur removal;

Flare mode 2 – treated LFG is flared post-CO₂ removal due to process upset;

Flare mode 3 – off-spec product is rejected by the pipeline;

Flare mode 4 – TSA blowdown.

Maximum Capacities:

EU 01 – RNG Plant: 3,200 scfm LFG

EU 02 – LFG Flare: 3,200 scfm LFG

TRO-1: 3,200 scfm waste gas

Control Devices for EU 01: TRO-1 and Flare (EU 02)

Applicable Regulations:

401 KAR 53:010, Ambient air quality standards, This regulation contains the primary and secondary ambient air quality standards for sulfur oxides, particulate matter, carbon monoxide, ozone, nitrogen dioxide, lead, hydrogen sulfide, gaseous fluorides, total fluorides, and odors are specified in Appendix A

Emission Unit 01 - Renewable Natural Gas Plant & Emission Unit 02 - LFG Flare

of 401 KAR 53:010.

401 KAR 59:010, *New process operations*, applies to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates. Applies to EU 01.

401 KAR 61:036, *Ambient emission guidelines and compliance times for municipal solid waste (MSW) landfills*, applies to each MSW landfill that commenced construction, modification, or reconstruction on or before July 17, 2014. This regulation requires compliance with **40 CFR 60, Subpart Cf, Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills**. Applies to this source because it is located at a MSW landfill as defined in 40 CFR 60.41f.

401 KAR 63:015, *Flares*, applies to each affected facility which means flares as defined in 401 KAR 63:015, Section 2. Applies to EU 02.

401 KAR 63:002, Section 2(4)(hhh), 40 C.F.R. 63.1930 through 63.1990, Table 1 (Subpart AAAA), *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills*, applies to each municipal solid waste (MSW) landfill that has accepted waste since November 8, 1987 or has additional capacity for waste deposition and has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m³) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR 63.1959. Applies to this source because it is located at a MSW landfill as defined in 40 CFR 63.1990.

40 CFR 60.18, *General control device and work practice requirements*, applies to control devices (flare) used to comply with applicable subparts of 40 CFR part 60.

40 CFR 63.11, *Control device and work practice requirements*, applies to control devices (flare) used to comply with applicable subparts of 40 CFR part 63.

Comments:

EU 01 & 02 – Emission factors for these units were determined from manufacturer’s specifications, AP-42 Tables 1.4-1 through 1.4-4 and 40 CFR 98 Tables C-1 and C-2 for fuel usage and AP-42 Tables 2.4-1 and 2.4-2 (Draft & Final) for landfill gas destroyed. Waste gas directed to the TRO is 12.2% methane per the specifications for the TRO. Control efficiency for Non Methane Organic Compounds (NMOC) is 99% for TRO, 98% for flare.

This flare is a control device installed to meet the requirements of 40 CFR 60.33f(c)(1) and 40 CFR 63.1959(b)(2)(iii)(A). Emission factors from AP-42 Chapter 2.4 (May 2025), Table 2.4-1, AP-42 Chapter 13.5, Table 13.5-1, and a design post-H₂S removal concentration of 100 ppm. Control efficiency for Non-Methane Organic Compounds (NMOC) is 98%.

Emission Unit 03 – CI Emergency Engine

Initial Construction Date: 2026

Process Description:

The CI RICE is a diesel fired emergency generator.

Emission Unit 03 – CI Emergency Engine

Maximum Rating: 324 HP

Fuel: Diesel

Control Device: None

Applicable Regulations:

401 KAR 60:005, Section 2(2)(oooo), 40 C.F.R. 60.4200 through 60.4219, Tables 1 through 8 (Subpart IIII), *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, applies to each stationary CI ICE with displacement of less than 30 liters per cylinder where the model year is 2007 or later.

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applies to each stationary RICE located at a major or area source of HAP emissions.

Comments:

Emission factors were determined from AP-42 Table 3.4-1 through 3.4-4, 40 CFR 98 Table C-1 and C-2, and the manufacturer's specifications. The PTE for the engine is calculated using 500 hours per year to account for emergencies.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements/Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
01	TRO-1	VOC & HAP DE and min. combustion chamber temp.	401 KAR 50:055, Section 2(a)	Initial and every 5 years	TBD	N/A	TBD	TBD	TBD	TBD
01	TRO-1	H ₂ S ppm	401 KAR 50:045, Section 1	Initial	U.S. EPA Method 15/16; ASTM D4084; ASTM D5504; or Approved Alt.	N/A	TBD	TBD	TBD	TBD
01	TRO-1	NMOC Weight-Percent Reduction	40 CFR 63.1959(b)(2)(iii)(B)	Initial	U.S. EPA Method 25 or 25C; Method 3, 3A, or 3C.	98% reduction	TBD	TBD	TBD	TBD
02	None	Methane Conc	40 CFR 63.1959(b)(2)(iii)(A)	Initial	U.S. EPA Method 3C	N/A	TBD	TBD	TBD	TBD

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
N/A		

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 53:010 , <i>Ambient air quality standards</i>	Site-wide
401 KAR 59:010 , <i>New process operations</i>	EU 01
401 KAR 60:005 , Section 2(2)(oooo), 40 C.F.R. 60.4200 through 60.4219 , Tables 1 through 8 (Subpart IIII) , <i>Standards of Performance for Stationary Compression Ignition Internal Combustion Engines</i>	EU 03
401 KAR 61:036 , <i>Ambient emission guidelines and compliance times for municipal solid waste (MSW) landfills</i> . This regulation requires compliance with 40 CFR 60, Subpart Cf , <i>Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills</i>	EU 01 & EU 02
401 KAR 63:002 , Section 2(4)(hhh), 40 C.F.R. 63.1930 through 63.1990 , Table 1 (Subpart AAAA) , <i>National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills</i>	EU 01 & EU 02
401 KAR 63:002 , Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675 , Tables 1a through 8, and Appendix A (Subpart ZZZZ) , <i>National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines</i>	EU 03
401 KAR 63:015 , <i>Flares</i>	EU 02
40 CFR 60.18 , <i>General control device and work practice requirements</i>	EU 02
40 CFR 63.11 , <i>Control device and work practice requirements</i>	EU 02

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
N/A	

Table D - Summary of Non Applicable Regulations:

Non Applicable Regulations	Emission Unit
N/A	

Air Toxic Analysis

N/A

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Single Source Determination

Lightning Renewables, LLC, Source ID #: 21-223-00022 (A.I. #175095), and the adjacent Valley View Landfill, Source ID #: 21-223-00005 (A.I. #4059), are considered by the Cabinet and the United States Environmental Protection Agency to be a “single source” in determining applicability under 401 KAR 51:017, Prevention of significant deterioration of air quality (PSD) and 401 KAR 52:020, Title V permits. Each source is subject to 401 KAR 52:020 and will be issued individual Title V operating permits. Pursuant to the respective Title V permits, each permittee is responsible and liable for their own violations unless there is a joint cause for the violations.

SECTION 5 – COMPLIANCE ASSURANCE MONITORING

40 CFR 64, *Compliance assurance monitoring* (CAM) applies to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria:

- (1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR 64.2(b)(1);
- (2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and
- (3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

Emission Unit	Criteria 1 (Y/N)	Criteria 2 (Y/N)	Criteria 3 (Y/N)	Does CAM apply? If Y for criteria 1, 2, AND 3, then Yes, Otherwise, No.
01	Y	N	N	No
02	N	N	N	No
03	N	N	N	No

* If Yes, CAM applies for any of the emission units above, then see further clarification for each listed emission unit in **Section 3**.

SECTION 6 – PERMITTING HISTORY

Permit	Permit Type	Activity #	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
V-23-007	Initial	APE20230001	3/9/2023	7/18/2023	Initial Construction & Operating Permit	N/A

SECTION 7 – PERMIT APPLICATION HISTORY

Permit Number: V-23-007

Activity: APE20230001

Application Received: 3/1/2023

Application Complete Date(s): 3/9/2023

Permit Action: ☒ Initial ☐ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒ Yes ☐ No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐ Yes ☒ No

Description of Action:

The initial application for Lightning Renewables' conditional major permit was received by the Division on September 28, 2022. The Division deemed the application complete on November 27, 2022. On Wednesday, March 1, 2023, Lightning Renewables submitted a revised AI form requesting a Title V permit and single source determination, which was deemed complete on March 9, 2023.

Lightning Renewables indicated that with this action they would construct a landfill gas to natural gas processing facility adjacent to Valley View Landfill. The facility includes a TRO and flare (EU 02) for control of emissions and an emergency CI RICE. The facility does not include any insignificant activities.

No LFG can be vented uncontrolled to the atmosphere.

V-23-007 Emission Summary		
Pollutant	PTE V-23-007 (tpy)	Combined Facility PTE* (tpy)
CO	62.79	62.79
NO _x	45.44	45.44
PT	16.35	16.35
PM ₁₀	16.35	16.35
PM _{2.5}	16.35	16.35
SO ₂	14.20	14.20
VOC**	4.80	4.87
Lead	0.0000075	0.0000075
Greenhouse Gases (GHGs)		
Carbon Dioxide	307,826	307,826
Methane	782.98	782.98
Nitrous Oxide	1.35	1.35
CO ₂ Equivalent (CO ₂ e)	327,801	327,801
Hazardous Air Pollutants (HAPs)		
Hydrochloric Acid	6.08	6.08
Toluene**	0.20	2.97
Combined HAPs:**	6.63	15.13

*Note: The “combined Facility PTE” includes both emissions from Lightning Renewable and Valley View Landfill. Because they are considered a “single source” their emissions must be counted together. However, the flare at valley view landfill is not counted toward the combined facility PTE, because the landfill only generates a set quantity of gas, which is accounted for in the worst case of EU 01’s TRO and EU 02’s operation.

**Note: Emissions of VOC and most HAPs are controlled by the flare or the TRO. The permittee must control emissions at all times. Additionally, VOC is limited to 90 tons/year to preclude major source status of criteria pollutants, Toluene is limited to 6.23 tons/year to preclude major source status of individual HAPs, and Combined HAPs are limited to 14.06 tons/year to preclude major source status of combined HAPs.

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO _x	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM ₁₀	– Particulate Matter equal to or smaller than 10 micrometers
PM _{2.5}	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO ₂	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds