

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

Title V, Operating  
Permit: V-24-004

East Kentucky Power Cooperative, Inc.  
in care of Pendleton County Landfill  
1456 Bryan Griffin Road  
Butler, KY 41006

March 21, 2024  
Ossama Ateyeh, Reviewer

SOURCE ID: 21-191-00022  
AGENCY INTEREST: 77788  
ACTIVITY: APE20240001

**Table of Contents**

**SECTION 1 – SOURCE DESCRIPTION ..... 2**  
**SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM..... 3**  
**SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS ..... 4**  
**SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS ..... 6**  
**SECTION 5 – PERMITTING HISTORY ..... 7**  
**SECTION 6 – PERMIT APPLICATION HISTORY ..... 7**  
**APPENDIX A – ABBREVIATIONS AND ACRONYMS ..... 8**

## SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 4911, Electric Services (other electric power generation)

Single Source Det.  Yes  No If Yes, Affiliated Source AI:

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

28 Source Category  Yes  No If Yes, Category:

County: Pendleton

Nonattainment Area  N/A  PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  Ozone  Lead

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

If yes, for what pollutant(s)?

PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

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

If yes, for what pollutant(s)?

PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

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

If yes, list which pollutant(s): Formaldehyde

PTE\* greater than 25 tpy for combined HAP  Yes  No

\*PTE does not include self-imposed emission limitations.

### Description of Facility:

East Kentucky Power Cooperative, Inc. in care of Pendleton County Landfill, purchases and combusts treated landfill gas from Pendleton County Landfill to produce energy.

**SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM**

Permit Number: V-24-004

Activities: APE20240001

Received: Feb. 19, 2024

Application Complete Date(s): March 7, 2024

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:**

*Renewal only. No changes.* The fifth engine EU02-5 is removed from Pendleton’s permit, 2019 revision as it was never installed.

| V-24-004 Emission Summary                      |                            |                    |
|--|----------------------------|--------------------|
| Pollutant                                      | 2022 Actual Emission (tpy) | V-24-004 PTE (tpy) |
| CO   | 149.577                    | 194.927            |
| NO <sub>x</sub>                                | 67.999                     | 88.603             |
| PT   | 5.781                      | 7.693              |
| PM <sub>10</sub>                               | 5.781                      | 7.693              |
| PM <sub>2.5</sub>                              | 5.781                      | 7.693              |
| SO <sub>2</sub>                                | 27.878                     | 37.099             |
| VOC  | 37.733                     | 49.174             |
| Greenhouse Gases (GHGs)                        |                            |                    |
| Carbon Dioxide                                 | 13,979                     | 18,512             |
| Methane  | 0.854                      | 1.120              |
| Nitrous Oxide                                  | 0.175                      | 0.221              |
| CO <sub>2</sub> Equivalent (CO <sub>2</sub> e) |                            | 18,606             |
| Hazardous Air Pollutants (HAPs)                |                            |                    |
| Toluene  | 0.324                      | 0.379              |
| Xylenes (Total)                                | 0                          | 0.135              |
| Formaldehyde                                   | 6.43                       | 11.96              |
| Combined HAPs:                                 |                            | 12.91              |

### SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

#### Emission Unit #EU01-1, EU01-2, EU01-3, and EU01-4 Internal Combustion Engines

**Initial Construction and/or Modification Date:**

07/05/06 EU01-1 EU01-2

07/05/06 EU01-3 EU01-4

**Process Description:**

These are 4SLB stationary SI RICE that combust only treated (filtered, de-watered, and compressed) landfill gas supplied by the adjacent Pendleton Landfill.

**Applicable Regulation:**

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

**Non-applicable Regulation:**

**401 KAR 60:005 Section 2(2)(eeee)**, 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines is non-applicable because although the date of construction commencement is after the classification date 6/12/06, the manufacture date is before the sub-classification date 1/1/08 for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP.

**Comments:**

**401 KAR 60:005 Section 2(2)(yyy)**, 40 C.F.R. 60.750 to 60.759 (Subpart WWW), Standards of Performance for Municipal Solid Waste Landfills is not applicable as the facility buys only treated landfill gas i.e. gas that has been filtered, de-watered, and compressed; and there is no the venting of treated landfill gas from the treatment system after purchase.

**401 KAR 63:002 Section 2(4)(hhh)**, 40 C.F.R. 63.1930 to 63.1990, Table 1 (Subpart AAAA), National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills is not applicable as the facility only purchases and combusts only landfill gas that has been filtered, de-watered, and compressed; and does not have any options to vent treated landfill gas into the ambient air after purchase.

No emission limitations apply to these emission units.

Emission factor for formaldehyde was increased to a conservative 40.5 lb/MMscf following a Michigan DEQ determination for a similar LGTE facility (same engines). This facility, Adrian Energy Associates, LLC, altered their emission factor after Caterpillar found increased formaldehyde emissions and updated the spec sheet. The increased emission factor has also made Pendleton a major source of HAP emissions. EU02-5 was removed from the permit for having never been installed.

**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 ppm CO            | Thruput and Operating Parameter(s) Established During Test | Activity Graybar | Date of last Compliance Testing |
|------------------|----------------|-----------|------------------|--------------------------|---------------|--------------|-------------------------------|--|------------------|---------------------------------|
| EU01-1           |                | ppm CO    | 401 KAR 50:045   | Initial Performance test | EPA Method 10 |              | 751.36 (low)<br>550.04 (high) |  | CMN20080001      | 12/9/2008                       |
| EU01-2           |                |           |                  |                          |               |              | 772.51 (low)<br>551.51 (high) |  | CMN20080001      | 12/9/2008                       |
| EU01-3           |                |           |                  |                          |               |              | 664.54 (low)<br>596.38 (high) |  | CMN20080001      | 12/9/2008                       |
| EU01-4           |                |           |                  |                          |               |              | 812.86 (low)<br>537.90 (high) |  | CMN20080001      | 12/9/2008                       |

**Footnotes:**

EPA Method 10 – CO

EPA Method 3A – O<sub>2</sub>

## SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

### **Table A - Group Requirements:**

N/A

### **Table B - Summary of Applicable Regulations:**

| Applicable Regulations  | Emission Unit                            |
|---|--|
| 401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ) <i>National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines</i> | EU01-1,<br>EU01-2,<br>EU01-3,<br>EU01-4. |

### **Table C - Summary of Precluded Regulations:**

N/A

### **Table D - Summary of Non Applicable Regulations:**

N/A

### **Air Toxic Analysis**

N/A

### **Single Source Determination**

N/A

**SECTION 5 – PERMITTING HISTORY**

| <b>Permit</b> | <b>Permit Type</b> | <b>Activity#</b> | <b>Complete Date</b> | <b>Issuance Date</b> | <b>Summary of Action</b> | <b>PSD/Syn Minor</b> |
|---------------|--------------------|------------------|----------------------|----------------------|--------------------------|----------------------|
| V-18-010      | Renewal            | APE20170001      | 12/20/2017           | 8/21/2019            | Renewal Title V Permit   | N/A                  |
| G-012-002     | Renewal            | APE20120001      | 10/14/2012           | 6/19/2013            | Permit Renewal           | N/A                  |
| G-07-002      | Renewal            | APE20070001      | 9/23/2007            | 2/19/2008            | Permit Reneal            | N/A                  |

**SECTION 6 – PERMIT APPLICATION HISTORY**

N/A

## **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 <sub>x</sub>   | – Nitrogen Oxides   |
| NSR               | – New Source Review   |
| PM                | – Particulate Matter  |
| PM <sub>10</sub>  | – Particulate Matter equal to or smaller than 10 micrometers  |
| PM <sub>2.5</sub> | – Particulate Matter equal to or smaller than 2.5 micrometers |
| PSD               | – Prevention of Significant Deterioration                     |
| PTE               | – Potential to Emit   |
| SO <sub>2</sub>   | – Sulfur Dioxide  |
| TF                | – Total Fluoride (Particulate & Gaseous)                      |
| VOC               | – Volatile Organic Compounds                                  |