

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection**

N139569643

FACILITY: Cadillac Renewable Energy Facility		SRN / ID: N1395
LOCATION: 1525 Miltner St., CADILLAC		DISTRICT: Gaylord
CITY: CADILLAC		COUNTY: WEXFORD
CONTACT: Ryan Putvin , O&M Manager		ACTIVITY DATE: 10/18/2023
STAFF: Rob Dickman	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On site inspection of this major source.		
RESOLVED COMPLAINTS:		

Cadillac Renewable Energy is a wood-fired electric utility plant located within an industrial park inside the City of Cadillac. It is located on the west edge of the industrial park with several industries to the east, west, and north including a foundry and an automotive hose manufacturer. There are some residences to the south of the facility with the closest being approximately one half a mile away.

The facility receives chipped wood by truck and uses it to fuel a single spreader-stoker boiler to produce steam. The steam is used by the associated generator to produce up to 41 megawatts of electricity at full capacity. Natural gas is used as a startup fuel for the boiler. The facility is equipped with Selective Non-Catalytic Reduction (SNCR) for NOx control and a Multi-clone and Electrostatic Precipitator (ESP) for particulate control. The fly ash and bottom ash are collected, treated with water, and transported to a landfill or recycled for agricultural uses.

AQD staff visited the Cadillac Renewable Energy LLC facility to perform an inspection. Accompanying me on the inspection was Ryan Putvin, Operations Manager. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) No. MI-ROP-N1395-2021. Typically, this facility operates at half load (Net 14 Megawatts) and were operating at this rate the day of inspection.

I inspected this facility on October 19, 2023. Records had been requested on October 10 and Mr. Putvin was able to show me he sent them on October 11, but I did not receive them. As the records were not extensive, Mr. Putvin and I reviewed them together on site on October 19. I had requested to review the period of September 2022 through August of 2023 (12-months). This period is referred to in this report as the review period. For records collected more frequently than monthly, I asked for three randomly selected days of records. These days were December 11, 2022, March 4, 2023, and July 27, 2023. Testing and Reporting requirements for the review period have been previously reviewed and documented and, unless otherwise noted, are not addressed in this report. Following are the findings of this inspection.

SOURCE-WIDE CONDITIONS

Emission Limits

There are no source wide emissions limits.

Material Limits

There are no source wide material limits.

Process or Operational Restrictions

The facility is required to have and implement a Fugitive Emissions Plan (FEP) for the plant yard, material storage piles and all material handling operations. This plan was last updated in February of 2018 and was included as part of the ROP renewal application. This plan was approved on July 2021 following the inspection that year. Housekeeping at the facility appeared good. No fugitive visible emissions were noted at the facility.

Design or Equipment Parameters

There are no source wide design or equipment parameters.

Monitoring and/or Recordkeeping Requirements

There are records that are required to be kept per the FEP including washing and sweeping of, and dust suppressant application to plant roads, storage piles, and material handling operations. These records are kept monthly. I reviewed

December of 2022, March of 2023, and July of 2024. These records appeared complete. The form used lists any activities performed and also contains a comment section for any issues noted. Any issues noted are immediately brought to the attention of plant management and resolved. Plant roads at the time of the inspection were in good repair and clean. These roads are paved so if they are kept clean no visible emissions are noted. A review of associated records indicates this facility maintains the roads as needed.

Stack/Vent Restrictions

There are no source wide stack or vent restrictions.

Other Requirements

There are no source wide other requirements.

EUW-HDLG

The wood storage and handling emission unit consists of covered conveyors and other equipment which transport and feed wood to the boiler for combustion and subsequent electricity generation.

Emission Limits

Fugitive emissions from the wood fuel storage and handling are not to exceed 5% opacity. Compliance with this is through non-Method 9 certified emission observations that are to be performed at least once daily. Records of these observations are kept electronically and were reviewed. Readings are taken at least four times daily and recorded. The form used lists any activities performed and also contains a comment section for any issues noted. Any issues noted are immediately brought to the attention of plant management and resolved. The last 12 months of these records appeared readily available for review. Three random days were reviewed. These records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%. The fuel storage is unique to other wood fired boilers in the state in that it is covered by a roof. No visible emissions from it were noted during the inspection.

Material Limits

There are no material limits associated with this section.

Process or Operational Restrictions

There are no process or operational restrictions associated with this section.

Design or Equipment Parameters

There are no design or equipment parameters associated with this section.

Monitoring and/or Recordkeeping Requirements

Fugitive emissions from the wood fuel storage and handling are not to exceed 5% opacity. Compliance with this is through non-Method 9 certified emission observations that are to be performed at least once daily. Records of these observations are kept electronically and were reviewed. Readings are taken at least four times daily and recorded. The form used lists any activities performed and also contains a comment section for any issues noted. Any issues noted are immediately brought to the attention of plant management and resolved. The last 12 months of these records appeared readily available for review. Three random days were reviewed. These records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%. On the July 27 readings, a maintenance issue was noted and a recommendation on repair was made.

Stack/Vent Restrictions

There are no stack or vent restrictions associated with this section.

Other Requirements

There are no other requirements associated with this section.

EUBLR

The boiler has a spreader-stoker design with a steam rating of 334,085 lb/hr at 1025 psig firing on wood fuel. The steam turbine/generator has a rated output of 39.6 Megawatts. Natural gas is used as a startup fuel only.

Emission Limits

Particulate Matter (PM) emissions are limited to 15.7 pounds per hour (pph) and 0.03 pounds per million BTU heat input (lb/MMBtu). Stack testing is the method used to demonstrate compliance with these emission limits. Stack testing performed in 2022 indicated the PM emissions from the emission unit were 0.6 pph and 0.001 lb/MMBtu.

Opacity from the stack is limited to 10%. Compliance with this limit is through operation of a Continuous Opacity Monitoring System (COMS). Records of excess opacity or monitoring system downtime are compiled and reported quarterly. These reports were previously reviewed, documented, and demonstrated compliance. An instant reading taken on site during the inspection indicated opacity at 1.4%

Benzo-a-pyrene (BAP) emissions are limited to 0.0054 pph and 10 micrograms per cubic meter corrected to standard conditions. Stack testing is the method used to demonstrate compliance with these emission limits. Stack testing performed in 2022 indicated BAP emissions from the emission unit stack were 0.0012 pph and 3.0 micrograms per cubic meter corrected to standard conditions.

Nitrogen oxides (NOx) emissions are limited to 78.5 pph and 0.15 lb/MMBtu. Compliance with this limit is through operation of a Continuous Emissions Rate Monitoring System (CERMS). Records of excess emissions or monitoring system downtime are compiled and reported quarterly. These reports were previously reviewed, documented, and demonstrated compliance. An instant reading taken on site during the inspection indicated NOx emissions at 88.1 ppm.

Carbon Monoxide (CO) emissions are limited to 209.2 pph and 0.40 lb/MMBtu. Compliance with this limit is through operation of a Continuous Emissions Rate Monitoring System (CERMS). Records of excess emissions or monitoring system downtime are compiled and reported quarterly. These reports were previously reviewed, documented, and demonstrated compliance. An instant reading taken on site during the inspection indicated CO emissions at 54 ppm.

Volatile Organic Compound (VOC) emissions are limited to 22.5 pph and 0.043 lb/MMBtu. Stack testing is the method used to demonstrate compliance with these emission limits. Stack testing performed in 2022 indicated VOC emissions from the emission unit stack were 0.4 pph and 0.001 lb/MMBtu.

Material Limits

Natural gas usage at startup of the unit is limited to 107,000 standard cubic feet per hour (scf/hr) and 464 million cubic feet per year. Compliance with these limitations is demonstrated through daily recording of natural gas usage. This fuel is only used at startup and records of the amount used during those times are being kept. A review of records demonstrated the total natural gas usage in 2022 was 1.4 million cubic feet per year.

Additionally, no chemically treated wood is to be used for fuel. This was confirmed by Mr. Putvin on site. Fuel used at the site is inspected, and, while very rare, if it is found to contain other than clean wood, that fuel is rejected for use. At the time of the inspection, only clean wood was noted on site.

Process/Operational Restrictions

Control equipment for the boiler (multiclone, electrostatic precipitator (ESP), and selective non-catalytic reduction (SNCR) system) are required to be installed and operating when the boiler is operating. This equipment is configured to not be able to operate when the boiler is down and vice versa. All control equipment was in operation at the time of the inspection as was the boiler.

The facility is required to have a malfunction abatement plan (MAP) for the above listed control equipment. This plan is in on file and the newest version of it is dated June of 2018 and was approved in July of 2021 following the inspection that year.

Design or Equipment Parameters

The COMS and CERMS are to be installed, calibrated, and maintained in accordance with 40 CFR Part 60 requirements. These systems have been in place for several years and are configured per these requirements. The daily, quarterly, and annual QA/QC requirements for them have been performed, reviewed, and documented.

Monitoring and/or Recordkeeping Requirements

Monitoring data collected by the CEMS and COMS is required to be kept. This data is collected by the corresponding data collection system which automatically calculates emissions in units of the applicable standard for each pollutant. COMS data was reviewed on site for three random days. These records indicated opacity less than 2%. CEMS data for three random days was also reviewed. This data is kept in units of all applicable standards (pound per million BTU and pound per hour). It is also kept on a 24-hour rolling time period. Excess emissions and monitoring system downtime are reported quarterly for each system. These reports have been previously received, reviewed, and documented.

For pollutants not monitored by CEMS (PM, BAP, and VOCs) the facility is required to develop emission factors based on most recent stack testing for these pollutants. The most recent testing was performed in October of 2022 and demonstrated compliance as listed above. Factors for these pollutants were developed per the procedure listed in the ROP utilizing this most recent testing. These factors are also utilized to calculate annual emissions for emissions inventory (MAERS) reporting.

Records of startup and shutdown of the facility, malfunctions of air pollution control equipment, and periods of monitoring system downtime are to be kept. A review of records indicates these are being kept in a correct and timely manner. For the reporting period, a total of four outages, planned and unplanned, were documented.

Monitoring of natural gas and wood fuel is continuous at the facility. Natural gas used at the facility is used primarily for startup and equipment to measure natural gas usage is installed. The equipment appeared to be operating. Wood fuel is measured via belt scale and recorded. Three random days were reviewed as follows:

Date	Wood (tons)	NG (cfm)
12/11/2022	860	0
3/4/2023	930	0
7/27/2023	881	0

The most recent annual capacity factor for wood calculated for the facility was 36.79% and 1.70% for natural gas. The calculation for annual capacity factor is a rolling average determined monthly.

Stack/Vent Restrictions

The stack on the outlet of the ESP is to have a maximum diameter of 108 inches and a minimum height of 188 feet. The stack has not been altered since construction of the facility and appears compliant with these parameters.

Other Requirements

The facility is required to have a malfunction abatement plan (MAP) for the above listed control equipment. This plan is in on file and the newest version of it is dated June of 2018 and was approved in July of 2021 following the inspection that year.

If the CAM plan is found to be inadequate, the facility is to submit an amended version for review. No amendments to the CAM plan have been received and none of the CAM reporting from the facility would indicate the plan is inadequate.

The facility is also required to comply with certain provisions of 40 CFR 97 (Cross-State Air Pollution Rule (CASPR). Specifically, Subparts AAAAA, BBBB, and CCCCC of Part 97. The facility complies with AAAAA and BBBB through the continuous monitoring of NOx and with CCCCC through the limited use of natural gas at startup.

EUA-HDLG

The ash storage and handling emission unit consists of screw feeders and other equipment which collect and dispose of the ash generated in the electricity generation process. This process is controlled by an ash wetting system.

Emission Limits

Fugitive emissions from ash storage and handling are not to exceed 5% opacity. Compliance with this is through non-Method 9 certified emission observations that are to be performed at least once daily. Records of these observations are kept electronically and were reviewed. Readings are taken at least twice daily and recorded. The form used lists any activities performed and also contains a comment section for any issues noted. Any issues noted are immediately brought to the attention of plant management and resolved. The last 12 months of these records appeared readily available for review. Three random days were reviewed. These records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%.

Material Limits

There are no material limits associated with this section.

Process or Operational Restrictions

The ash handling system is not to be operated unless the wetting (conditioning) system is operating. At the time of the inspection, this system was in operation.

Design or Equipment Parameters

There are no design or equipment parameters associated with this section.

Monitoring and/or Recordkeeping Requirements

Fugitive emissions from ash storage and handling are not to exceed 5% opacity. Compliance with this is through non-Method 9 certified emission observations that are to be performed at least once daily. Records of these observations are kept electronically and were reviewed. Readings are taken at least twice daily and recorded. The form used lists any activities performed and also contains a comment section for any issues noted. Any issues noted are immediately brought to the attention of plant management and resolved. The last 12 months of these records appeared readily available for review. Three random days were reviewed. These records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%.

Stack/Vent Restrictions

There are no stack or vent restrictions associated with this section.

Other Requirements

There are no other requirements associated with this section.

EUMACTJJJJJ

Conditions for any existing large (≥ 10 MMBTU/hr) biomass-fired industrial, commercial or institutional boiler as defined in 40 CFR 63.11237 (excluding seasonal and limited-use boilers and boilers equipped with oxygen trim systems) that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in 40 CFR 63.2, except as specified in 40 CFR 63.11195. The AQD is not delegated the regulatory authority for this area source MACT; therefore, the special conditions for the Boiler Area Source MACT contained were not reviewed by the AQD. However, the facility did provide information regarding this MACT that is described below.

Emission Limits

There are no emission limits associated with this section.

Material Limits

There are no material limits associated with this section.

Process or Operational Restrictions

The permittee must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to 40 CFR Part 63, Subpart JJJJJJ that applies to the permittee's boiler. An energy assessment completed on or after January 1, 2008 that meets or is amended to meet the energy assessment requirements in Table 2 of 40 CFR Part 63, Subpart JJJJJJ satisfies the energy assessment requirement. A facility that operates under an energy management program established through energy management systems compatible with ISO 50001, that includes the affected units, also satisfies the energy assessment requirement. The date of the last energy assessment for this facility was November 11, 2014.

The permittee must conduct a performance tune-up according to 40 CFR 63.11223(b), stated in SC III.4, and the permittee must submit a signed statement in the Notification of Compliance Status report that indicates that the permittee conducted a tune-up of the boiler. The date of the last boiler tune up was February 12 of 2019.

Design or Equipment Parameters

There are no design or equipment parameters associated with this section.

Monitoring and/or Recordkeeping Requirements

There are no monitoring or recordkeeping requirements associated with this section.

Stack/Vent Restrictions

There are no stack or vent restrictions associated with this section.

Other Requirements

There are no other requirements associated with this section.

FGMACTZZZZ

These are stationary reciprocating internal combustion engines (RICE) located at area source of HAP emissions. One diesel fired emergency backup fire pump (EUFIREPUMP) rated at 130 hp (97 kw) and one diesel fired emergency generator (EUEMERGEN) rated at 469 HP (350 kw).

Emission Limits

There are no emission limits associated with this section.

Material Limits

There are no material limits associated with this section.

Process or Operational Restrictions

Operation of these engines is limited to 100 hours per year for maintenance and readiness checks and 50 hours per year for non-emergency situations. EUFIREPUMP has run a total of 63.5 hours for the life of the unit. EUEMERGEN ran a total of six hours during the review period and has run 496 hours for the life of the unit. The fire pump is turn tested weekly and the generator is tested monthly for 30 minutes. Each unit is serviced by the facility and records regarding this were available.

Design or Equipment Parameters

Both engines are equipped with non-resettable hour meters as required.

Monitoring and/or Recordkeeping Requirements

Annual and total run time records are being kept by the facility as noted above. Malfunction and maintenance records are being kept as part of the maintenance work order system at the facility. EUFIREPUMP has run a total of 63.5 hours for the life of the unit. EUEMERGEN ran a total of six hours during the review period and has run 496 hours for the life of the unit.

Stack/Vent Restrictions

There are no stack or vent restrictions associated with this section.

Other Requirements

There are no other requirements associated with this section.

At the time of this inspection, this facility was in compliance with their air permitting.

NAME *Neal Dickman*

DATE 11-16-23

SUPERVISOR *Shane Nixon*