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

N139558863

FACILITY: Cadillac Renewable Energy Facility		**SRN / ID:** N1395
LOCATION: 1525 Miltner St., CADILLAC		**DISTRICT:** Gaylord
CITY: CADILLAC		**COUNTY:** WEXFORD
CONTACT: Chase Shepherd , Plant Manager		**ACTIVITY DATE:** 06/30/2021
STAFF: Rob Dickman	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled inspection of this ROP 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 Chase Shepherd, Plant Manager, Ryan Putvin, Operations Manager, Cheryl Hainich, EH&S Manager for Atlantic Power, and Tammi VanTil of Madison Consulting. 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) but this day they were asked by Consumers Energy to run at full load (Net 34 MW). One additional note is that this facility was down due to fire from September of 2019 to August of 2020. 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. There is no record of this, or previous versions of this plan being approved. This plan will be reviewed and approved if warranted. 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.

Testing and Sampling Requirements

There are no source wide testing or sampling requirements.

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. Typically, the facility does treat the covered

fuel storage pile which consists mostly of wood chips and there are little to no fugitive emissions associated with it. They also do not treat the ash pile as the ash is wetted upon collection and stored in an enclosed building. Plant roads at the time of the inspection were in good repair. 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.

Reporting

Annual certifications of compliance and semiannual deviation reports were previously reviewed and documented.

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 twice per shift, so six times daily and recorded. The last 12 months of these records appeared readily available for review. Two dates, November 13, 2020 and May 9, 2021 were selected at random to review in detail. The required 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 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.

Testing and Sampling Requirements

There are no testing or sampling requirements associated with this section.

Monitoring and/or Recordkeeping Requirements

Records of required daily observations are to be kept along with any repairs or remedial action as a result of them. These records are kept electronically and were reviewed. Readings are taken six times daily and recorded. The last 12 months of these records appeared readily available for review. Two dates, November 13, 2020 and May 9, 2021 were selected at random to review in detail. The required records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%. Accordingly, no corresponding records of repairs or remedial action concerning this equipment were noted.

Reporting

Annual certifications of compliance and semiannual deviation reports were previously reviewed and documented.

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.

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 2017 indicated the PM emissions from the emission unit were 2.8 pph and 0.0054 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 0.9%.

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 2017 indicated BAP emissions from the emission unit stack were 1.63E-6 pph and 0.0046 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 at 65.5 pph.

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 181 pph.

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 2017 indicated VOC emissions from the emission unit stack were 0.5 pph and 0.00097 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. A review of records demonstrated the total natural gas usage in 2020 was 47,849 standard cubic feet.

Additionally, no chemically treated wood is to be used for fuel. At the time of the inspection, only clean wood and wood waste 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. 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. No approval of this plan is on file. This will be resolved post inspection.

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.

Testing and Sampling Requirements

Stack testing for PM, BAP, and VOC is required at least once every five years. As described above, this testing was performed in 2017 and demonstrated compliance with applicable emission limits. Required procedures involving timely submissions of testing protocols and testing reports were followed for this testing.

The COMS is required to be audited annually. However, the facility has taken a proactive approach and has adopted 40 CFR 60, Appendix F, Procedure 3. Under this procedure, the COMS is audited quarterly. A review of first quarter 2021 by Technical Programs Unit staff indicated compliance.

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. 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. These factors have been developed and are 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. These items are reported quarterly. These records have been previously received, reviewed, and 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. The most recent annual capacity factor calculated for the facility was 29%. This is a low number as the facility was down for several months due to a fire and the calculation for annual capacity factor is a rolling average determined monthly.

Reporting

Annual certifications of compliance and semiannual deviation reports were previously reviewed and documented.

Also, required reporting relating to stack testing, COMS and CERMS quality assurance testing, and Compliance Assurance Monitoring (CAM) has all been completed in a timely manner, has previously been reviewed, and the reviews have been documented.

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. No approval of this plan is on file. This will be resolved post inspection.

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, BBBBB, and CCCCC of Part 97. The facility complies with AAAAA and BBBBB through the continuous monitoring of NOx and with CCCCC through the limited use of natural gas at startup.

Finally, the facility is to comply with the applicable requirements of 40 CFR 63 Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters. The AQD is not delegated the regulatory authority for this area source MACT. However, some information regarding it is documented later in this report.

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 this equipment is not to exceed 5% opacity. Collected ash from this process is wetted and stored in an enclosed building. 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 to be kept. These records are kept electronically and were reviewed. Non-certified visible emission readings are taken at least six times daily and recorded. The last 12 months of these records appeared readily available for review. Two dates, 11/13/20 and 1/24/21 were selected at random to review in detail. The required records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%. During the inspection, no visible emissions were noted from the building housing the ash. Housekeeping around the building appeared very good.

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 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.

Testing and Sampling Requirements

There are no testing or sampling requirements associated with this section.

Monitoring and/or Recordkeeping Requirements

Fugitive emissions from this equipment is not to exceed 5% opacity. Collected ash from this process is wetted and stored in an enclosed building. 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 to be kept. These records are kept electronically and were reviewed. Non-certified visible emission readings are taken at least six times daily and recorded. The last 12 months of these records appeared readily available for review. Two dates, 11/13/20 and 1/24/21 were selected at random to review in detail. The required records on those days were being kept and appeared complete. No records were noted where the opacity was greater than 5%.

Reporting

Annual certifications of compliance and semiannual deviation reports were previously reviewed and documented.

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.

EUMACTJJJJJJ

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, 2013.

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.

Testing and Sampling Requirements

There are no testing or sampling requirements associated with this section.

Monitoring and/or Recordkeeping Requirements

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

Reporting

Annual certifications of compliance and semiannual deviation reports were previously reviewed and documented.

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. From January of 2020 through the date of the inspection EUFIREPUMP ran a total of 20.5 hours and EUEMERGEN ran a total of six hours.

Design or Equipment Parameters

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

Testing and Sampling Requirements

There are no testing or sampling requirements associated with this section.

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. These records are kept electronically and were available for review.

Reporting

Annual certifications of compliance and semiannual deviation reports were previously reviewed and documented.

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 Rod Dickinson DATE _____ SUPERVISOR Shane Nixon 2022.04.20 09:45:12 -04'00'