

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection**

N139530681

FACILITY: Cadillac Renewable Energy Facility		SRN / ID: N1395
LOCATION: 1525 Miltner St., CADILLAC		DISTRICT: Cadillac
CITY: CADILLAC		COUNTY: WEXFORD
CONTACT: Thomas Schmid , (updated 6/5/2015)		ACTIVITY DATE: 08/13/2015
STAFF: Caryn Owens	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Inspection and Records Review		
RESOLVED COMPLAINTS:		

On Thursday, August 13, 2015, Caryn Owens of the DEQ-AQD conducted a scheduled field inspection and records review of Cadillac Renewable Energy (CRE) (SRN: N1395), located at 1525 Miltner Street, Cadillac, Wexford County, Michigan. The facility is located on the south corner of Miltner and Ron Wilson Street. The field inspection and records review were to determine compliance with the Renewable Operating Permit (ROP) MI-ROP-N1395-2014. CRE is currently a major source for nitrogen oxides (NOx) and carbon monoxide (CO) criteria pollutants. CRE is an area source of hazardous air pollutants (HAPs). The source is subject to: National Emission Standard for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (40 CFR, Part 63, Subpart ZZZZ – RICE MACT); NESHAP for Industrial, Commercial, and Institutional Boilers (40 CFR, Part 63, Subpart JJJJJJ - Area Source Boiler MACT); New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Db); and subject to the federal Compliance Assurance Monitoring (CAM) rule (40 CFR, Part 64).

Evaluation Summary

The activities covered during this full compliance evaluation (FCE) appear to be in compliance with the MI-ROP-N1395-2014. Review of the records for the facility indicates the facility was in compliance with emission limits in accordance to the current ROP. No further actions are necessary at this time. Specific permit conditions that were reviewed are discussed below.

Source Description

CRE is a wood-fired electric utility plant located within the Cadillac city limits. The facility receives chipped wood by truck and uses it to fuel a spreader-stoker boiler to produce steam. The steam is used by the associated generator to produce up to 42 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) using urea for NOx control, a multi-clone dust collector, 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.

On-site Inspection:

During the field inspection it was mostly cloudy with wind speeds approximately 10-15 miles per hour out of the southwest, and approximately 80°F. DEQ checked in at the front desk and met with Mr. Thomas Schmid, Plant Manager, and Mr. Scott Clark, Maintenance Manager, to escort DEQ through the facility. DEQ handed an Inspection Brochure and a Boiler NESHAP Navigation Tool Brochure to Mr. Schmid at the time of the inspection.

DEQ began the inspection at EUA-HDLG, which consists a storage building that contain devices that collects and disposes the ash created by the electricity generation process. EUA-HDLG uses an ash wetting system to minimize particulate and opacity in the air from the ash. During the inspection, both doors to the storage building containing the fly ash and bottom ash were closed. Inside the building, water was observed in puddles on the floor and the ash appeared to be wet. DEQ observed some particulate in the air of the ash handling building, but it was dark, so an opacity percentage could not be determined. No ash was observed outside of the ash handling building, or observed on the roadway leading in and out of the storage building. As previously stated, the ash is properly disposed of at a landfill or used for agricultural purposes.

Following EUA-HDLG, DEQ observed the wood yard (EUW-HDLG) which consists of storage piles of wood chips, and bulldozers to turn the wood piles and push the wood onto the conveyors to transport wood to the

boiler. According to Mr. Schmid, there were approximately 38,000 tons of wood chips in the storage yard. CRE would like at least 42,000 tons of wood to stock up for the winter months. The wood piles are turned monthly, and CRE currently uses approximately 700 up to 1,100 tons of wood chips per day, depending on the electricity demand. The conveyors used to feed the wood chips to the boiler were covered. DEQ observed no visible emissions from the wood chip piles or the conveyor systems transporting the wood chips. A slight wet wood odor was observed while standing close to the wood piles, but it was not an objectionable odor.

DEQ went to the controls room of the boiler and then observed the boiler operations. In the control room, the stack flow rate was 3,506.7 kdscf/hour and 0.16 percent opacity. CRE was producing 14.3 megawatts (MW) of electricity which was a low load for the facility. Typically for the month of July, they produce 34 MW of power, but they came back down because the demand wasn't there. The boiler appeared to be operating correctly with urea pumped into the boiler at the top portion of the boiler to mix with the flue gas prior to entering the ESP. The urea flow rate was 3 gallons per hour during the field inspection. Additionally, DEQ observed a 469 horsepower (hp) (350 kW) emergency generator that is tested once a month for approximately 30 minutes. DEQ observed a small building next to the cooling towers and north of the main building at the site that contained an emergency booster water pump rated 130 hp (97kW), which is tested weekly for 30 minutes.

Records Review:

Source-Wide Conditions:

I. Emission Limits:

No Emission Limits were applicable for the Source-Wide Conditions.

II. Material Limits:

No Material Limits were applicable for the Source-Wide Conditions.

III. Process/Operational Restrictions:

No Process/Operational Restrictions were applicable for this emission unit.

IV. Design/Equipment Parameters

No Design/Equipment Parameters were applicable for the Source-Wide Conditions.

V. Testing/Sampling

No Testing/Sampling was applicable for the Source-Wide Conditions.

VI. Monitoring/Recordkeeping

CRE properly maintains records of sweeping and washing the streets near the ash handling and wood storage piles. The records are filled out on a daily basis. The street and parking lot were clean during the inspection. The records are kept in an acceptable manner. An updated Continuous Fugitive Emissions Control Plan was supplied to the DEQ, dated July 25, 2015. CRE was following the Continuous Fugitive Emissions Control Plan during the walkover.

VII. Reporting

Reporting of any deviations, quarterly reports, semi-annual reports, and annual compliance reports for ROP certification were submitted to the DEQ in timely manner.

VIII. Stack/Vent Restrictions

The stack height Limits were applicable for the Source-Wide Conditions.

IX. Other Requirements

No Other Requirements were applicable for the Source-Wide Conditions.

EUW-HDLG: As previously stated, EUW-HDLG consists of the wood storage and handling at the facility, which includes the devices to transport and feed wood to the boiler system for subsequent electricity generation. The conveyors used to transport the wood are covered to minimize particulate matter (PM) emissions.

I. Emission Limits:

The facility is limited to 5 percent opacity, based on a six minute average. Based on observations during the field inspection and records reviewed, no visible emissions were observed from EUW-HDLG. The facility is within the permitted opacity limits.

II. Material Limits:

No Material Limits were applicable for EUW-HDLG.

III. Process/Operational Restrictions:

No Process/Operational Restrictions were applicable for EUW-HDLG.

IV. Design/Equipment Parameters

No Design/Equipment Parameters were applicable for EUW-HDLG.

V. Testing/Sampling

No Testing/Sampling was applicable for EUW-HDLG.

VI. Monitoring/Recordkeeping

Visible emissions for EUW-HDLG is observed and recorded twice daily, and no repairs or remedial action have been reported.

VII. Reporting

Reporting of any deviations, quarterly reports, semi-annual reports, and annual compliance reports for ROP certification were submitted to the DEQ in timely manner.

VIII. Stack/Vent Restrictions

No stack/vent Restrictions were applicable for EUW-HDLG.

IX. Other Requirements

No Other Requirements were applicable for EUW-HDLG.

EUBLR: This emission unit is for electric generation that consists of the wood boiler, a SNCR system, a multi-clone dust collector, and an ESP. Natural gas is used as a startup fuel. The boiler has a spreader-stoker design and is capable of providing enough steam to produce 42 MW of electricity.

I. Emission Limits:

The emission limits for EUBLR are determined using performance test data for PM and volatile organic compounds (VOCs) with concentrations reported in pounds per hour (lbs/hr) and pounds per MMBTU (lbs/MMBtu), and Benzo-a pyrene with concentrations reported in lbs/hr and micrograms per cubic meter corrected to 70 degrees Fahrenheit and 29.92 inches mercury. The most recent stack test completed for the facility was April 17 and 18, 2012.

The emission limits for NOx and CO use a continuous emission monitor system (CEMs) that reports concentrations in lbs/hr based on a 24-hour rolling time period as determined at the end of each hour that the boiler operates, and lbs/MMBtu based on a 24-hour rolling time period as determined each hour the boiler operates.

Below is a table summarizing the results from performance testing and DEQ observations of the NOx and CO CEMs during the inspection on August 13, 2015.

Pollutant	Emission Limit	Performance Test Results	CEMs, during field inspection 8/14/15	Compliance with Emission Limit
PM	15.7 lbs/hr	10.96 lbs/hr	Not Applicable (NA)	Yes
	0.03 lbs/MMBtu	0.019 lbs/MMBtu		
Benzo-a-Pyrene	0.0054 lbs/hr	0.00000158 lbs/hr	NA	Yes
	10 micrograms per cubic meter	0.0041 micrograms per cubic meter		
NOx	78.5 lbs/hr	NA	37.3 lbs/hr	Yes
	0.15 lbs/MMBtu		0.144 lb/MMBtu	
CO	209.2 lbs/hr	NA	28.1 lbs/hr	Yes
	0.40 lbs/MMBtu		0.109 lbs/MMBtu	
VOCs	22.5 lbs/hr	2.93 lbs.hr	NA	Yes
	0.043 lbs/MMbtu	0.0038 lbs/MMBtu		

At the time of the field inspection the opacity from the COM was 0.16 percent per six-minute average. Based on the records reviewed from the Daily Opacity Report (attached) from August 13, 2015, the opacity varied between 0.1 to 2.0 percent.

II. Material Limits:

The material limits for natural gas are 107,000 scf/hr and 10% of the annual capacity of the boiler. According to the records reviewed, the natural gas usage from January 1, 2015 until August 16, 2015 was 8,500 CCF based on the rolling 12-month time period. No natural gas was used for the month of August. According to Mr. Schmid, the last time the facility started up on natural gas was in February 2015 following a power outage.

Based on visual observations during the field inspection and through discussions with Mr. Schmid, no chemically treated wood is used at the facility.

III. Process/Operational Restrictions:

During the facility inspection the multi-clone dust collector, ESP, and SNCR system were in operation and appeared to be working properly.

The latest MAP for the facility was submitted on March 9, 2012, and Mr. Schmid said that it is reviewed annually. Based on observations of the facility records during the inspection and through discussions with Mr. Schmid, the MAP is implemented in daily operations at the facility.

IV. Design/Equipment Parameters

The COM is used to verify that the ESP is functioning properly. Monitoring plans for the CEMs and COM have been submitted to the DEQ. During the field the inspection, the CEMs and COM appeared to be maintained and operating properly.

V. Testing/Sampling

Emission rates from stack testing were submitted and reviewed by the DEQ on May 4, 2012. Additional stack testing typically occurs every 5 years, so the next stack test is planned in 2017, unless an earlier date is determined necessary. As previously stated, PM, Benzo-a-pyrene, and VOCs were analyzed during the stack testing and were within the permitted emission limits.

The annual audit of the COM and CEMs was completed on August 11 and 12, 2015. According to Mr. Dave Patterson of the DEQ- Technical Programs Unit, the audit appeared to run smoothly. Mr. Patterson will review the audit when it is submitted to the DEQ, to verify the monitors are operating properly.

CRE completes quarterly Quality Assurance Reports for the COM and CEMs. DEQ observed no concerns with the Quality Assurance Reports that were submitted to the District.

VI. Monitoring/Recordkeeping

The opacity measured by the COM is used to verify that the ESP is functioning properly. As previously stated, records indicated the opacity between 0-2%. The facility uses a CEMs to monitor NOx, CO, and O2. A monitoring plan for CEMs and COM has been submitted, and the facility operates in accordance with the CEMs and COM monitoring plan. The facility does not operate the boiler without the CEMs or COM operating.

One excursion was reported from August 13, 2014 through August 13, 2015, due to a power outage at the facility in February 2015, resulting in the opacity exceedance. Corrective measures were taken using good air pollution practices to resolve the opacity exceedance and minimize emissions, and the incident was reported to DEQ in a timely manner. The facility records the duration of each start-up, shut-down, or malfunction of the boiler system for their power use for sale purposes, and permit requirements.

CRE uses calculated emission factors for PM, Benzo-a-pyrene, and VOCs using the most recent performance testing data. CRE uses CEMs to continuously record NOx and CO concentrations and 24-hour rolling averages of NOx and CO emissions.

Records reviewed at the facility indicated approximately 850 tons of wood chips are consumed per day, and no natural gas was used for the month of August.

VII. Reporting

Reporting of any deviations, quarterly reports, semi-annual reports, and annual compliance reports for ROP certification were submitted to the DEQ in timely manner. Based on the quarterly excess emissions reports submitted to the DEQ for the past year, excess emissions and/or CEMs and COM downtime percentages were less than 1% and in compliance. Reporting for CEMs and COM were submitted to the DEQ in a timely manner.

As previously stated, the most recent performance test was completed April 17 and 18, 2012, and performance test protocols were followed appropriately. The next performance test shall be completed prior to April 2017, unless an earlier date is determined necessary.

VIII. Stack/Vent Restrictions

The stack from EUBLR was reported 188 feet above ground surface, and 96 inch diameter which are within the permitted limits.

IX. Other Requirements

CRE reviews the MAP and CAM Plan, on an annual basis. The facility was subject to the Clean Air Interstate Rule (CAIR) that has been rescinded, and replaced with the federal Cross-State Air Pollution Rule (CSAPR). DEQ is awaiting guidance from the Environmental Protection Agency (EPA) prior to implementing CSPAR requirements into the ROP.

EUA-HDLG: This emission unit consists of the ash storage and handling devices that collect and dispose the bottom and fly ash created by the electrical generation process.

I. Emission Limits:

The facility is limited to 5 percent opacity, based on a six minute average. Based on observations during the field inspection and records reviewed, no visible emissions were observed from EUA-HDLG. The facility is within the permitted opacity limits.

II. Material Limits:

No Material Limits were applicable for EUA-HDLG.

III. Process/Operational Restrictions:

No Process/Operational Restrictions were applicable for EUA-HDLG.

IV. Design/Equipment Parameters

No Design/Equipment Parameters were applicable for EUA-HDLG.

V. Testing/Sampling

No Testing/Sampling was applicable for EUA-HDLG.

VI. Monitoring/Recordkeeping

Visible emissions for EUA-HDLG is observed and recorded twice daily, and no repairs or remedial action have been reported.

VII. Reporting

Reporting of any deviations, quarterly reports, semi-annual reports, and annual compliance reports for ROP certification were submitted to the DEQ in timely manner.

VIII. Stack/Vent Restrictions

No stack/vent Restrictions were applicable for EUA-HDLG.

IX. Other Requirements

No Other Requirements were applicable for EUA-HDLG.

EUMACTJJJJJ: EUBLR is subject to the federal Area Source Boiler MACT (40 CFR, Part 63, Subpart JJJJJJ), for the requirements of a wood/bark fired boiler with natural gas used as a startup fuel. The DEQ does not have

delegation of this Area Source Boiler MACT regulation, therefore, a compliance analysis of EUMACTJJJJJ was not assessed during this inspection and records review.

FGMACTZZZZ: Flexible Group FGMACTZZZZ consists of one diesel fired emergency generator rated at 469 hp (350 kW) and one diesel fired emergency backup fire pump rated at 130 hp (97 kW), which are subject to the federal RICE MACT (40 CFR, Part 63, Subpart ZZZZ). The DEQ does not have delegation of the RICE MACT regulation, therefore, a compliance analysis of FGMACTZZZZ was not assessed during this inspection and records review.

NAME Camp Owens

DATE 8/18/15

SUPERVISOR 