

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

N711370942

FACILITY: Michigan Public Power Agency		SRN / ID: N7113
LOCATION: 1750 Prough Road SW, KALKASKA		DISTRICT: Gaylord
CITY: KALKASKA		COUNTY: KALKASKA
CONTACT: Matt Burk , Power Generation Services Lead		ACTIVITY DATE: 02/16/2024
STAFF: Caryn Owens	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT:		
RESOLVED COMPLAINTS:		

On Friday, February 16, 2024, Caryn Owens of the Department of Environment, Great Lakes and Energy (EGLE) – Air Quality Division (AQD) conducted an on-site field inspection of Michigan Public Power Agency – Kalkaska CT No. 1 (N7113) located at 1750 Prough Road in Kalkaska Township, Kalkaska County, Michigan. More specifically, the site is located on the west side of Prough Road, approximately 1/3 mile north of the Prough and Thomas Roads intersection. The purpose of this inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) MI-ROP-N7113-2022. This facility is considered a major source due to the potential to emit of nitrogen oxides (NOx) exceed 100 tons per year. The fire pump (EUFENGINE) at the site is an area source for National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (40 CFR, Part 63, Subpart ZZZZ – RICE MACT).

The two onsite turbines are subject to the New Source Performance Standards (NSPS): Standards of Performance for Stationary Gas Turbines in 40 CFR, Part 60, Subpart GG. The turbines were installed at this location in 1999. Additionally, the turbines at the site are subject to the federal Acid Rain Program in 40 CFR, Part 72 and subject to the Cross-State Air Pollution Rule (CSAPR) Trading Program pursuant to 40 CFR, Part 97, however, AQD does not have delegation of the Acid Rain and CSAPR Programs, so these areas were not reviewed during the field inspection and records review.

Evaluation Summary:

The activities covered during this full compliance evaluation (FCE) appear to be in compliance with ROP MI-ROP-N7113-2022. Review of the records for the facility indicates the facility was in compliance with emission limits in accordance with the ROP. No further actions are necessary at this time. Specific permit conditions that were reviewed are discussed below.

Source Description:

Michigan Public Power Agency (MPPA) operates an electric power plant located on Prough Road, in a small industrial area approximately two miles south-southwest of Kalkaska, Michigan. The station is operated as a "peaking plant", meaning that it operates mostly for short periods of "peak load" when demand for electricity is high. The facility was constructed in 2002 and may run one or both turbines as required. An operator is typically onsite whether they are operating or not, to monitor onsite activities, though the plant can also be monitored from Company offices in Traverse City, Michigan.

The facility contains one Pratt and Whitney FT-8 Twin Pac turbine set consisting of two natural gas fired combustion turbines and utilizing water injection and low-NOx burners for NOx control. The turbines are coupled to an electric generator with an ISO nominal rating of 55 MW. The facility also has a diesel engine for operating a fire pump, and a natural gas-fired "line heater" to preheat natural gas fuel before the fuel is supplied to the turbines.

The Facility is controlled by a software system programmed using operating curves of water to fuel ratios established during stack testing. The software is reported to shut down the Facility should any parameters exceed the ranges and thresholds established during testing.

On-site Inspection:

During the onsite inspection, the gate to the site was open, and AQD spoke to Rob Hipp, the Operations & Controls Technician of Traverse City Light and Power. The site was not operating at the time of the inspection. According to Mr. Hipp, the last day they operated was February 14th, they also operated February 11th, 12th, and 13th. They operate based on demand from Midcontinent Independent System Operators (MISO) they also operate the unit every 14 days whether there's demand to make sure the turbines are operating correctly, and water is flowing properly. The fire pump is operated monthly for testing and the required to operate it about 15 minutes, but they operate it between 15 and 30 minutes. Additional equipment onsite consists of an approximately 210,000-gallon water tank for fire suppression, and an approximately 330,000-gallon tank of demineralized water for NOx control. During the field inspection, it was cloudy with

snow flurries, with wind speeds approximately 8 to 10 miles per hour out of the west-northwest, and approximately 25 degrees Fahrenheit. The site was snow covered during the inspection.

The facility is claiming the following exemptions at the facility:

- A natural gas heater to pre-heat turbine fuel with a heat input of 1 MMBTU/hour meets exemption Rule 336.1282 (2)(b)(i),
- A 250,000 BTU/hour natural gas fired space heater for the turbine enclosure meets exemption Rule 336.1282(2)(b)(i).

Records Review:

EUPENGINE:

A 210-horsepower diesel engine used as backup power for the fire pump subject to the NESHAP under 40 CFR, Part 63, Subpart ZZZZ, located at an area source of HAP emissions, existing emergency, compression ignition (CI) RICE equal to or less than 500 brake hp. A RICE is existing if the date of installation is before June 12, 2006.

The maintenance records for EUPENGINE appeared to be complete. The facility chooses to change the oil on an annual basis, and the last oil change was April 6, 2023. The facility also inspects the belts, hoses, and spark plugs on an annual basis, and replaces if necessary.

According to Mr. Hipp, EUPENGINE is operated about 15 to 30 minutes per month to test the engine. The facility inspects the EUPENGINE monthly in accordance with manufacturer's recommendations.

At the time of the inspection EUPENGINE was equipped with a non-resettable hour meter and had operated for a total of 96.1 hours since it was installed. There have been no malfunctions of EUPENGINE. Additionally, the diesel fuel contains a fill alarm to prevent overfilling the tank. The alarm is tested monthly when the engine is tested.

FGTURBINES:

Pratt and Whitney FT8-1 Twin Pac turbine set consisting of two simple-cycle natural gas-fired turbines, nominally rated at 55 MW and 546.3 MMBTU/hour combined.

I. Emission Limits:

The NOx emission limits for each turbine in FGTURBINES are 31 pounds per hour per turbine, and 130 parts per million by volume at 15 percent oxygen per turbine, and additionally 34.6 tons per year based on a 12-month rolling time period for FGTURBINES. Based on the most recent stack testing conducted May 2023. Based on the testing data, the highest NOx emissions from EUTURBINE 1A were 21.71 pph, 24.20 ppmv at 15 percent oxygen. NOx emissions from EUTURBINE 1B were 24.38 pph, 23.15 ppmv at 15 percent oxygen. Based on the records reviewed, the highest NOx emissions from FGTURBINES were reported at 25.8 tpy based on a 12-month rolling time period. The NOx emissions were below the permitted emission limits.

II. Material Limits:

Natural gas is limited to 595.6 million cubic feet (MMCF) based on a 12-month rolling time period, and the sulfur content of the natural gas is not to exceed 1.5 grains sulfur per 100 cubic feet of gas. The sulfur content is confirmed by testing from the supplier of natural gas. Based on the records reviewed, the highest amount of gas used was 565.1 MMCF based on a rolling 12-month time period, the most recent test of natural gas indicated the sulfur content is less than 1.5 grains sulfur per 100 cubic feet of gas.

III. Process/Operational Restrictions:

AQD received an updated startup, shut down, and malfunction abatement plan (SSMAP) for MPPA on April 20, 2022. The plan was approved by AQD on April 25, 2022, and the facility appears to be following the SSMP.

IV. Design/Equipment Parameters:

Natural gas usage is continuously monitored at the facility, and the facility has installed a water injection system that appears to be operating properly. The facility has a system to monitor and record the fuel consumption and the ratio of water to fuel being fired in each turbine for NOx emission control.

V. Testing/Sampling:

NOx emission testing was most recently conducted May 3 and 4, 2023. The results of the performance testing indicated the NOx emissions were within the permitted limits and discussed further above under emission limits.

VI. Monitoring/Recordkeeping:

Records of natural gas to FGTURBINES are being kept by the facility. All required hourly rolling data, monthly data, and 12-month rolling time period data is collected and retained appropriately at the site.

VII. Reporting:

The semi-annual reports and annual compliance reports for ROP certification were submitted to AQD in a timely manner. During the reporting period the permittee reported all monitoring and associated recordkeeping requirements. Exceedances of the limit, when they occur are reported throughout the year and in semi-annual excess emission reports (EERs). No excess emissions or monitor downtime were reported during the last year.

Test protocols and test reports, established in the ROP, were submitted within appropriate time frames. The permittee appears in compliance with the reporting requirements.

VIII. Stack/Vent Restrictions:

Stack parameters for FGTURBINES have not changed from the previous inspection and appear to be accurate.

IX. Other Requirements:

The facility appears to comply with the NSPS 40 CFR, Part 60, Subpart GG requirements for FGTURBINES. As previously stated, the facility is subject to Acid Rain (40 CFR, Part 72), and CSAPR (40 CFR, Part 96). However, the state of Michigan does not have delegation over these programs, and therefore, these requirements were not reviewed at this time.

NAME

Camp Owens

DATE

4-29-24

SUPERVISOR

Shane Nixon