

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

B610767430

FACILITY: CLOVERLAND ELECTRIC COOPERATIVE - DAFTER		SRN / ID: B6107
LOCATION: 2535 W HIGHWAY M-28, DAFTER		DISTRICT: Marquette
CITY: DAFTER		COUNTY: CHIPPEWA
CONTACT: ROGER LINE , DIRECTOR OF GENERATION		ACTIVITY DATE: 04/21/2023
STAFF: Lauren Luce	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Targeted Inspection FY23		
RESOLVED COMPLAINTS:		

Facility: Cloverland Electric Cooperative – Dafter (SRN: B6107)

Location: 2535 West M-28, Dafter, Chippewa County, MI

Contacts: Roger Line, Director of Generation

Cory Wilson, Regulatory Affairs and Compliance Specialist

Regulatory Authority

Under the Authority of Section 5526 of Part 55 of NREPA, The Department of Environment, Great Lakes, and Energy (EGLE) may upon the presentation of their card, and stating the authority and purpose of the investigation, enter and inspect any property at reasonable times for the purpose of investigating either an actual or suspected source of air pollution or ascertaining compliance or noncompliance with NREPA, Rules promulgated thereunder, and the federal Clean Air Act.

Facility Description

Cloverland Electric Cooperative (CEC) is a utility company that serves five counties in the eastern Upper Peninsula (Chippewa, Mackinac, Schoolcraft, Delta and Luce). The Dafter generating facility is considered a “peaking” station, meaning the station is used during a high demand for electricity and power outages. Diesel generators are commonly used as peak shaving units due to their ability to come online quickly, respond to fluctuation in loads, and provide long durability.

The Dafter station is located in a rural area just west of the I-75 and M-28 crossing in Chippewa County. This facility was constructed in the 1950s with three Superior diesel engines, identified as Units 1, 2, and 3, and two Nordberg diesel engines, identified as Units 4 and 5. Each of these units are fuel oil-fired, compression ignited (CI) reciprocating internal combustion engines (RICE) that are shaft coupled to electric generators. The three Superior engines were installed in 1954 and are rated at 1,440 BHP, 1,000 KWe. The two Nordberg engines were installed in 1962 and are rated at 4,180 BHP, 3,000 KWe. Each engine is housed inside a warehouse building with exhaust emissions routed outside through five vertical stacks (one for each engine).

The three Superior engines have not operated since 2012. In 2017, EUENGINE5 seized a piston and the engine has not been repaired since. CEC - Dafter requested to void their Permit to Install (PTI) for the three superior engines and EUENGINE5 in 2020. A new PTI was issued in 2020 for EUENGINE4 and the addition of four identical Caterpillar diesel-fired CI RICE engines (FGCATENGINES). These engines were manufactured in 2008 and have a maximum rate of 2,990 HP and 2,231 kW. They are vented through a grated opening on the ceiling of their enclosure.

Emissions

Pollutants emitted from the combustion process of fuel oil-fired RICE units include nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), and particulate matter (PM). Sulfur oxides emissions are directly related to the sulfur content of the fuel. The formation of nitrogen oxides is related to the combustion temperature in the engine cylinder, and CO and VOC emissions are primarily a result of incomplete combustion. PM emissions can include trace amounts of metals and condensable, semi-volatile organics which result from incomplete combustion, volatilized lubricating oil, and engine wear. PM in the form of blue smoke is caused by lubricating oil that leaks into the combustion chamber past worn piston rings and is partially burned. Black smoke is a result of carbon particles combining to form soot. Liquid particles that form during an engine cold start, or low operation, appear as white smoke. Emissions vary according to the air-to-fuel ratio, ignition timing, torque, speed, ambient temperature, humidity, and other factors.

Emissions Reporting

The table below shows the facility's Michigan Air Emissions Reporting System (MAERS) 2022 submittal.

Pollutant	Pounds per Year (PPY)	Tons per Year (TPY)
CO	168891.33	84.4
NO _x	49243.94	24.6
PM ₁₀	1307.30	<1
PM _{2.5}	1293.87	<1
SO ₂	40.86	<1
VOC	1139.93	<1

Regulatory Analysis

CEC – Dafter is currently subject to PTI No. 194-09A for five RICE generator units. Each engine is also subject to the federal NESHAP 40 CFR Part 63, Subpart ZZZZ. FGCATENGINES units are subject to the federal NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII). The 30,000 gallon fuel oil storage tank is considered exempt per Rule 336.1284(d).

Compliance History

The facility has not received any violation notices in the past five years. The facility was last inspected in December 2019 and was found to be in compliance with all applicable air quality rules and regulations at that time.

Inspection

On April 21, 2023, AQD Staff (Lauren Luce) conducted a targeted inspection at Cloverland Electric Cooperative in Dafter MI. AQD Staff arrived at the facility and met with Dan Klever, Repairman. It was explained that the purpose of the inspection was to ensure compliance with the PTI No. 194-09A and all other applicable air pollution control rules and federal regulations. The inspection began by discussing permitted equipment, the facility, and records. A tour of the facility was then provided.

EUENGINE4

This emission unit is a Nordberg Model No. TS2110. At the time of the inspection, the unit was not operating. Fuel oil invoices provided stated that the product was Dyed Ultra Low Sulfur #2 Diesel. This fuel is certified to contain 0-15 ppm of sulfur. This shows compliance with SC II.1 that states the sulfur content of the diesel fuel shall not be greater than 0.0015%.

The permittee is required to monitor and record kW-hr production from EUENGINE4. These records were provided for January 2008-March 2023. In 2022, there was 769,548 kW-hrs of electricity produced. There were no exceedances of the 1,000,000 kW-hours of electricity produced per 12-month rolling time period limit as specified in SC III.1. A detailed maintenance schedule was also provided.

FGCATENGINES

This flexible group consists of four identical Caterpillar diesel-fired CI RICE engines. These engines were manufactured in 2008 and have a maximum rate of 2,990 HP and 2,231 kW. They were installed in 2021. The engines are located directly east of the building within four separate trailer enclosure units.

Fuel oil invoices provided stated that the product was Dyed Ultra Low Sulfur #2 Diesel. This fuel is certified to contain 0-15 ppm of sulfur. This shows compliance with SC II.1 and SC VI.5 that states the sulfur content of the diesel fuel shall not be greater than 0.0015%.

Records were provided on hours of operations for December 2021-March 2023 (SC VI.4). In March 2023, engine 1C operated 65.75 hours, engine 2C operated 65.75 hours, engine 3c operated 65.75 hours, and engine 4C operated 64.75 hours. There were no exceedances of the 500 hours per year based on a 12-month rolling time period as specified in SC III.1. On 1/5/22, a letter dated 12/31/2021 was received by the AQD from CEC stating that Dafter Generating Station had completed the installation of four new electric generating engines. The letter also states the engines are certified and operated in a certified manner per PTI #194-09A SC VIII.1 & 2. A maintenance schedule and service records were also provided for FGCATENGINES.

All of the engines are equipped with a non-resettable hours meter (SC IV.1). On 4/21/23 at approximately 12:45pm the meters read: 1C – 2775.4, 2C – 1834.4, 3C – 3373.5, 4C – 3974.2. The nameplate on the engines have a power rating of 2030 kW at 1800 RPM (SC IV.2).

A record of certification and manufacturer's emission data was provided for each engine in FGATENGINES (SC VI.3). FGATENGINES are vented through a grated opening on the ceiling of their enclosure. The opening appears to be at least 12.5 feet from the ground and 94x94 inches in diameter (SC VIII.1-4).

FGFACILITY


Records were provided on NOx emissions for FGFACILITY from January 2022-March 2023 (SC VI.2). 12-month rolling NOx emissions in March 2023 were 28.87 tons per year. There were no exceedances of the 60 ton per year limit specified in SC I.1.

Compliance

Based on this inspection and records reviewed, Cloverland Electric Cooperative - Dafter appears to be in compliance with PTI No. 194-09A and all other applicable air pollution control rules and federal regulations.



Image 1: FGATENGINES

NAME 

DATE 6/1/2023

SUPERVISOR 