

**MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION**

December 21, 2023

**PERMIT TO INSTALL
20-02C**

ISSUED TO
Michigan Public Power Agency

LOCATED AT
1750 Prough Road
Kalkaska, Michigan 49646

IN THE COUNTY OF
Kalkaska

STATE REGISTRATION NUMBER
N7113

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: July 7, 2023	
DATE PERMIT TO INSTALL APPROVED: December 21, 2023	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO ₂ e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUTURBINE1A	Natural gas-fired, simple-cycle Pratt and Whitney turbine, 273.15 MMBtu/hr nominal heat input with low NO _x burners and water injection.	05/21/2002	FGTURBINES
EUTURBINE1B	Natural gas-fired, simple-cycle Pratt and Whitney turbine, 273.15 MMBtu/hr nominal heat input with low NO _x burners and water injection.	05/21/2002	FGTURBINES
EUFENGINE	210 HP diesel engine used as backup power for the fire pump.	10/2002	NA

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

EUPENGINE EMISSION UNIT CONDITIONS

DESCRIPTION

210 HP diesel engine used as backup power for the fire pump.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. At all times, the permittee must operate and maintain any emergency reciprocating internal combustion engine (RICE), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.6605(b))**
2. In order for the engine to be considered an emergency stationary RICE, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in 40 CFR 63.6640(f)(2) and (3) is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(2) and (3), the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.
 - a) You may operate your emergency stationary RICE for any combination of purposes specified in 40 CFR 63.6640(f)(2)(i) through (iii) for a maximum of 100 hours per year for maintenance checks and readiness testing and emergency demand response. Any operation for non-emergency situations as allowed in SC III.3(b) counts as part of the 100 hours.
 - b) Emergency stationary RICE may be operated for up to 50 hours per calendar year in non-emergency situations. This 50 hours of operation are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response. **(40 CFR 63.6640(f))**
3. For existing emergency engines ≤ 500 HP, the permittee must conduct the following:
 - a) Change oil and filter every 500 hours of operation or annually, whichever comes first.
 - b) Inspect air cleaner (compression ignition units) or spark plugs (spark ignition units) every 1,000 hours of operation or annually, whichever comes first, and replace as necessary.
 - c) Inspect all hoses and belts, every 500 hours of operation or annually, whichever comes first, and replace as necessary.**(40 CFR 63.6602, Table 2c to 40 CFR Part 63, Subpart ZZZZ)**
4. For existing emergency engines ≤ 500 HP, the permittee must operate and maintain the stationary RICE and after treatment control device (if any) according to the manufacturer's emission related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 63.6625(e))**

For existing and new/reconstructed emergency engines ≤500 HP, the permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards (other than startup) in Table 2c to 40 CFR Part 63, Subpart ZZZZ apply. **(40 CFR 63.6625(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. For existing emergency engines ≤500 HP, the permittee must install a non-resettable hour meter. **(40 CFR 63.6625(f))**

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. For existing emergency engines ≤500 HP, the permittee must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the engine and after-treatment device (if any) was operated and maintained according to the maintenance plan. **(40 CFR 63.6655(e))**
2. For existing emergency engines ≤500 HP, the permittee must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee must document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency. **(40 CFR 63.6655(f))**
3. For existing emergency engines ≤500 HP, the permittee must keep records of the occurrence and duration of each malfunction of operation of the engine, or air pollution control and monitoring equipment, if installed. **(40 CFR 63.6655(a)(2))**
4. For existing emergency engines ≤500 HP, the permittee shall keep in a satisfactory manner, records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment, if installed, to its normal or usual manner of operation. **(40 CFR 63.6655(a)(5))**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ, for Stationary Reciprocating Internal Combustion Engines by the initial compliance date. **(40 CFR 63.6595, 40 CFR Part 63, Subparts A and ZZZZ)**
2. The permittee may utilize an oil analysis program in order to extend the specified oil change requirement only if such program complies fully with 40 CFR Part 63, Subpart ZZZZ. **(40 CFR 63.6595, 40 CFR Part 63, Subpart ZZZZ, 40 CFR 63.6625(i))**

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
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. The turbines are equipped with low NO _x burners and water injection systems.	EUTURBINE1A EUTURBINE1B

FGTURBINES FLEXIBLE GROUP CONDITIONS

DESCRIPTION

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.

Emission Unit: EUTURBINE1A, EUTURBINE1B

POLLUTION CONTROL EQUIPMENT

Water injection system and low NO_x burners.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. NO _x	31 lb/hr per turbine ^{a,b}	Hourly	EUTURBINE1A, EUTURBINE1B	SC V.2	R 336.1205(1)(a)
2. NO _x	103 ppmv dry at 15% oxygen per turbine	Hourly	EUTURBINE1A, EUTURBINE1B	SC V.1	40 CFR 60.332(a)(1)
3. NO _x	220 tpy ^a	Based on a 12 month rolling time period as determined at the end of each calendar month	FGTURBINES	SC V.2, SC VI.2	R 336.1205(1)(a), R 336.1205(3)

^a NO_x limits do not include startup, shutdown and malfunction conditions.

^b Startup and shutdown shall be defined in the Startup, Shutdown and Malfunction Plan as approved by the AQD.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Natural gas	3,800 million cubic feet	Based on a 12 month rolling time period as determined at the end of each calendar month	FGTURBINES	SC IV.1	R 336.1205(1)(a) & (3)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
2. Sulfur content of natural gas	1.5 grains per 100 standard cubic foot ¹	NA	FGTURBINES	SC VI.4	R 336.1225

3. The permittee shall only combust natural gas as defined in 40 CFR Part 60, Subpart GG. **(40 CFR 60.331(u), 40 CFR 60.333(b))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall burn only natural gas in FGTURBINES. **(R 336.1205(1)(a)& (3), R 336.1225)**
2. The permittee shall not operate FGTURBINES unless a Startup, Shutdown, and Malfunction Plan that describes how emissions will be minimized during startups, shutdowns, and malfunctions is maintained and has been approved by the District Supervisor. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. **(R 336.1911, R 336.1912)**
3. The permittee shall keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NO_x emission control. At a minimum, the plan shall include the parameters monitored and the acceptable ranges of the parameters as well as the basis for designating the parameters and acceptable ranges. **(40 CFR 60.334(g))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner a device to monitor and record the natural gas usage for FGTURBINES on a continuous basis. **(R 336.1205(1)(a) & (3), R 336.1225)**
2. The permittee shall install, maintain, and operate in a satisfactory manner a water injection system for each turbine in FGTURBINES for purposes of NO_x emission control. **(R 336.1205(1)(a) & (3))**
3. The permittee shall install, maintain, and operate in a satisfactory manner a device to monitor and record the fuel consumption and the ratio of water to fuel being fired in each turbine, on a continuous basis. **(40 CFR 60.334(a))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall determine the NO_x emission rate from EUTURBINE1A and EUTURBINE1B, in parts per million by volume on a dry basis at 15 percent O₂ at worst-case normal operating load of the turbines at least once every five years. The emission rate shall be determined by the average of a minimum of three test runs per 40 CFR Part 60 method requirements. Testing shall be performed in accordance with 40 CFR Part 60, Appendix A, Method 7E or an alternate method approved in advance by the AQD. The fuel consumption and the water to fuel ratio shall be monitored concurrently with the testing. **(40 CFR 60.335)**
2. The permittee shall determine the NO_x emission rate from EUTURBINE1A and EUTURBINE1B, in pounds per hour, at worst-case normal operating load once every five years. The emission rate shall be determined by the average of three test runs per method requirements at least once every five years. Testing shall be performed in accordance with 40 CFR Part 60, Appendix A, Method 7E or an alternate method approved in advance by the AQD. An alternative method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol and must meet the requirements of the federal Clean Air Act, all applicable state and federal rules and regulations, and be within the authority of the AQD to make the change. No Less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and the AQD District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The

permittee must submit a complete report of the test results to the AQD Technical Programs Unit and the AQD District Office within 60 days following the last date of the test. **(R 336.1205(1)(a) & (3))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain, in a satisfactory manner to the AQD, daily, monthly, and 12 month rolling time period records of the average operating load (in Megawatts), fuel consumption, and water-to-fuel ratio which each turbine in FGTURBINES operated at during the monitoring period. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3))**
2. The permittee shall calculate and maintain NO_x emissions in tons per calendar month and tons per 12 month rolling time period using emission factors based on the most recent performance test. **(R 336.1205(1)(a) & (3))**
3. The permittee shall continuously monitor and record the fuel consumption and water to fuel ratio for FGTURBINES in a manner satisfactory to the AQD. **(40 CFR 60.334(a))**
4. The permittee shall maintain records demonstrating that the natural gas combusted in FGTURBINES meets the sulfur content limit in SC II.2 by either of the following:¹
 - a) Maintaining a record of the gas quality characteristics in a current valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is less than SC II.2.
 - b) Conducting representative fuel sampling which shows that the sulfur content of the gaseous fuel does not exceed SC II.2. At a minimum, the amount of fuel sampling data specified in Section 2.3.1.4 or 2.3.2.4 of Appendix D to 40 CFR Part 75 is required.
(R 336.1225)

VII. REPORTING

1. The permittee shall submit reports of excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c), on a semiannual basis for all periods of unit operation, including startup, shutdown and malfunction. The reports shall be postmarked by the 30th day following the end of each six-month period.
 - a) An excess emission shall be any unit operating hour for which the average water to fuel ratio, as measured by the continuous monitoring system, falls below the acceptable water to fuel ratio needed to demonstrate compliance with SC I.2, as established during performance testing. Any unit operating hour in which no water is injected into FGTURBINES shall also be considered an excess emission.
 - b) A period of monitor downtime shall be any unit operating hour in which the water is injected into FGTURBINES, but the essential parametric data needed to determine the water to fuel ratio are unavailable or invalid.
 - c) Each report shall include the average water to fuel ratio, average fuel consumption, ambient conditions (temperature, pressure, and humidity), load of each turbine during each excess emission. Ambient conditions do not have to be reported when using the worst case ISO correction factor as specified in 40 CFR 60.334(b)(3)(ii) or if not using the ISO correction equation under the provisions of 40 CFR 60.335(b)(1).
(40 CFR 60.334(j))

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVTURBINE1A	150.0	45.0	R 336.1225 40 CFR 52.21(c) & (d)
2. SVTURBINE1B	150.0	45.0	R 336.1225 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the Federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and GG. **(40 CFR, Part 60, Subparts A and GG)**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).