

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

August 17, 2021

PERMIT TO INSTALL
40-15A

ISSUED TO
Consumers Energy Company

LOCATED AT
2742 North Weadock Highway
Essexville, Michigan 48732

IN THE COUNTY OF
Bay

STATE REGISTRATION NUMBER
B2840

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: April 20, 2021	
DATE PERMIT TO INSTALL APPROVED: August 17, 2021	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
EU-KARN1	<p>Karn Boiler #1 is a 2500 million BTU per hour dry bottom tangential coal fired boiler with fuel oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. Particulate emissions are currently controlled by a pulse jet fabric filter (PJFF).</p> <p>A Selective Catalytic Reduction (SCR) unit (installed in 2004), a spray dry absorber (SDA) (installed in 2014), and sorbent injection (installed in 2015) are utilized for nitrogen oxides (NO_x), sulfur dioxide (SO₂) and other acid gas, and mercury control, respectively.</p>	<p>July 1, 1956, 1973 – 1993, June 26, 2014</p>	FG-KARN12
EU-KARN2	<p>Karn Boiler #2 is a 2540 million BTU per hour dry bottom wall coal fired boiler with fuel oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. Particulate emissions are controlled by a pulse jet fabric filter (PJFF) installed in 2011. Additionally, Low NO_x burners were installed in 1998.</p> <p>A Selective Catalytic Reduction (SCR) unit (installed in 2003), a spray dry absorber (SDA) (installed in 2015), and sorbent injection (installed in 2015) are utilized for NO_x, SO₂, other acid gas, and mercury control, respectively.</p>	<p>July 1, 1956, 1973 – 1998, June 26, 2014</p>	FG-KARN12

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.

**EU-KARN1
EMISSION UNIT CONDITIONS**

DESCRIPTION

Karn Boiler #1 is a 2500 million BTU per hour dry bottom tangential coal fired boiler with fuel oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. Particulate emissions are currently controlled by a pulse jet fabric filter (PJFF). A Selective Catalytic Reduction (SCR) unit (installed in 2004), a spray dry absorber (SDA) (installed in 2014), and sorbent injection (installed in 2015) are utilized for nitrogen oxides (NO_x), sulfur dioxide (SO₂) and other acid gas, and mercury control, respectively.

Flexible Group ID: FG-KARN12

POLLUTION CONTROL EQUIPMENT

PJFF, SCR, SDA, and sorbent injection.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. SO ₂	1.67 lbs/mmBtu heat input*	Monthly calendar average	EU-KARN1	SC VI.3	R 336.1401(1)
2. SO ₂	0.090 pounds per MMBtu heat input ^{2,3,4}	Based on a 30-day Rolling Average Emission Rate. ^{2,3,4}	EU-KARN1	SC VI.4	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 117, Act 451 324.5503(b)
3. SO ₂	0.075 pounds per MMBtu heat input ^{2,3,4}	Based on a 365-day Rolling Average Emission Rate. ^{2,3,4}	EU-KARN1	SC VI.4	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 117, Act 451 324.5503(b)
4. PM	0.16 lb/1000 lb of exhaust gas corrected to 50% excess air	Hourly	EU-KARN1	SC V.1	R 336.1331(1)(c)
5. PM	0.015 pound per MMBtu heat input ^{2,3,4}	3-hour Rolling Average ^{2,3,4}	EU-KARN1	SC V.4, (See Appendixes C-1 & D-1)	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 147, Act 451 324.5503(b)
6. NO _x	0.080 pound per MMBtu heat input ^{2,3,4}	Based on a 30-day Rolling Average Emission Rate ^{3,4}	EU-KARN1	SC VI.4	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 85, Act 451 324.5503(b)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
7. Opacity	20% ^{2,3,4}	Per 6-minute period except for one 6-minute period per hour of not more than 27% ^{2,3,4}	EU-KARN1	SC VI.2	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 151
* 1.0 percent sulfur by weight in coal at 12,000 BTU per pound is equivalent to 1.67 pounds per million BTU heat input. Compliance with this emission limitation shall be based upon the monthly average of continuous emission monitoring data. (R 336.1401(1))					

See Appendixes C-1 & D-1

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EU-KARN1 unless a Malfunction Abatement Plan (MAP) as described in Rule 911(2), for the emission control equipment is implemented and maintained. The MAP shall, at a minimum, specify the following:
 - a. A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - b. An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
 - c. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 90 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1910, R 336.1911)**

2. The permittee shall continuously operate the PJFF and use good air pollution control practices to maximize the PM emission reductions at all times when the Unit is in operation. The requirements of Appendix G-1 shall be met.^{2,3,4} **("U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" – paragraph 141, Act 451 324.5503(b))**

See Appendix G-1

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EU-KARN1 unless the SCR, fabric filter baghouse (PJFF), SDA, and sorbent injection (for mercury control) are installed, maintained, and operated in a satisfactory manner. Satisfactory manner includes operating and maintaining each control device in accordance with an approved MAP for EU-KARN1 as required in SC III.1. **(R 336.1901, R 336.1910)**

2. The permittee shall not operate EU-KARN1 unless the SCR, SDA and fabric filter are Continuously Operated.^{3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” – paragraphs 84, 117 and 147, Act 451 324.5503(b))

V. TESTING/SAMPLING

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

1. Once every three years, or more frequently upon request of the AQD, permittee shall verify the PM emission rate from EU-KARN1 by testing, utilizing US EPA Reference Method 17 (Determination of Particulate Emissions from Stationary Sources (In-stack Filtration Method)) or other AQD approved test method, at permittee’s expense, and in accordance with Department requirements. Verification of emission rates includes the submittal of a complete report of the test results within 60 days of test completion. (R 336.1331(1)(c), R 336.2001, R 336.2003, R 336.2004)
2. The permittee shall submit a complete test protocol to the AQD for approval at least 30 days prior to the anticipated test date. (R 336.2001(3))
3. The permittee shall notify the AQD no less than 7 days prior to the anticipated test date. (R 336.2001(4))
4. Continuous compliance with SC I.5 PM filterable emission limit is demonstrated with a PM CEMS pursuant to conditions contained in Appendix C-1: PM Emissions Testing and Monitoring Requirements.^{3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” – paragraph 157, Act 451 324.5503(b))

See Appendix C-1

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall monitor and record the parameters specified in the applicable MAPs. (R 336.1910, R 336.1911)
2. The permittee shall monitor and record the opacity from the boiler using a Continuous Opacity Monitoring System (COMS), installed, operated and maintained in accordance with 40 CFR Part 60, Appendix B.² (R 336.2101(1)(a), R 336.2150(1)(a), R 336.2152(1), R 336.2153(1)(a) & (b), R 336.2154, R 336.2155(1), R 336.2190, 40 CFR 64.6(c)(1)(iii))
3. The permittee shall install, calibrate, maintain, and operate a continuous emission monitoring system for the measurement of gas flow, SO₂, CO₂, and NO_x, in accordance with the provisions of 40 CFR Part 75.² (R 336.1401(1), 40 CFR 52.21(c) & (d))
4. For purposes of determining compliance with the Rolling Average Emission Rates for NO_x and SO₂ as found in SC I.2, I.3 and I.6, the permittee shall install and operate CEMS in accordance with the procedures of 40 CFR Part 75, except that the NO_x and SO₂ emissions data need not be bias adjusted and the missing data substitution procedures of 40 CFR Part 75 shall not apply. If applicable, diluent capping (i.e., 5% CO₂) will be applied to the NO_x emission rate for any hours where the measured CO₂ concentration is less than 5% following the procedures in 40 CFR Part 75, Appendix F, Section 3.3.4.1.^{3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” paragraphs 99 & 130, Act 451 324.5503(b))
5. The permittee shall install, correlate, maintain, and Continuously Operate a PM CEMS pursuant to the conditions contained in Appendix D-1: PM CEMS.^{2,3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” paragraphs 159, 160, 163, Act 451 324.5503(b))

See Appendix D-1

VII. REPORTING

NA

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. SVKARN1	216 ²	350 ²	R 336.1201(3)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of 40 CFR Part 63, Subpart UUUUU, the National Emissions Standard for Hazardous Air Pollutants: Coal- and Oil-fired Electric Utility Steam Generating Units. **(40 CFR Part 63 Subpart UUUUU)**
2. The permittee shall comply with the System-Wide Annual NO_x Tonnage Limitations and System-Wide Annual SO₂ Tonnage Limitations listed in Appendix E-1: System Wide Tonnage Limitations. Emissions from EU-KARN1 shall be counted toward the system-wide total emissions.^{2,3,4} **(“U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” paragraphs 98, 129, Act 451 324.5503(b))**
3. The permittee shall comply with the SO₂ and NO_x allowance surrender and super-compliance allowance provisions listed in Appendix F-1: Allowance Provisions.^{2,3,4} **(“U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” paragraphs 101-109 and 132-140, Act 451 324.5503(b))**

See Appendix E-1 and Appendix F-1

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).
- ³This condition is federally enforceable and was established pursuant to the “U.S. V CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” and will remain in effect after termination of the referenced document.
- ⁴Definitions specific to this condition may be found in Appendix A-1: Definitions associated with the Consent Decree

**EU-KARN2
EMISSION UNIT CONDITIONS**

DESCRIPTION

Karn Boiler #2 is a 2540 million BTU per hour dry bottom wall coal fired boiler with fuel oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. Particulate emissions are controlled by a pulse jet fabric filter (PJFF) installed in 2011. Additionally, Low NOx burners were installed in 1998.

A Selective Catalytic Reduction (SCR) unit (installed in 2003), a spray dry absorber (SDA) (installed in 2015), and sorbent injection (installed in 2015) are utilized for NOx, SO₂, and other acid gas, and mercury control, respectively.

Flexible Group ID: FG-KARN12

POLLUTION CONTROL EQUIPMENT

Low NO_x burners, PJFF, SCR, SDA, and sorbent injection

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. SO ₂	1.67 lbs/mmBtu heat input**2	Monthly calendar average	EU-KARN2	SC VI.3	R 336.1401(1)
2. SO ₂	0.090 pounds per MMBtu heat input ³	Based on a 30-day Rolling Average Emission Rate. ^{2,3,4}	EU-KARN2	SC VI.4	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 118, Act 451 324.5503(b)
3. SO ₂	0.075 pounds per MMBtu heat input ³	Based on a 365-day Rolling Average Emission Rate. ^{2,3,4}	EU-KARN2	SC VI.4	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 118, Act 451 324.5503(b)
4. PM	0.16 lb/1000 lb exhaust gas, corrected to 50% excess air ²	Hourly	EU-KARN2	SC V.1	R 336.1331(1)(c)
5. PM	0.015 pound per MMBtu heat input ³	3-hour Rolling Average ^{2,3,4}	EU-KARN2	SC V.4 (See Appendixes C-1 & D-1)	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 148, Act 451 324.5503(b)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
6. NO _x	0.080 pound per MMBtu heat input ³	Based on a 30-day Rolling Average Emission Rate ^{3,4}	EU-KARN2	SC VI.4	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 87, Act 451 324.5503(b)
7. Opacity	20% ^{3,4}	Per 6-minute period except for one 6-minute period per hour of not more than 27% ^{2,3,4}	EU-KARN2	SC VI.2	"U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" paragraph 151

**1.0 percent sulfur by weight in coal at 12,000 BTU per pound is equivalent to 1.67 pounds per million BTU heat input. Compliance with this emission limitation shall be based upon the monthly average of continuous emission monitoring data. (R 336.1401(1))

See Appendixes C-1 & D-1

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EU-KARN2 unless a Malfunction Abatement Plan (MAP) as described in Rule 911(2), for the emission control equipment is implemented and maintained. The MAP shall, at a minimum, specify the following:
 - a. A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - b. An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
 - c. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 90 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits.² (R 336.1910, R 336.1911)
2. The permittee shall continuously operate the PJFF and use good air pollution control practices to maximize the PM emission reductions at all times when the Unit is in operation. The requirements of Appendix G-1 shall be met.^{2,3,4} ("U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014" – paragraph 141, Act 451 324.5503(b))

See Appendix G-1

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EU-KARN2 unless the SCR, fabric filter baghouse (PJFF), and SDA, sorbent injection (for mercury control) are installed, maintained, and operated in a satisfactory manner. Satisfactory manner includes operating and maintaining each control device in accordance with an approved MAP for EU-KARN2 as required in SC III.1.² **(R 336.1910)**
2. The permittee shall not operate EU-KARN2 unless the SCR, SDA and fabric filter are continuously operated.^{2,3,4} **(“U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” – paragraphs 86 and 148, Act 451 324.5503(b))**

V. TESTING/SAMPLING

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

1. Once every three years, or more frequently upon request of the AQD, permittee shall verify the PM emission rate from EU-KARN2 by testing, utilizing USEPA Reference Method 17 (Determination of Particulate Emissions from Stationary Sources (In-stack Filtration Method)) or other AQD approved test method, at permittee's expense, and in accordance with Department requirements. Verification of emission rates includes the submittal of a complete report of the test results within 60 days of test completion. **(R 336.1331, R 336.2001, R 336.2003, R 336.2004)**
2. The permittee shall submit a complete test protocol to the AQD for approval at least 30 days prior to the anticipated test date. **(R 336.2001(3))**
3. The permittee shall notify the AQD no less than 7 days prior to the anticipated test date. **(R 336.2001(4))**
4. Continuous compliance with SC I.5 PM filterable emission limit is demonstrated with a PM CEMS pursuant to conditions contained in Appendix C-1: PM Emissions Testing and Monitoring Requirements.^{2,3,4} **(“U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” – paragraph 157, Act 451 324.5503(b))**

See Appendix C-1

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall monitor and record the parameters specified in the applicable MAPs. **(R 336.1910, R 336.1911)**
2. The permittee shall monitor and record the opacity from the boiler using a Continuous Opacity Monitoring System (COMS), installed, operated and maintained in accordance with 40 CFR Part 60, Appendix B.² **(R 336.2101(1)(a), R 336.2150(1)(a), R 336.2152(1), R 336.2153(1)(a) & (b), R 336.2154, R 336.2155(1), R 336.2190, 40 CFR 64.6(c)(1)(iii))**
3. The permittee shall install, calibrate, maintain and operate a continuous emission monitoring system for the measurement of gas flow, SO₂, CO₂, and NO_x, in accordance with the provisions of 40 CFR Part 75, Appendix B.² **(R 336.1401, 40 CFR 52.21(c) & (d))**
4. For purposes of determining compliance with the Rolling Average Emission Rates for NO_x and SO₂ as found in SC I.2, I.3 and I.6, the permittee shall install and operate CEMS in accordance with the procedures of 40 C.F.R. Part 75, except that the NO_x and SO₂ emissions data need not be bias adjusted and the missing data substitution procedures of 40 C.F.R. Part 75 shall not apply. If applicable, diluent capping (i.e., 5% CO₂) will be applied to the NO_x emission rate for any hours where the measured CO₂ concentration is less than 5% following the procedures in 40 C.F.R. Part 75, Appendix F, Section 3.3.4.1.^{3,4} **(“U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” paragraphs 99 & 130, Act 451 324.5503(b))**

5. The permittee shall install, correlate, maintain, and Continuously Operate a PM CEMS pursuant to the conditions contained in Appendix D-1: PM CEMS.^{2,3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” paragraphs 159, 160, 163, Act 451 324.5503(b))

See Appendix D-1

VII. REPORTING

NA

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. SVKARN2	216 ²	350 ²	R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of 40 CFR Part 63, Subpart UUUUU, the National Emissions Standard for Hazardous Air Pollutants: Coal- and Oil-fired Electric Utility Steam Generating Units. (**40 CFR Part 63 Subpart UUUUU**)
2. The permittee shall comply with the System-Wide Annual NO_x Tonnage Limitations and System-Wide Annual SO₂ Tonnage Limitations listed in Appendix E-1: System Wide Tonnage Limitations. Emissions from EU-KARN2 shall be counted toward the system-wide total emissions.^{2,3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” paragraphs 98, 129, Act 451 324.5503(b))
3. The permittee shall comply with the SO₂ and NO_x allowance surrender and super-compliance allowance provisions listed in Appendix F-1: Allowance Provisions.^{2,3,4} (“**U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014**” paragraphs 101-109 and 132-140, Act 451 324.5503(b))

See Appendix E-1 and Appendix F-1

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).

³This condition is federally enforceable and was established pursuant to the “U.S. v CONSUMERS ENERGY COMPANY, CIVIL ACTION 14-13580, E.D. MICH., 2014” and will remain in effect after termination of the referenced document.

⁴Definitions specific to this condition may be found in Appendix 2-A: Definitions associated with the Consent Decree

Appendix A-1 Definitions associated with the Consent Decree

Definitions associated with the Consent Decree

- For the purposes of the Consent Decree, every term expressly defined by this Appendix shall have the meaning given that term herein. Every other term used in the Consent Decree that is also a term used under the Act or in a federal regulation implementing the Act shall mean in the Consent Decree what such term means under the Act or those regulations. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 4**)
- A "30-Day Rolling Average Emission Rate" for a Unit shall be expressed in lb/mmBTU and calculated in accordance with the following procedure: first, sum the total pounds of NO_x or SO₂ emitted from the Unit during the current Unit Operating Day and the previous 29 Unit Operating Days; second, sum the total heat input to the Unit in mmBTU during the current Unit Operating Day and the previous 29 Unit Operating Days; and third, divide the total number of pounds of NO_x or SO₂ emitted during the 30 Unit Operating Days by the total heat input during the 30 Unit Operating Days. A new 30-Day Rolling Average Emission Rate shall be calculated for each new Unit Operating Day. Each 30-Day Rolling Average Emission Rate shall include all emissions that occur during all periods within any Unit Operating Day, including emissions from startup, shutdown, and Malfunction, except as otherwise provided by Section XV (Force Majeure – beginning at paragraph 214 of the Consent Decree). (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 5**)
- A "90-Day Rolling Average Emission Rate" for a Unit shall be expressed in lb/mmBTU and calculated in accordance with the following procedure: first, sum the total pounds of NO_x or SO₂ emitted from the Unit during the current Unit Operating Day and the previous 89 Unit Operating Days; second, sum the total heat input to the Unit in mmBTU during the current Unit Operating Day and the previous 89 Unit Operating Days; and third, divide the total number of pounds of NO_x or SO₂ emitted during the 90 Unit Operating Days by the total heat input during the 90 Unit Operating Days. A new 90-Day Rolling Average Emission Rate shall be calculated for each new Unit Operating Day. Each 90-Day Rolling Average Emission Rate shall include all emissions that occur during all periods within any Unit Operating Day, including emissions from startup, shutdown, and Malfunction, except as otherwise provided by Section XV (Force Majeure – beginning at paragraph 214 of the Consent Decree). (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 6**)

- A "365-Day Rolling Average Emission Rate" for a Unit shall be expressed in lb/mmBTU and calculated in accordance with the following procedure: first, sum the pounds of the pollutant in question emitted from the Unit during the most recent Unit Operating Day and the previous 364 Unit Operating Days; second, sum the total heat input to the Unit in mmBTU during the most recent Unit Operating Day and the previous 364 Unit Operating Days; and third, divide the total number of pounds of the pollutant emitted during the 365 Unit Operating Days by the total heat input during the 365 Unit Operating Days. A new 365-Day Rolling Average Emission Rate shall be calculated for each new Unit Operating Day. Each 365-Day Rolling Average Emission Rate shall include all emissions that occur during all periods of operation, including startup, shutdown, and Malfunction, except as otherwise provided by Section XV (Force Majeure – beginning at paragraph 214 of the Consent Decree). (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 7**)
- "Baghouse" means a full stream (fabric filter or membrane) particulate emissions control device. Full stream is defined as capturing the entire stream of exhaust gas with no concurrent by-pass. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 8**)
- "Campbell" means Consumers' J.H. Campbell Generating Plant consisting of three electric utility steam-generating units designated as Unit 1 (260 MW), Unit 2 (360 MW), and Unit 3 (835 MW) and related equipment, located in West Olive, Ottawa County, Michigan. Campbell Unit 3 is co-owned by Consumers (approximately 93%) along with Wolverine Power Supply Cooperative and the Michigan Public Power Association. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 10**)
- "CEMS" or "Continuous Emission Monitoring System," means, for obligations involving the monitoring of NO_x and SO₂ emissions under the Consent Decree, the devices defined in 40 C.F.R. § 72.2 and installed and maintained as required by 40 C.F.R. Part 75. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 12**)
- "Clean Air Act" or "CAA" or "Act" means the federal Clean Air Act, 42 U.S.C. §§ 7401-7671q, and its implementing regulations. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 13**)
- "Cobb" means, for purposes of the Consent Decree, Consumers' B.C. Cobb Generating Plant consisting of two electric utility steam-generating units designated as Unit 4 (160 MW) and Unit 5 (160 MW) and related equipment, located in Muskegon, Muskegon County, Michigan. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 14**)
- "Consent Decree" means Consent Decree (“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014”) and its Appendices. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 15**)
- "Consumers" means Consumers Energy Company. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 16**)

- "Consumers System" means the Campbell, Cobb, Karn, Weadock, and Whiting facilities as defined herein. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 17**)
- "Continuously Operate" or "Continuous Operation" means that when a pollution control technology or combustion control is required to be used at a Unit pursuant to the Consent Decree (including, but not limited to, SCR, FGD, DSI, ESP, Baghouse, or Low NO_x Combustion System), it shall be operated at all times that the Unit it serves is in operation (except as otherwise provided by Section XV (Force Majeure – beginning at paragraph 214 of the Consent Decree)), consistent with the technological limitations, manufacturers' specifications, good engineering and maintenance practices and good air pollution control practices for minimizing emissions (as defined in 40 C.F.R. § 60.11(d)), as applicable, for such equipment and the Unit. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 18**)
- "Date of Entry" means the date the Consent Decree was signed by the United States District Court Judge (i.e. November 4, 2014). (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 19**)
- "Day" means calendar day unless otherwise specified in the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 21**)
- "Dry Sorbent Injection" or "DSI" means a process in which a sorbent is pneumatically injected into the ducting downstream of where the coal is combusted and flue gas is produced, and upstream of the PM Control Device. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 22**)
- "Emission Rate" for a given pollutant means the number of pounds of that pollutant emitted per million British Thermal Units of heat input (lb/mmBTU), calculated in accordance with the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 24**)
- "Flue Gas Desulfurization System" or "FGD" means a pollution control device that employs flue gas desulfurization technology, including an absorber or absorbers utilizing lime or limestone, or a sodium based material, for the reduction of SO₂ emissions. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 27**)
- "Fossil Fuel" means any hydrocarbon fuel, including coal, petroleum coke, petroleum oil, or natural gas. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 29**)
- "Full Stream Operation" is defined as the design configuration of a control device such that it captures the entire stream of exhaust gas with no concurrent by-pass. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 30**)

- "Karn," for purposes of the Consent Decree, means Consumers' D.E. Karn Generating Plant consisting of two electric utility steam-generating units designated as Unit 1 (255 MW) and Unit 2 (260 MW) and related equipment, located in Essexville, Bay County, Michigan. Karn does not include the oil-fired electricity generating units designated as Karn Units 3 and 4, also located in Essexville, Bay County, Michigan. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 34**)
- "Karn Units 3 and 4" means Consumers' oil-fired Units 3 and 4, in Essexville, Bay County, Michigan. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 35**)
- "KW" means Kilowatt or one thousand watts net. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 36**)
- "lb/mmBTU" means one pound per million British Thermal Units. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 37**)
- "Low NO_x Combustion System" means burners and associated combustion air control equipment, including Over Fire Air if specified, which control mixing characteristics of Fossil Fuel and oxygen, thus restraining the formation of NO_x during combustion of fuel in the boiler. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 38**)
- "Malfunction" means a failure to operate in a normal or usual manner by any air pollution control equipment, process equipment, or a process, which is sudden, infrequent, and not reasonably preventable. Failures that are caused in part by poor maintenance or careless operation are not Malfunctions. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 39**)
- "Michigan SIP" means the Michigan State Implementation Plan, and any amendments thereto, as approved by EPA pursuant to Section 110 of the Act, 42 U.S.C. § 7410. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 40**)
- "MW" means a megawatt or one million watts net. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 41**)
- "NO_x" means oxides of nitrogen, measured in accordance with the provisions of the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 45**)
- "NO_x Allowance" means an authorization to emit a specified amount of NO_x that is allocated or issued under an emissions trading or marketable permit program of any kind established under the Clean Air Act or the Michigan SIP; provided, however, that with respect to any such program that first applies to emissions occurring after December 31, 2011, a "NO_x Allowance" shall include an allowance created and allocated to a Consumers System Unit under such program only for control periods starting on or after the fourth anniversary of the Date of Entry of the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 46**)
- "Operating Day" means any calendar day on which a Unit fires Fossil Fuel. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 49**)

- "Over Fire Air" or "OFA" mean an in-furnace staged combustion control to reduce NO_x emissions. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 51**)
- "PM" means total filterable particulate matter, measured in accordance with the provisions of the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 53**)
- "PM Continuous Emission Monitoring System" or "PM CEMS" means, for obligations involving the monitoring of PM emissions under the Consent Decree, the equipment that samples, analyzes, measures, and provides, by readings taken at frequent intervals, an electronic and/or paper record of PM emissions. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 54**)
- "PM Control Device" means any device, including an ESP or Baghouse, which reduces emissions of PM. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 55**)
- "PM Emission Rate" means the number of pounds of PM emitted per million BTU of heat input (lb/mmBTU). (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 56**)
- "Selective Catalytic Reduction" or "SCR" means an air pollution control device for reducing NO_x emissions in which ammonia ("NH₃") is added to the flue gas and then passed through layers of a catalyst material. The ammonia and NO_x in the flue gas stream react on the surface of the catalyst, forming nitrogen ("N₂") and water vapor. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 61**)
- "SO₂" means sulfur dioxide, measured in accordance with the provisions of the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 62**)
- "SO₂ Allowance" means an authorization to emit a specified amount of SO₂ that is allocated or issued under an emissions trading or marketable permit program of any kind established under the Clean Air Act or the Michigan SIP; provided, however, that with respect to any such program that first applies to emissions occurring after December 31, 2011, an "SO₂ Allowance" shall include an allowance created and allocated to a Consumers System Unit under such program only for control periods starting on or after the fourth anniversary of the Date of Entry of the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 63**)
- "State Implementation Plan" or "SIP" means regulations and other materials promulgated by a state for purposes of meeting the requirements of the Act that have been approved by EPA pursuant to Section 110 of the Act, 42 U.S.C. § 7410. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 65**)
- "Surrender" or "Surrender of Allowances" means, for purposes of SO₂ or NO_x allowances, permanently surrendering allowances from the accounts administered by EPA and Michigan for all Units in the Consumers System, so that such allowances can never be used thereafter to meet any compliance requirements under the Act, a SIP, or the Consent Decree. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 66**)

- "System-Wide Annual NO_x Tonnage Limitation" means the limitations, as specified in the Consent Decree, on the number of tons of NO_x that may be emitted from Campbell, Cobb, Kam, Weadock, and Whiting, collectively, during the relevant calendar year (i.e., January 1 through December 31), and shall include all emissions of NO_x during all periods of operations, including startup, shutdown, and Malfunction. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 67**)
- "System-Wide Annual SO₂ Tonnage Limitation" means the limitations, as specified in the Consent Decree, on the number of tons of SO₂ that may be emitted from Campbell, Cobb, Kam, Weadock, and Whiting, collectively, during the relevant calendar year (i.e., January 1 through December 31), and shall include all emissions of SO₂ during all periods of operations, including startup, shutdown, and Malfunction. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 68**)
- "Title V Permit" means the permit required of Consumers' major sources pursuant to Subchapter V of the Act, 42 U.S.C. §§ 7661-7661e. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 69**)
- "Unit" means collectively, the coal pulverizer, stationary equipment that feeds coal to the boiler, the boiler that produces steam for the steam turbine, the steam turbine, the generator, the equipment necessary to operate the generator, steam turbine, and boiler, and all ancillary equipment, including pollution control equipment and systems necessary for production of electricity. An electric steam generating station may comprise one or more Units. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 70**)
- "Weadock" means, for purposes of the Consent Decree, Consumers' J.C. Weadock Generating Plant consisting of two electric utility steam-generating Units designated as Unit 7 (155 MW) and Unit 8 (155 MW) and related equipment, located in Essexville, Bay County, Michigan. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 72**)
- "Whiting" means, for purposes of the Consent Decree, Consumers' Whiting Generation Station consisting of three electric utility steam-generating Units designated as Unit 1 (102 MW), Unit 2 (102 MW), and Unit 3 (124 MW) and related equipment, located in Luna Pier, Monroe County, Michigan. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 73**)

Appendix B-1
Used as a placeholder.

Appendix C-1
PM Emissions Testing and Monitoring Requirements

- As an alternative to the PM testing required in this Appendix C-1: PM Emissions Testing and Monitoring Requirements, following the installation and operation of PM CEMS as required by Appendix D-2: PM CEMS, Consumers, at its sole discretion, may seek EPA approval pursuant to Section XIII (Review and Approval of Submittals; beginning at paragraph 193 of the Consent Decree) to forego stack testing and instead demonstrate continuous compliance with an applicable filterable PM Emission Rate by using the PM CEMS data on a 3-hour rolling average basis. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 157**)
- Note: Units EU-KARN1 and EU-KARN 2 were both approved by USEPA to use the PM CEMS alternative to testing per letter dated January 20, 2020, and mailed on February 3, 2020, this PM CEMS approval letter is available upon request.

**Appendix D-1
PM CEMS**

- Consumers shall install, correlate, maintain, and operate two PM CEMS as specified below. The PM CEMS shall comprise a continuous particle mass monitor measuring particulate matter concentration, directly or indirectly, on an hourly average basis and a diluent monitor used to convert the concentration to units expressed in lb/mmBTU. The PM CEMS installed at each Unit must be appropriate for the anticipated stack conditions and capable of measuring PM concentrations on an hourly average basis. Consumers shall maintain, in an electronic database, the hourly average emission values of all PM CEMS in lb/mmBTU. Except for periods of monitor malfunction, maintenance, calibration, or repair, Consumers shall continuously operate the PM CEMS at all times when the Unit it serves is operating. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 159**)
- In developing both the plan for installation and correlation of the PM CEMS and the QA/QC protocol, Consumers shall use the criteria set forth in 40 C.F.R. Part 60, Appendix B, Performance Specification 11, and Appendix F, Procedure 2. Following EPA's approval of the plan described in Paragraph 160 of the Consent Decree, and the QA/QC protocol described in Paragraph 161, Consumers shall thereafter operate the PM CEMS in accordance with the approved plan and QA/QC protocol. Notwithstanding any other provision of the Consent Decree, exceedances of the PM Emission Rate that occur as a result of de-optimizing emission controls and/or spiking the exhaust gas with excess particulate required to achieve the high level PM test runs during the correlation testing shall not be a violation of the requirements of the Consent Decree (or credible evidence thereof); provided, however, that Consumers shall make best efforts to keep the high level PM test runs during such correlation testing below the applicable PM Emission Rate. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 162**)
- Except as approved pursuant to paragraph 157 of the Consent Decree, stack testing shall be used to determine compliance with the PM Emission Rates established by the Consent Decree. Data from PM CEMS shall be used, at a minimum, to provide information to operators on PM emissions rate trends on a continuous basis. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 164**)
- The data recorded by the PM CEMS shall be expressed in lb/MMBtu on a rolling average 3-hour basis to identify any PM emission rates in excess of the applicable PM Emission Rate and shall be available in electronic format. (**U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 163**)

Appendix E-1
System Wide Tonnage Limitations

System-Wide Annual NO_x Tonnage Limitations

The Consumers System, collectively, shall operate so as not to exceed the following System-Wide Annual NO_x Tonnage Limitations:

For the Calendar Year Specified Below:	System-Wide Annual NO_x Tonnage Limitation:
2017 and continuing each calendar year thereafter	6,600

(“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 98)

- For purposes of calculating the System-Wide Annual NO_x Tonnage Limitations, Consumers shall use CEMS in accordance with the procedures specified in 40 C.F.R. Part 75, which includes the requirements associated with the concepts of bias adjustments and missing data substitution. **(“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 100)**

System-Wide Annual SO₂ Tonnage Limitations

The Consumers System, collectively, shall operate so as not to exceed the following System-Wide Annual SO₂ Tonnage Limitations:

For the Calendar Year Specified Below:	System-Wide Annual SO₂ Tonnage Limitation:
2017 and continuing each calendar year thereafter	10,900

(“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 129)

- For purposes of calculating the System-Wide Annual SO₂ Tonnage Limitations, Consumers shall use CEMS in accordance with the procedures specified in 40 C.F.R. Part 75, which includes the requirements associated with the concepts of bias adjustments and missing data substitution. **(“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 131)**

Appendix F-1 Allowance Provisions

Use and Surrender of NO_x Allowances

- Consumers shall not use NO_x Allowances to comply with any requirement of the Consent Decree, as enumerated in this permit, including by claiming compliance with any emission limitation required by the Consent Decree, as provided in this permit, by using, tendering, or otherwise applying NO_x Allowances to offset any excess emissions. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 101**)
- Except as provided by Appendix F-1: Allowance Provisions, Consumers shall not sell, bank, trade, or transfer any NO_x Allowances allocated to the Consumers System Units. Nothing in the Consent Decree shall restrict Consumers’ ability to transfer NO_x Allowances among its own facility or general accounts. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 102**)
- Beginning with the year 2014 compliance period, and continuing each year thereafter, Consumers shall Surrender all NO_x Allowances allocated to the Consumers System for that year’s compliance period that Consumers does not need in order to meet its own federal and/or state CAA regulatory requirements for the Consumers System Units. However, NO_x Allowances allocated to the Consumers System may be used by Consumers to meet its own federal and/or state CAA regulatory requirements for such Units. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 103**)
- Nothing in Appendix F-1: Allowance Provisions, shall prevent Consumers from purchasing or otherwise obtaining NO_x Allowances from another source for purposes of complying with federal and/or state CAA regulatory requirements to the extent otherwise allowed by law. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 104**)

Super-Compliant NO_x Allowances

- Beginning with the year 2014 and continuing in each calendar year thereafter, Consumers may sell, bank, use, trade, or transfer NO_x Allowances made available in that year’s compliance period solely as a result of:
 - a. the installation and operation of any NO_x pollution control that is not otherwise required by, or necessary to maintain compliance with, any provision of the Consent Decree as provided in this permit, and is not otherwise required by law;
 - b. the use of SCR prior to the date established by the Consent Decree; or
 - c. achievement and maintenance of an Emission Rate below a 365-Day Rolling Average Emission Rate for NO_x at the following Units: (v) at Karn Unit 1: 0.070 lb/mmBTU; (vi) at Karn Unit 2: 0.070 lb/mmBTU; provided that Consumers is also in compliance for that calendar year with all emission limitations for NO_x set forth in the Consent Decree, as provided in this permit. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 106**)

Method for Surrender of NO_x Allowances

- Consumers shall Surrender, or transfer to a non-profit third-party selected by Consumers for Surrender, all NO_x Allowances required to be Surrendered pursuant to Appendix F-1: Allowance Provisions, by June 30 of the immediately following calendar year. Such Surrender need not include the specific NO_x Allowances that were allocated to Consumers System Units, so long as Consumers Surrenders NO_x Allowances that are from the same year or an earlier year and that are equal to the number required to be Surrendered under the Consent Decree, as provided in this permit. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 107**)
- If any NO_x Allowances required to be Surrendered under Appendix F-1: Allowance Provisions are transferred directly to a non-profit third-party, Consumers shall include a description of such transfer in the next report submitted to EPA pursuant to the Periodic Reporting provisions of the consent decree (beginning at paragraph 188) of the Consent Decree. Such report shall: (a) identify the non-profit third-party recipient(s) of the NO_x Allowances and list the serial numbers of the transferred NO_x Allowances; and (b) include a certification by the third-party recipient(s) stating that the recipient(s) will not sell, trade, or otherwise exchange any of the NO_x Allowances and will not use any of the NO_x Allowances to meet any obligation imposed by any environmental law. No later than the third periodic report due after the transfer of any NO_x Allowances, Consumers shall include a statement that the third-party recipient(s) Surrendered the NO_x Allowances for permanent Surrender to EPA in accordance with the provisions of Appendix F-1: Allowance Provisions within one year after Consumers transferred the NO_x Allowances to them. Consumers shall not have complied with the NO_x Allowance Surrender requirements of Appendix F-1: Allowance Provisions until all third-party recipient(s) have actually Surrendered the transferred NO_x Allowances to EPA. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 108**)
- For all NO_x Allowances required to be Surrendered, Consumers or the third-party recipient(s) (as the case may be) shall first submit a NO_x Allowance transfer request to EPA’s Office of Air and Radiation’s Clean Air Markets Division directing the transfer of such NO_x Allowances to the EPA Enforcement Surrender Account or to any other EPA account that EPA may direct in writing. Such NO_x Allowance transfer requests may be made in an electronic manner using EPA’s Clean Air Markets Division Business System or similar system provided by EPA. As part of submitting these transfer requests, Consumers or the third-party recipient(s) shall irrevocably authorize the transfer of these NO_x Allowances and identify – by name of account and any applicable serial or other identification numbers or station names – the source and location of the NO_x Allowances being Surrendered. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 109**)

Use and Surrender of SO₂ Allowances

- Consumers shall not use SO₂ Allowances to comply with any requirement of the Consent Decree, as enumerated in this permit, including by claiming compliance with any emission limitation required by the Consent Decree, as enumerated in this permit, by using, tendering, or otherwise applying SO₂ Allowances to offset any excess emissions. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 132**)

- Except as provided in Appendix F-1: Allowance Provisions, Consumers shall not sell, bank, trade, or transfer any SO₂ Allowances allocated to the Consumers System Units. Nothing in Appendix F-1: Allowance Provisions, shall restrict Consumers' ability to transfer SO₂ Allowances among its own facility or general accounts. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 133**)
- Beginning with the year 2014 compliance period, and continuing each year thereafter, Consumers shall Surrender all SO₂ Allowances allocated to the Consumers System for that year's compliance period that Consumers does not need in order to meet its own federal and/or state CAA regulatory requirements for the Consumers System Units. However, SO₂ Allowances allocated to the Consumers System Units may be used by Consumers to meet its own federal and/or state CAA regulatory requirements for such Units. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 134**)
- Nothing in Appendix F-1: Allowance Provisions shall prevent Consumers from purchasing or otherwise obtaining SO₂ Allowances from another source for purposes of complying with federal and/or state CAA regulatory requirements to the extent otherwise allowed by law. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 135**)

Super-Compliant SO₂ Allowances

- Beginning with the year 2014 and continuing in each calendar year thereafter, Consumers may sell, bank, use, trade, or transfer SO₂ Allowances made available in that year's compliance period solely as a result of:
 - a. the installation and operation of any SO₂ pollution control that is not otherwise required by, or necessary to maintain compliance with, any provision of the Consent Decree, and is not otherwise required by law;
 - b. the use of FGD or DSI prior to the date established by the Consent Decree; or
 - c. achievement and maintenance of an Emission Rate below a 365-Day Rolling Average Emission Rate for SO₂ at the following Units: (iii) at Karn Unit 1: 0.075 lb/mmBTU, (iv) at Karn Unit 2: 0.075 lb/mmBTU; provided that Consumers is also in compliance for that calendar year with all emission limitations for SO₂ set forth in the Consent Decree, as provided in this permit. (**"U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014" paragraph 137**)

Method for Surrender of SO₂ Allowances

- Consumers shall Surrender, or transfer to a non-profit third party selected by Consumers for Surrender, all SO₂ Allowances required to be Surrendered pursuant to Appendix F-1: Allowance Provisions by June 30 of the immediately following calendar year. Such Surrender need not include the specific SO₂ Allowances that were allocated to Consumers System Units, so long as Consumers Surrenders SO₂ Allowances that are from the same year or an earlier year and that are equal to the number required to be Surrendered under Appendix F-1: Allowance Provisions. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 138**)
- If any SO₂ Allowances required to be Surrendered under Appendix F-1: Allowance Provisions are transferred directly to a non-profit third party, Consumers shall include a description of such transfer in the next report submitted to EPA pursuant to the Periodic Reporting provisions of the Consent Decree (beginning at paragraph 188 of the Consent Decree). Such report shall: (a) identify the non-profit third party recipient(s) of the SO₂ Allowances and list the serial numbers of the transferred SO₂ Allowances; and (b) include a certification by the non-profit third party recipient(s) stating that the recipient(s) will not sell, trade, or otherwise exchange any of the allowances and will not use any of the SO₂ Allowances to meet any obligation imposed by any environmental law. No later than the third periodic report due after the transfer of any SO₂ Allowances, Consumers shall include a statement that the non-profit third party recipient(s) Surrendered the SO₂ Allowances for permanent Surrender to EPA in accordance with the provisions of Appendix F-1: Allowance Provisions within one year after Consumers transferred the SO₂ Allowances to them. Consumers shall not have complied with the SO₂ Allowance Surrender requirements of Appendix F-1: Allowance Provisions until all third party recipient(s) have actually Surrendered the transferred SO₂ Allowances to EPA. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 139**)
- For all SO₂ Allowances required to be Surrendered, Consumers or the third party recipient(s) (as the case may be) shall first submit an SO₂ Allowance transfer request to EPA’s Office of Air and Radiation’s Clean Air Markets Division directing the transfer of such SO₂ Allowances to the EPA Enforcement Surrender Account or to any other EPA account that EPA may direct in writing. Such SO₂ Allowance transfer requests may be made in an electronic manner using EPA’s Clean Air Markets Division Business System or similar system provided by EPA. As part of submitting these transfer requests, Consumers or the third party recipient(s) shall irrevocably authorize the transfer of these SO₂ Allowances and identify – by name of account and any applicable serial or other identification numbers or station names – the source and location of the SO₂ Allowances being Surrendered. (**“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 140**)

**Appendix G-1
Optimization of Baghouses**

Consumers shall:

- a) At a minimum, to the extent practicable: (i) operate each compartment of the Baghouse as designed for Full Stream Operation for each Unit, where applicable (regardless of whether those actions are needed to comply with opacity limits); (ii) maintain and replace bags on each Baghouse as needed to maximize collection efficiency, where applicable; and
- b) during the next planned Unit outage (or unplanned outage of sufficient length), optimize the PM controls on that Unit by inspecting for and repairing any failed Baghouse compartment.

The above requirements are found in **“U.S. v Consumers Energy Company, Civil Action 14-13580, E.D. Mich., 2014” paragraph 141.**