MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

August 23, 2018

PERMIT TO INSTALL
1-18

ISSUED TO
The Regents of the University of Michigan

LOCATED AT
1120 East Huron Street
Ann Arbor, Michigan

IN THE COUNTY OF
Washtenaw

STATE REGISTRATION NUMBER
M0675

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. 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 17, 2018**	
DATE PERMIT TO INSTALL APPROVED: **August 23, 2018**	SIGNATURE: Mary Ann Dolehanty
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

Section **Page**

Alphabetical Listing of Common Abbreviations / Acronyms 2

General Conditions 3

Special Conditions 5

Emission Unit Summary Table 5

Special Conditions for EU-CPP-CHPHRSG 6

Appendix A 13

Appendix B 14

Common Abbreviations / Acronyms

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO_2e	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
		gr	Grains
EU	Emission Unit	HAP	Hazardous Air Pollutant
FG	Flexible Group	Hg	Mercury
GACS	Gallons of Applied Coating Solids	hr	Hour
GC	General Condition	HP	Horsepower
GHGs	Greenhouse Gases	H_2S	Hydrogen Sulfide
HVLP	High Volume Low Pressure*	kW	Kilowatt
ID	Identification	lb	Pound
IRSL	Initial Risk Screening Level	m	Meter
ITSL	Initial Threshold Screening Level	mg	Milligram
LAER	Lowest Achievable Emission Rate	mm	Millimeter
MACT	Maximum Achievable Control Technology	MM	Million
MAERS	Michigan Air Emissions Reporting System	MW	Megawatts
MAP	Malfunction Abatement Plan	NMOC	Non-methane Organic Compounds
MDEQ	Michigan Department of Environmental Quality	NO_x	Oxides of Nitrogen
		ng	Nanogram
MSDS	Material Safety Data Sheet	PM	Particulate Matter
NA	Not Applicable	PM10	Particulate Matter equal to or less than 10 microns in diameter
NAAQS	National Ambient Air Quality Standards		
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	psia	Pounds per square inch absolute
PTI	Permit to Install	psig	Pounds per square inch gauge
RACT	Reasonable Available Control Technology	scf	Standard cubic feet
ROP	Renewable Operating Permit	sec	Seconds
SC	Special Condition	SO_2	Sulfur Dioxide
SCR	Selective Catalytic Reduction	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
		µm	Micrometer or Micron
VE	Visible Emissions	VOC	Volatile Organic Compounds
		yr	Year

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

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 Environmental Quality, 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 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 R 336.1219 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 R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(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 conditions 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 R 336.1301, 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 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 R 336.1370(2). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

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 (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU-CPP-CHPHRSG	A combined heat and power unit (CHP) with heat recovery steam generator (HRSG) for a nominal 15.8 MW electricity production. The primary fuel for the turbine is natural gas but it will be capable of firing ultra-low sulfur diesel (ULSD) as a backup fuel. The CTG is Solar Titan 130E with a rating of 190.1 MMBTU/hr (HHV) on natural gas and 173.4 MMBTU/hr (HHV) on ULSD. The HRSG is equipped with a natural gas-fired duct burner rated at 112 MMBTU/hr (HHV) to provide heat for additional steam production. The HRSG is not capable of operating independently from the CTG. The natural gas duct burner shall not operate when diesel fuel is being fired in the turbine. The CTG/HRSG is equipped with dry low NOx combustion technology and SCR.	TBD	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 336.1290.			

The following conditions apply to:
EU-CPP-CHPHRSG

DESCRIPTION: A combined heat and power unit (CHP) with heat recovery steam generator (HRSG) for a nominal 15.8 MW electricity production. The primary fuel for the turbine is natural gas but it will be capable of firing ultra-low sulfur diesel (ULSD) as a backup fuel. The CTG is Solar Titan 130E with a rating of 190.1 MMBTU/hr (HHV) on natural gas and 173.4 MMBTU/hr (HHV) on ULSD. The HRSG is equipped with a natural gas-fired duct burner rated at 112 MMBTU/hr (HHV) to provide heat for additional steam production. The HRSG is not capable of operating independently from the CTG. The natural gas duct burner shall not operate when diesel fuel is being fired in the turbine. The CTG/HRSG is equipped with dry low NO_x combustion technology and SCR.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT: Dry low-NOx technology and SCR for NOx control

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO_x	25 ppm at 15% O_2 OR 150 ng/J of useful output when firing natural gas at full load conditions [A]	30-day rolling average as determined each operating day	EU-CPP-CHPHRSG	SC VI.2, SC VI.9	40 CFR 60.4320(a), Table 1 of 40 CFR Part 60 Subpart KKKK[B]
2. NO_x	74 ppm at 15% O_2 OR 460 ng/J of useful output when firing ULSD at full load conditions [A]	30-day rolling average as determined each operating day	EU-CPP-CHPHRSG	SC VI.2, SC VI.9	40 CFR 60.4320(a), Table 1 of 40 CFR Part 60 Subpart KKKK[B]
3. NO_x	7.69 lb/hr when firing natural gas at full load conditions [A]	24-hour rolling average as determined each operating hour, except during startup and shutdown	EU-CPP-CHPHRSG	SC VI.2, SC VI.9	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d)
4. NO_x	15.16 lb/hr when firing ULSD at full load conditions [A]	24-hour rolling average as determined each operating hour, except during startup and shutdown	EU-CPP-CHPHRSG	SC VI.2, SC VI.9	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d)
5. NO_x	9 lb/event	Duration of a shutdown or startup[C]	EU-CPP-CHPHRSG	SC VI.2, SC VI.9	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
6. NO_x	35.7 tpy	12-month rolling time period as determined at the end of each calendar month.	EU-CPP-CHPHRSG	SC VI.2, SC VI.6	R 336.1205(1)(a) & (b)
7. CO	19.33 lb/hr when firing natural gas at full load conditions [A]	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d)
8. CO	10.10 lb/hr when firing ULSD at full load conditions [A]	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d)
9. CO	94.2 tpy	12-month rolling time period as determined at the end of each calendar month	EU-CPP-CHPHRSG	SC V.1, SC VI.6	R 336.1205(1)(a) & (b),
10. PM10	3.60 lb/hr when firing natural gas at full load conditions	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810
11. PM10	3.50 lb/hr when firing ULSD at full load conditions	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810
12. PM2.5	3.60 lb/hr when firing natural gas at full load conditions	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810
13. PM2.5	3.50 lb/hr when firing ULSD at full load conditions	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810
14. SO_2	0.06 lb/MMBtu at full load conditions [D]	Hourly	EU-CPP-CHPHRSG	SC VI.9	40 CFR 60.4330
15. VOC	4.08 pph when firing natural gas at full load conditions [A]	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), R 336.1702(a)
16. VOC	5.8 pph when firing ULSD at full load conditions [A]	Hourly	EU-CPP-CHPHRSG	SC V.1, SC VI.9	R 336.1205(1)(a) & (b), R 336.1702(a)
17. GHGs as CO_2e	155,597 tpy	12-month rolling time period as determined at the end of each calendar month.	EU-CPP-CHPHRSG	SC VI.8	R 336.1205(1)(a) & (b), R 336.2810, 40 CFR 52.21(j)
18. GHGs as CO_2e	1,000 lb/MWh of gross energy output at full load conditions [A]	12-month rolling time period as determined at the end of each calendar month.	EU-CPP-CHPHRSG	SC VI.8	R 336.1205(1)(a) & (b), R 336.2810, 40 CFR 52.21(j)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements

[A] Does not include startup and shutdown.
[B] Table 1 of 40 CFR Part 60 Subpart KKKK also allows 150 ppm at 15 percent O_2 when the turbine is operating at less than 75 percent of peak load and at temperatures less than 0°F.
[C] Startup is defined as the period of time from initiation of the combustion process (flame-on) from shutdown status and continues until steady state operation (loads greater than a demonstrated percent of design capacity) is achieved. Shutdown is defined as that period of time from the lowering of the turbine output below the demonstrated steady state level, with the intent to shut down, until the point at which the fuel flow to the combustor is terminated. The demonstrated percent of design capacity, or demonstrated steady state level, shall be described in the plan required in SC III.2.
[D] Equal to the 40 CFR 60.4330(a)(2) limit of 26 ng/J of heat input

II. MATERIAL LIMITS

1. The permittee shall only burn pipeline quality natural gas or ultra low sulfur diesel (ULSD) in EU-CPP-CHPHRSG. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a), R 336.2810, 40 CFR 52.21(j), 40 CFR 60.4330)**

2. The pipeline quality natural gas burned in EU-CPP-CHPHRSG shall not have a total sulfur content in excess of 0.5 grains of sulfur per 100 standard cubic feet. This restriction subsumes the sulfur content fuel requirement of 20 grains of sulfur per 100 standard cubic feet of gas in 40 CFR Part 60 Subparts KKKK. **(R 336.1205(1)(a) & (b), 40 CFR 60.4365(a))**

3. The ULSD burned in EU-CPP-CHPHRSG shall not have a total sulfur content in excess of 15 ppmw. This restriction subsumes the 0.05 weight percent (500 ppmw) sulfur content fuel requirement in 40 CFR Part 60 Subparts KKKK. **(R 336.1205(1)(a) & (b), 40 CFR 60.4365(a))**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate EU-CPP-CHPHRSG burning ULSD for more than 500 hours per year on a 12-month rolling time period basis as determined at the end of each calendar month**. (R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**

2. Within 180 days of operation, the permittee shall submit, implement, and maintain a malfunction abatement plan (MAP) as described in Rule 911(2) for EU-CPP-CHPHRSG. 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.
   d. Operating variables and ranges under various load conditions shall be monitored and recorded. The normal operating range of these variables and a description of the method of monitoring shall be maintained.

   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 45 days, if new equipment is installed or upon request from the AQD 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 336.1205(1)(a) & (b), R 336.1224, R 336.1702(a), R 336.1910, R 336.1911, R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(j), (c), & (d))**

3. Within 180 days of operation, the permittee shall submit, implement, and maintain a plan that describes how emissions will be minimized during startup and shutdown. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporate standard industry practices, and shall describe the demonstrated percent of design capacity, or demonstrated steady state level. Unless notified by the District Supervisor within 30 business days after plan submittal, the plan shall be deemed approved. **(R 336.1911, R 336.1912, R 336.2810, 40 CFR 52.21(j), 40 CFR 60.4333(a))**

4. The total number of startup and shutdown events for EU-CPP-CHPHRSG shall not exceed 60 events per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(c) & (d))**

5. The permittee shall operate and maintain EU-CPP-CHPHRSG, including associated equipment and monitors, in a manner consistent with safety and good air pollution control practice. **(40 CFR 60.4333(a))**

6. The permittee shall implement and maintain an audio/visual/olfactory (AVO) plan for the natural gas piping and associated components to EU-CPP-CHPHRSG. **(R 336.1205(1)(a) & (b), R 336.1702(a), R 336.2803, R 336.2804, R 336.2810)**

7. Upon the loss of natural gas, the permittee shall take immediate action to exhaust EU-CPP-CHPHRSG through the north stack and to shut down the duct burning until natural gas is restored. **(R 336.1225, R 336.2803, R 336.2804)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The maximum design heat input capacity for the turbine in EU-CPP-CHPHRSG shall not exceed, on a fuel heat input basis, 190.1 MMBTU per hour (HHV) on natural gas and 173.4 MMBtu/hr (HHV) on ULSD and the design heat input capacity the duct burner in EU-CPP-CHPHRSG shall not exceed, on a fuel heat input basis, 112 MMBTU per hour (HHV). **(R 336.1205(1)(a) & (b), R 336.2803, R 336.2804)**

2. The permittee shall not operate EU-CPP-CHPHRSG unless the dry low NO_x technology and selective catalytic reduction are installed, maintained, and operated in a satisfactory manner, for EU-CPP-CHPHRSG. Satisfactory manner includes operating and maintaining each control device in accordance with an approved MAP for EU-CPP-CHPHRSG as required in SC III.2. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, 40 CFR 52.21(c) & (d))**

3. The permittee shall install, calibrate, maintain and operate, in a satisfactory manner, devices to monitor and record the NO_x emissions and oxygen (O_2) content of the exhaust gas from EU-CPP-CHPHRSG on a continuous basis. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements and reporting detailed in Appendix A. **(R 336.1205(1)(a) & (b), 40 CFR 60.4340(b)(1), 40 CFR 60.4345, 40 CFR Part 75)**

4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the natural gas usage rate for EU-CPP-CHPHRSG on a continuous basis. The device shall be operated in accordance with 40 CFR 60.4345(c). **(R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(j), 40 CFR 60.4345)**

5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a sufficient number of watt meters to continuously measure and record the hourly gross electric output from EU-CPP-CHPHRSG. **(R 336.1205(1)(a) & (b), R 336.2810, 40 CFR 52.21(j))**

6. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a sufficient number of watt meters to continuously measure and record the total useful thermal output from EU-CPP-CHPHRSG. **(R 336.1205(1)(a) & (b), R 336.2810, 40 CFR 52.21(j))**

V. TESTING/SAMPLING

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

1. Within 180 days after commencement of initial startup, the permittee shall verify CO, PM10, PM2.5, and VOC emission rates from EU-CPP-CHPHRSG at maximum routine operating conditions, by testing at owner's expense, in accordance with Department requirements. The permittee must complete the required testing once every five years of operation, thereafter. Testing shall be based on an average of three 1-hour or longer test runs performed using an approved EPA Method listed in:

Pollutant	Test Method Reference
PM10/PM2.5	40 CFR Part 51, Appendix M
CO	40 CFR Part 60, Appendix A
VOCs	40 CFR Part 60, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and 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 District Office within 60 days following the last date of the test. **(R 336.1205(1)(a) & (b), R 336.1331(1)(c), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, R 336.2810)**

2. Within 180 days after commencement of initial startup, and annually thereafter, the permittee shall verify SO_2 emissions by verifying the sulfur content of the fuels burned in EU-CPP-CHPHRSG. This can be performed by obtaining fuel characterization documentation as specified in 40 CFR 60.4365 or by performing an analysis of fuel samples following ASTM D5287 for natural gas and ASTM D4177 for oil. Alternatively, for oil, the permittee may follow the procedures for manual pipeline sampling in section 14 of ASTM D4057. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using:
   a. For liquid fuels, ASTM D129, or alternatively D1266, D1552, D2622, D4294, or D5453 (all of which are incorporated by reference, see §60.17); or
   b. For gaseous fuels, ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see §60.17).

   (40 CFR 60.4415(a)(1))

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 30th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(j), 40 CFR 60.4345, 40 CFR 60.5535(c), 40 CFR 60.5540(a) & (b), 40 CFR 60.5560)**

2. The permittee shall continuously monitor and record, in a satisfactory manner, the NO_x emissions and the O_2, emissions from EU-CPP-CHPHRSG. The permittee shall operate each CEMS to meet the timelines, requirements and reporting detailed in Appendix A and shall use the CEMS data for determining compliance with SC I.1, SC I.2, SC I.3, SC I.4, and SC I.5. **(R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d), 40 CFR 60.4345, 40 CFR 60.4320(a), Table 1 of 40 CFR Part 60 Subpart KKKK)**

3. The permittee shall monitor and record, in a satisfactory manner, the natural gas usage for EU-CPP-CHPHRSG on an hourly and monthly basis. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.2810, 40 CFR 52.21(c), (d) and (j), 40 CFR 60.4345, 40 CFR 60.4320(a), Table 1 of 40 CFR Part 60 Subpart KKKK)**

4. The permittee shall maintain a record of the number of hours ULSD is fired in EU-CPP-CHPHRSG on a monthly and 12-month rolling time period basis as determined at the end of each calendar month. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**

5. The permittee shall maintain a record of the number startup and shutdown events EU-CPP-CHPHRSG is operating under startup on a monthly and 12-month rolling time period basis as determined at the end of each calendar month. **(R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810))**

6. The permittee shall keep, in a satisfactory manner, a record of the following:
   a. Hourly and 24-hour rolling average NO_x emission rate for each fuel type.
   b. Daily and 30-day rolling average NO_x concentration for each fuel type.
   c. Mass of NO_x emissions for each startup or shutdown event. Startup and shutdown events were defined in footnote C of the emission limit table in Section I.
   d. Total monthly and 12-month rolling NO_x, and CO emission rates.

   The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.2803, R 336.2804, R 336.2810)**

7. The permittee shall keep, in a satisfactory manner, all test reports for EU-CPP-CHPHRSG, on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1331(1)(c), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, R 336.2810)**

8. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling total CO_2e mass emissions and mass per MWh for EU-CPP-CHPHRSG, as required by SC I.17 and SC I.18. The permittee shall keep all records on file and make them available to the Department upon request. The calculations shall be performed using the method included in Appendix B unless a new method is approved by the District Supervisor. **(R 336.1205(1)(a) & (b), R 336.2810, 40 CFR 52.21(j))**

9. The permittee shall maintain records of all information necessary for all notifications and reports as specified in these special conditions as well as that information necessary to demonstrate compliance with the emission limits of this permit for EU-CPP-CHPHRSG. This information shall include, but shall not be limited to the following:
   a. Compliance tests and any testing required under the special conditions of this permit;
   b. Monitoring data;
   c. Total sulfur content and potential sulfur emissions, as applicable, of the natural gas and ULSD as required by 40 CFR 60.4365(a)
   d. Verification of heat input capacity;
   e. Identification, type, and amount of fuel combusted on a calendar month basis;
   f. Gross energy output on a calendar month basis;
   g. All records required by 40 CFR 60.7;
   h. Records of the duration of all dates and times of startup and shutdown events;
   i. All calculations necessary to show compliance with the limits contained in this permit;
   j. All records related to, or as required by, the MAP, AVO and the startup and shutdown plan.

   All of the above information shall be stored in a format acceptable to the AQD District Supervisor and shall be consistent with the requirements of 40 CFR 60.7(f). **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1331(1)(c), R 336.1702(a), R 336.1912, R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(j), 40 CFR 60.7(f), 40 CFR 60.4345, 40 CFR 60.4365, 40 CFR Part 60 Subpart KKKK)**

10. The permittee shall maintain a record of all natural gas loss events including the dates and times of the natural gas loss and when natural gas supply was restored. This record shall indicate that the exhaust was through the north stack and the duct burner was off before the natural gas loss event or else indicate the times that the duct burner was turned off and/or the exhaust was routed to the north stack. **(R 336.1225, R 336.2803, R 336.2804)**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of EU-CPP-CHPHRSG. **(R 336.1201(7)(a), R 336.1216(1)(a)(v))**

2. The permittee shall provide written notification of the date construction commences and the actual date of initial startup of EU-CPP-CHPHRSG, in accordance with 40 CFR 60.7. The permittee shall submit the notification(s) to the AQD District Supervisor within the time frames specified in 40 CFR 60.7 and 40 CFR 60.19, where applicable. **(40 CFR 60.7(a))**

3. The permittee shall submit reports of excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) and with 40 CFR 60.4375 and 40 CFR 4380. The reports shall be postmarked by the 30th day following the end of each 6-month period. **(40 CFR 60.7(c), 40 CFR 60.4375(a), 40 CFR 60.4380, 40 CFR 60.4395)**

VIII. STACK/VENT RESTRICTIONS

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. SV-B0260-01	168	North Stack: 250 ft. above a stack base elevation of 859 ft.	R 336.1225, R 336.2803, R 336.2804
2. SV-B0260-02	120	South Stack: 159 ft. above a stack base elevation of 873 ft.	R 336.1225, R 336.2803, R 336.2804

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and KKKK, as they apply to EU-CPP-CHPHRSG. **(40 CFR Part 60 Subparts A & KKKK)**

APPENDIX A
Continuous Emission Monitoring System (CEMS) Requirements

1. Within 30 calendar days after commencement of trial start-up, the permittee shall submit two copies of a Monitoring Plan to the AQD, for review and approval. The Monitoring Plan shall include drawings or specifications showing proposed locations and descriptions of the required CEMS.

2. Within 150 calendar days after commencement of trial start-up, the permittee shall submit two copies of a complete test plan for the CEMS to the AQD for approval.

3. Within 180 calendar days after commencement of trial start-up, the permittee shall complete the installation and testing of the CEMS.

4. Within 60 days of completion of testing, the permittee shall submit to the AQD two copies of the final report demonstrating the CEMS complies with the requirements of the corresponding Performance Specifications (PS) in the following table:

Emission	Applicable PS
NO_x	2
O_2	3

5. The span value shall be 2.0 times the lowest emission standard or as specified in the federal regulations.

6. The CEMS shall be installed, calibrated, maintained, and operated in accordance with the procedures set forth in 40 CFR 60.13 and PS, listed in the table above, of Appendix B to 40 CFR Part 60.

7. Each calendar quarter, the permittee shall perform the Quality Assurance Procedures of the CEMS set forth in Appendix F of 40 CFR Part 60. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report (Figure 1, Appendix F).

8. In accordance with 40 CFR 60.7(c) and (d), the permittee shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to the AQD, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information:
   a. A report of each exceedance above the limits specified in the conditions of this permit. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.
   b. A report of all periods of CEMS downtime and corrective action.
   c. A report of the total operating time of EU-CPP-CHPHRSG during the reporting period.
   d. A report of any periods that the CEMS exceeds the instrument range.
   e. If no exceedances or CEMS downtime occurred during the reporting period, the permittee shall report that fact.

The permittee shall keep all monitoring data on file for a period of at least five years and make them available to the AQD upon request.

APPENDIX B
CO_2e Emission Calculations for EU-CPP-CHPHRSG

CO_2 emissions (tons/month) = CO_2 EF (scf/MMBTU) x Fuel Usage (MMscf/month) x Higher Heating Value (MMBTU/MMscf) x CO_2 MW (lb/lb-mol) x CO_2 GWP / molar volume (scf/lb-mol) / 2,000 lb/ton

Where:
CO_2 EF (scf/MMBTU) = carbon based F-factor for natural gas according to the methodology from equation G-4 of Appendix G to Part 75
Fuel Usage (MMscf/month) = monthly fuel usage data from fuel flow meter
Heat Content (MMBTU/MMscf) = standard value in AP-42 for natural gas or supplier data, if available
CO_2 MW (lb/lb-mol) = 44 [C = 6; O = 8; 6 + (8 x 2) = 22]
CO_2 GWP = global warming potential from 40 CFR Part 98, Subpart A, Table A-1 (January 1, 2014)
Molar volume (scf/lb-mol) = 385

CO_2e emissions (tons/month) = CO_2 emissions (tons/month) + [((Fuel Usage (MMscf/month) x Higher Heating Value (MMBTU/MMscf)) x (CH_4 EF (kg/MMBTU) x CH_4 GWP + N_2O EF (kg/MMBTU) x N_2O GWP)) x 2.20462 (lb/kg) x 1/2000 (ton/lb)]

Where:
Fuel Usage (MMscf/month) = monthly fuel usage data from fuel flow meter
Heat Content (MMBTU/MMscf) = standard value in AP-42 for natural gas or supplier data, if available
CH_4 EF (kg/MMBTU) = emission factors from AP-42 Ch. 3.1 for Stationary Gas Turbines, Table 2a (April 2000)
N_2O EF (kg/MMBTU) = emission factors from AP-42 Ch. 3.1 for Stationary Gas Turbines, Table 2a (April 2000)
CH_4 GWP = global warming potential from 40 CFR Part 98, Subpart A, Table A-1 (January 1, 2014)
N_2O GWP = global warming potential from 40 CFR Part 98, Subpart A, Table A-1 (January 1, 2014)