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JUN 10 2019

June 6, 2019

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FILE \_\_\_\_\_

Ms. Caryn Owens  
Air Quality Division  
Environment, Great Lakes, and Energy  
120 West Chapin Street  
Cadillac, MI 49601-2158

Re: Renewable Operating Permit (ROP) Administrative Amendment Application  
DTE Electric Company, St. Clair/Belle River Power Plant (B2796) – MI-ROP-B2796-2015b

Dear Ms. Owens:

Pursuant to Rule 216(1), an application for an Administrative Amendment to MI-ROP-B2796-2015b, Section 4 is attached, outlining that a NOx continuous emissions monitoring systems (CEMS) for will be installed on the following Emission Units: EU-CTG12-1-BP, EU-CTG12-2-BP, and EU-CTG13-1-BP as required by FG-CTG-BP, Special Condition VI.6 of the current ROP. We have included Michigan Forms C-001, M-001, and AI-001, as well as a marked-up copy of the affected pages of MI-ROP- B2796-2015b. The requested modification will not affect emissions. The modification is eligible for an Administrative Amendment because it represents a request to include additional monitoring, record keeping, and reporting in the ROP.

An Administrative Amendment requires copies of testing, monitoring, and record keeping demonstrating compliance with the conditions. Additional information from recent stack testing is included in AI-TEST; a summary of the dry low oxides of nitrogen (NOX) technology to reduce NOX emissions is provided on the AI-COMBUSTION form, and AI-RECORDS includes record keeping demonstrating compliance with annual limits.

If you have any questions or require additional information, please contact me or FTCH's Lillian Woolley at 313.235.6384 / [Ignatius.fadanelli@dteenergy.com](mailto:Ignatius.fadanelli@dteenergy.com) or 248.324.4785 / [lwoolley@ftch.com](mailto:lwoolley@ftch.com), respectively.

Sincerely,



I. Andrew Fadanelli, Principal Engineer,  
Environmental Management & Resources  
DTE Energy Corporate Services, LLC

Cc / Attachments by Electronic Mail:

M. Guilluamin, Plant Manager, Greenwood Energy Center & Peakers  
S. Zanke, Environmental Engineer-DTE Electric Peakers  
J. Zhu, AQD, Manager-Southeast Michigan District Office  
R. Elmouchi, AQD - Southeast Michigan District Office  
Ms. Lillian L. Woolley, PE, Fishbeck, Thompson, Carr & Huber, Inc., Project No. 190246

enclosures



Michigan Department Of Environmental Quality - Air Quality Division

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### RENEWABLE OPERATING PERMIT APPLICATION C-001: CERTIFICATION

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This information is required by Article II, Chapter 1, part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to provide this information may result in civil and/or criminal penalties. Please type or print clearly.

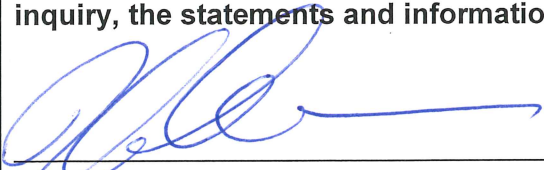
This form is completed and included as part of Renewable Operating Permit (ROP) initial and renewal applications, notifications of change, amendments, modifications, and additional information.

Form Type C-001	SRN B2796
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Stationary Source Name DTE Electric Company, St. Clair/Belle River Power Plant - Section 4 Belle River Peakers	
City East China	County St. Clair

<b>SUBMITTAL CERTIFICATION INFORMATION</b>	
1. Type of Submittal <i>Check only one box.</i>	
<input type="checkbox"/> Initial Application (Rule 210)	<input checked="" type="checkbox"/> Notification / Administrative Amendment / Modification (Rules 215/216)
<input type="checkbox"/> Renewal (Rule 210)	<input type="checkbox"/> Other, describe on AI-001
2. If this ROP has more than one Section, list the Section(s) that this Certification applies to _____	
3. Submittal Media	<input checked="" type="checkbox"/> E-mail <input type="checkbox"/> FTP <input type="checkbox"/> Disk <input checked="" type="checkbox"/> Paper
4. Operator's Additional Information ID - Create an Additional Information (AI) ID that is used to provide supplemental information on AI-001 regarding a submittal. AI	

<b>CONTACT INFORMATION</b>	
Contact Name Andrew Fadanelli	Title Principal Engineer
Phone number 313.235.6384	E-mail address ignatius.fadanelli@dteenergy.com

<b>This form must be signed and dated by a Responsible Official.</b>				
Responsible Official Name Margaret Guillaumin			Title Plant Manager, Fossil Generation	
Mailing address 38155 Cherry Hill Road				
City Westland	State MI	ZIP Code 48186	County Wayne	Country US
<b>As a Responsible Official, I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this submittal are true, accurate and complete.</b>				
 _____ Signature of Responsible Official			6/6/2019 _____ Date	



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**RENEWABLE OPERATING PERMIT**  
**M-001: RULE 215 CHANGE NOTIFICATION**  
**RULE 216 AMENDMENT/MODIFICATION APPLICATION**

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*This information is required by Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment.*

1. SRN B2796	2. ROP Number MI-ROP-B2796-2015b, Section 4	3. County St. Clair
4. Stationary Source Name DTE Electric Company, St. Clair/Belle River Power Plant - Belle River Peakers		
5. Location Address 4505 King Road		6. City China
<p>7. Submittal Type - <i>The submittal must meet the criteria for the box checked below. Check only one box. Attach a mark-up of the affected ROP pages for applications for Rule 216 changes.</i></p> <p><input type="checkbox"/> <b>Rule 215(1) Notification of change.</b> Complete Items 8 – 10 and 14</p> <p><input type="checkbox"/> <b>Rule 215(2) Notification of change.</b> Complete Items 8 – 10 and 14</p> <p><input type="checkbox"/> <b>Rule 215(3) Notification of change.</b> Complete Items 8 – 11 and 14</p> <p><input type="checkbox"/> <b>Rule 215(5) Notification of change.</b> Complete Items 8 – 10 and 14</p> <p><input checked="" type="checkbox"/> <b>Rule 216(1)(a)(i)-(iv) Administrative Amendment.</b> Complete Items 8 – 10 and 14</p> <p><input type="checkbox"/> <b>Rule 216(1)(a)(v) Administrative Amendment.</b> Complete Items 8 – 14. Results of testing, monitoring &amp; recordkeeping must be submitted. See detailed instructions.</p> <p><input type="checkbox"/> <b>Rule 216(2) Minor Modification.</b> Complete Items 8 – 12 and 14</p> <p><input type="checkbox"/> <b>Rule 216(3) Significant Modification.</b> Complete Items 8 – 12 and 14, and provide any additional information needed on ROP application forms. See detailed instructions.</p> <p><input type="checkbox"/> <b>Rule 216(4) State-Only Modification.</b> Complete Items 8 – 12 and 14</p>		
8. Effective date of the change. (MM/DD/YYYY) <i>See detailed instructions.</i> 8/1/2019		9. Change in emissions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>10. Description of Change - <i>Describe any changes or additions to the ROP, including any changes in emissions and/or pollutants that will occur. If additional space is needed, complete an Additional Information form (AI-001).</i></p> <p>Continuous emissions monitoring systems (CEMS) for nitrogen dioxide will be installed on EU-CTG12-1-BP, EU-CTG12-2-BP and EU-CTG13-1-BP. A combustion monitoring system will be installed prior to installation of the CEMS.</p>		
11. New Source Review Permit(s) to Install (PTI) associated with this application? If Yes, enter the PTI Number(s) _____ - _____ - _____ - _____ - _____		<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>12. Compliance Status - <i>A narrative compliance plan, including a schedule for compliance, must be submitted using an AI-001 if any of the following are checked No.</i></p> <p>a. Is the change identified above in compliance with the associated applicable requirement(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>b. Will the change identified above continue to be in compliance with the associated applicable requirement(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>c. If the change includes a future applicable requirement(s), will timely compliance be achieved? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>		
13. Operator's Additional Information ID - <i>Create an Additional Information (AI) ID for the associated AI-001 form used to provide supplemental information.</i>		<b>AI ROP-Markup</b>
14. Contact Name Andrew Fadanelli	Telephone No. 313.235.6384	E-mail Address ignatius.fadanelli@dteenergy.com
15. This submittal also updates the ROP renewal application submitted on ____/____/____ <i>(If yes, a mark-up of the affected pages of the ROP must be attached.)</i>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A

**NOTE: A CERTIFICATION FORM (C-001) SIGNED BY A RESPONSIBLE OFFICIAL MUST ACCOMPANY ALL SUBMITTALS**

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Michigan Department of Environmental Quality - Air Quality Division



# RENEWABLE OPERATING PERMIT APPLICATION AI-001: ADDITIONAL INFORMATION

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This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: B2796	Section Number (if applicable): 4
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1. Additional Information ID  
AI-COMBUSTION

### Additional Information

2. Is This Information Confidential?  Yes  No

The Belle River Combustion Turbines (CTG-BPs) use dry low NOx (DLN) technology to reduce NOx emissions. This was considered the Best Available Control Technology (BACT) at the time of installation and is still considered BACT for some simple-cycle CTs. DLN uses two-stage combustion where a primary zone of the combustor is operated fuel-rich while the secondary zone is operated fuel-lean. The rich zone creates higher concentrations of CO than diffusion flame-fired turbines because of incomplete combustion. The creation of CO also minimizes the amount of oxygen available to create NOx. Before entering the secondary zone, the exhaust of the primary zone is quenched to extinguish the flame. The quenching is performed using large amounts of air, creating a fuel-lean mixture. The lean mixture is pre-ignited and combustion takes place in the secondary zone. NOx formation in the secondary zone is limited through combustion in this fuel-lean environment.

The dry low NOx combustor DLN-1 allows the turbine to operate with an extremely lean mixture while ensuring a stable flame. But it results in a combustion system that is sensitive to environmental changes, fuel composition changes, and hardware degradation. It requires monitoring and periodic tuning to maintain acceptable dynamics, operability, emissions and performance. Installation of one of the newer combustion monitoring systems can help identify operating conditions that will lead to combustion instability and make corrections to fuel flow, air flow, and operating pressures before these conditions produce emissions that are over the permit limit. Temperature, pressure, and vibration are monitored at several points in the combustion system, automatically making adjustments if necessary, and noting any changes that could lead to performance issues or equipment failure.

Installation of these combustion monitoring systems will not increase emissions, rather they will ensure proper operation of the equipment. It will help ensure the CTG-BPs remain in compliance with emission limits.

201900105



# RENEWABLE OPERATING PERMIT APPLICATION

## AI-001: ADDITIONAL INFORMATION

*This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.*

SRN: B2796	Section Number (if applicable): 4
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1. Additional Information ID <b>AI-ROP-Markup</b>
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### Additional Information

2. Is This Information Confidential?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Attached is the marked up copy of the affected pages of DTE Energy Company's current MI-ROP-B2796-2015b.

**FG-CTG-BP  
FLEXIBLE GROUP CONDITIONS**

**DESCRIPTION**

Three (3) natural gas-fired simple cycle combustion turbine generator (CTG) peaking units each nominally rated at 82.4 MW located at Belle River Power Plant. The combustion turbines are equipped with dry low-NOx burners. ~~This permit is to clarify intermediate loads as normal steady state conditions rather than start-up/shut-down operations. (PTI No. 177-07A)~~

**Emission Unit:**

EU-CTG12-1-BP CTG 12-1. Natural gas-fired combustion turbine generator located at Belle River Power Plant  
 EU-CTG12-2-BP CTG 12-2. Natural gas-fired combustion turbine generator located at Belle River Power Plant  
 EU-CTG13-1-BP CTG 13-1. Natural gas-fired combustion turbine generator located at Belle River Power Plant

**Commented [IAF1]:**

This is unnecessary and since the description is not compliance related conditions, can be changed without a PTI

**POLLUTION CONTROL EQUIPMENT**

Dry Low-NOx Burners

**I. EMISSION LIMIT(S)**

Pollutant	Limit <sup>a</sup>	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NOx	9 ppm by volume at 15% oxygen & on a dry gas basis <sup>2</sup>	Average of all operating hours in a calendar day	Each combustion turbine	SC V.1 and Appendix 7-BP	R 336.1205(1)(a) & (b), 40 CFR 52.21(j), 40 CFR 60.332(a)(1)
	230 tons per year <sup>2</sup>	Based on a rolling 12-month period, as determined at the end of each month	FG-CTG-BP	SC V.1 and Appendix 7-BP	R 336.1205(1)(a) & (b), 40 CFR 52.21(j)
2. CO	25 ppm by volume at 15% oxygen & on a dry gas basis <sup>2</sup>	Average of all operating hours in a calendar day	Each combustion turbine	SC V.2 and Appendix 7-BP	R 336.1205(1)(a) & (b), 40 CFR 52.21(j)
	382 tons per year	Based on a rolling 12-month period, as determined at the end of each month	FG-CTG-BP	SC V.2 and Appendix 7-BP	R 336.1205(1)(a) & (b), 40 CFR 52.21(j)
3. PM-10	9 pounds per hour <sup>2</sup>	Average of all operating hours in a calendar day <sup>2</sup>	Each combustion turbine	SC V.3 and Appendix 7-BP	R 336.1205(1)(a) & (b), 40 CFR 52.21(j)
	50.4 tons per year <sup>2</sup>	Based on a rolling 12-month period, as determined at the end of each month	FG-CTG-BP	SC V.3 and Appendix 7-BP	R 336.1205(1)(a) & (b), 40 CFR 52.21(j)
4. Opacity	10%, except for uncombined water vapor <sup>2, b</sup>	6-minute average	Each combustion turbine	SC V.5	R 336.1301(1)(c), 40 CFR 52.21

<sup>a</sup>Limits do not include startup, shutdown, and malfunction conditions.

<sup>b</sup>Opacity limit shall not include periods of startup and shutdown.

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Natural Gas	13,600 MM Cu. Ft. <sup>2</sup>	Based on a rolling 12- month period, as determined at the end of each month <sup>2</sup>	FG-CTG-BP	SC VI.4	R 336.1205(1)(a) & (b), 40 CFR 52.21(j)
2. Sulfur in Natural Gas	0.8 grain per 100 standard cu. ft. <sup>2</sup>	As-fired	FG-CTG-BP	SC III.1	R 336.1225, R 336.1702(a), 40 CFR 52.21, 40 CFR 60.333(b)

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall only burn pipeline quality natural gas in each turbine.<sup>2</sup> (R 336.1225, R 336.1702(a), 40 CFR 52.21, 40 CFR 60.333(b))
2. The total hours for startup and shutdown for FG-CTG-BP shall not exceed 500 hours per turbine per 12-month rolling time period as determined at the end of each calendar month. Startup is defined as the period of time from initiation of combustion firing until the unit reaches steady state operation (e.g., when pre-mix operating mode is achieved). Shutdown is defined as that period of time from the initial lowering of the turbine output, with the intent to shut down, until the point at which the combustion process has stopped.<sup>2</sup> (40 CFR 52.21 (j))
3. The permittee shall not operate FG-CTG-BP unless all provisions of the Federal Prevention of Significant Deterioration regulations, 40 CFR 52.21, are met.<sup>2</sup> (40 CFR 52.21)
4. The permittee shall maintain and implement the approved "Emission Minimization Plan" describing how emissions will be minimized during startup(s), shutdown(s) and malfunction(s). The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. Alternative plans or modifications to the approved plan must be approved by the District Supervisor.<sup>2</sup> (R 336.1911, R 336.1912, 40 CFR 52.21)

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall equip and maintain each turbine with a dry low-NOx combustor.<sup>2</sup> (R 336.1910, 40 CFR 52.21(j))

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of 5 years. (R 336.1213(3)(b)(ii))

1. In accordance with 40 CFR 75, Appendix E, NOx emission rates (ppmv) from each turbine will be verified at least once every 20 calendar quarters. The permittee shall perform NOx testing for at least four (4) approximately equally spaced operating load points, ranging from the maximum operating load to the minimum operating load. Testing procedures shall be in accordance with the applicable federal Reference Methods, 40 CFR Part 60, Appendix A. This test satisfies the NOx performance test requirement of 40 CFR 60, Subparts A and GG.<sup>2</sup> (40 CFR 60.8 & 60.335, 40 CFR 75 Appendix E2.2)
2. The permittee shall conduct CO emission rate testing for each turbine in conjunction with NOx testing and under the same test averaging period requirements. CO emissions testing will be conducted at two operating load points, one at maximum load and one other mid load. (R 336.1213(3))

3. Verification of PM-10 emission rates from each turbine by testing, at owner's expense, in accordance with Department requirements will be required. The permittee shall verify PM-10 emission rates from each turbine once every 5 years. Testing procedures shall be in accordance with the applicable federal Reference Methods, 40 CFR 60, Appendix A. Testing must be done for each turbine at 70% and 100% of base load.<sup>2</sup> (R 336.2001, R 336.2003, R 336.2004)
4. The permittee shall submit a complete test protocol to the AQD for approval at least 30 days prior to the anticipated test date. The permittee shall notify the AQD no less than 7 days prior to the anticipated test date. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> (R 336.1331, R 336.2001, R 336.2003, R 336.2004)

The permittee shall conduct federal Reference Method 9 visible emissions reading for each turbine at least once per 1200 hours of operation.<sup>2</sup> (R 336.1301, 40 CFR 52.21)

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of 5 years. (R 336.1213(3)(b)(ii))

1. For each turbine, the permittee shall keep a record of federal Reference Method 9 visible emissions reading conducted at least once per 1200 hours of operation.<sup>2</sup> (R 336.1301, 40 CFR 52.21)
2. For each turbine, the permittee shall keep records of calendar day average (lbs/hr for PM-10, and ppmv for NOx and CO), monthly and previous 12-month NOx, CO and PM-10 emission calculations.<sup>2</sup> See Appendix 7-BP. (R 336.1205(1)(a) & (b), 40 CFR 52.21, 40 CFR 60 Subpart GG)
3. The permittee shall monitor the nitrogen content in the fuel in accordance with 40 CFR 60.334(h)(2) if an allowance for fuel bound nitrogen is claimed.<sup>2</sup> (40 CFR 60.334(h)(2))
4. For each turbine, the permittee shall continuously monitor and record hourly the natural gas usage in a manner and with instrumentation acceptable to the AQD District Supervisor.<sup>2</sup> (R 336.1205(1)(a) & (b), 40 CFR 52.21)
5. For each turbine, the permittee shall keep records of hours of startup and shutdown.<sup>2</sup> (40 CFR 52.21(j))
6. For each turbine, the permittee shall monitor and record the capacity factor for each calendar year. If the capacity factor for each individual turbine exceeds 20% in any calendar year or exceeds 10% averaged over the three previous calendar years, a continuous monitor for nitrogen dioxide must be installed, certified, and operated no later than December 31 of the following calendar year.<sup>2</sup> (40 CFR 75.12(d)(2))
7. Monitoring and recording of emissions and operating information for FG-CTG-BP is required to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subpart A, and Subpart GG, 60.334.<sup>2</sup> (40 CFR 60.334)
8. On or before December 31, 2019, the permittee shall install, calibrate, maintain and operate in a satisfactory manner devices or equipment to monitor and record the NOx emissions and O<sub>2</sub> or CO<sub>2</sub> content of the exhaust gas from each turbine on a continuous basis. See Appendix 3-BP. (R 336.1213(3), 40 CFR 75.12(d)(2), 40CFR72.12(c), Appendix F to Part 75)

#### **VII. REPORTING**

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))



3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))
4. After NOx CEMs installed, within 30 days following the end of each calendar quarter, the permittee shall report nitrogen oxide and either oxygen or carbon dioxide emissions in accordance with 40 CFR, Part 75 (Continuous Emission monitoring).<sup>2</sup> (40 CFR 75.64)
5. After NOx CEMs installed, in accordance with 40 CFR 60.7(c) & (d), the permittee shall submit two copies of an excess emission report (EER) and monitoring system performance report in an acceptable format to the AQD District Supervisor and the TPU Supervisor. The monitoring system performance report shall follow the format of Figure 1 in 40 CFR 60.7(d). The written reports of NOx excess emissions (EER) shall include the following information:
- For each exceedance above the permitted NOx, the date & time of commencement & completion, the magnitude, the cause and corrective actions of all occurrences during the reporting period.
  - A report of all periods of CEMS downtime and corrective action.
  - A report of the total operating time of each turbine included in FG-CTG-BP, during the reporting period.
  - If no exceedances or CEMS downtime occurred during the reporting period, the permittee shall report that fact.
- The permittee shall submit quarterly Excess Emission Report (EER) and Monitoring System Performance report 30 days following the end of the quarter in which data were collected.<sup>2</sup> (R 336.1213(3), 40 CFR 60.7(c) & (d), 40CFR60.334(j))

See Appendix **3-BP and 8-BP**

#### 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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-CTG13-1	228 x 108 <sup>2</sup>	56 <sup>2</sup>	R 336.1225, 40 CFR 52.21(c) & (d)
2. SV-CTG12-1	228 x 108 <sup>2</sup>	56 <sup>2</sup>	R 336.1225, 40 CFR 52.21(c) & (d)
3. SV-CTG12-2	228 x 108 <sup>2</sup>	56 <sup>2</sup>	R 336.1225, 40 CFR 52.21(c) & (d)

#### IX. OTHER REQUIREMENT(S)

- The permittee shall comply with all the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR 60, Subparts A and GG, as they apply to FG-CTG-BP.<sup>2</sup> (40 CFR 60, Subparts A and GG)
- The permittee shall conduct a visual inspection of the silencer elements associated with each turbine once each quarter that the turbine is operated. The visual inspection will evaluate whether or not silencer material has been lost due to operation of the turbines. If there is evidence that silencer material has been lost, the permittee shall notify the District Office of the positive results and take immediate action to replace the silencer elements. Records of the quarterly visual inspections shall be kept on file for a period of at least five years and made available to the AQD upon request. (R 336.1213(3))
- The permittee shall comply with the acid rain permitting provisions of 40 CFR 72.1 to 72.94 as outlined in a complete Phase II Acid Rain Permit issued by the AQD. The Phase II Acid Rain Permit No. MI-AR-6034-2015 is hereby incorporated into this ROP as **Appendix 9-BP**. (R 336.1299(2)(a))

4. The permittee shall not allow the emission of an air pollutant to exceed the amount of any emission allowances that an affected source lawfully holds as of the allowance transfer deadline pursuant to R 336.1299(2)(d) and 40 CFR Part 72.9(c)(1)(i). **(R 336.1299(2)(a), 40 CFR 72.9(c)(1)(i))**
5. The permittee shall comply with the provisions of the Transport Rule SO<sub>2</sub> Group 1 Trading Program, as specified in 40 CFR, Part 97, Subpart CCCCC, as they apply to EU-CTG12-1-BP, EU-CTG12-2-BP, and EU-CTG13-1-BP. **(40 CFR Part 97 Subpart CCCCC)**
6. The permittee shall comply with the provisions of the Transport Rule NO<sub>x</sub> Annual Trading Program, as specified in 40 CFR, Part 97, Subpart AAAAA, as they apply to EU-CTG12-1-BP, EU-CTG12-2-BP, and EU-CTG13-1-BP. **(40 CFR Part 97 Subpart AAAAA)**
7. The permittee shall comply with the provisions of the Transport Rule NO<sub>x</sub> Ozone Trading Program, as specified in 40 CFR, Part 97, Subpart BBBBB, as they apply to EU-CTG12-1-BP, EU-CTG12-2-BP, and EU-CTG13-1-BP. **(40 CFR Part 97 Subpart BBBBB)**

**Footnotes:**

<sup>1</sup>This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

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

**Appendix 3-BP. Monitoring Requirements**

The following monitoring procedures, methods, or specifications are the certified CEMS details to the monitoring requirements identified and referenced in FG-BR-CTG.

**1. Continuous Emissions Monitoring System**

The CEMS performance specifications defined in 40 CFR Part 75, Appendix B are adopted.

Methods of measurement, frequency of measurement and record keeping methods for CEMS required under 40 CFR 75 are outlined in the most recent version of the Acid Rain Program - Belle River Peakers Monitoring Plan.

The data reduction procedures defined in 40CFR 75.12(c) will calculate hourly, quarterly, and annual NOX emission rates (in lb/mmBtu) by combining the NOx concentration (in ppm), diluent concentration (in percent O2 or CO2), and percent moisture (if applicable) measurements according to the procedures in Appendix F of Part 75.

The data conversion procedures defined in Appendix F to Part 75 will calculate the hourly heat input, mmBtu.

**Appendix 7-BP. Emission Calculations**

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FG-CTG-BP:

Natural gas usage is monitored continuously but recorded once per hour and tracked on a monthly basis.

The NOx and CO calendar day ppmv limits are assured by the latest stack testing results. The worst case concentration data (in ppmv) from the tested operating loads are compared to permit limits.

From stack testing, emission factors for CO and PM-10 are developed in lbs pollutant/million cubic feet of natural gas, for the corresponding loads specified in FG-CTG-BP SC V.2 (CO) and V.3 (PM-10). Emission factors for each pollutant are calculated using the worst-case emissions recorded during the last representative stack test on a pollutant-specific basis. The emission factors, along with the fuel monitoring requirement, shall be applied to each hour to ensure compliance with PM-10's calendar day average, and CO's and PM-10's rolling 12-month period emission limits.

From stack testing at the four load points, correlation curves are developed from NOx emissions (lb/MM BTU) and heat input (MM BTU/hr) for each CTG. Consistent with Part 75, Appendix E, an hourly NOx emission rate (lb/MM BTU) is applied to each operating hour. Each QA-QC validated hour either has the NOx emission rate from the correlation curve applied or the appropriate substitute NOx emission rate applied if the hour is outside operational and control equipment parameters, per Appendix E, section 2.5.2. The product of the hourly NOx emission rates and heat inputs are aggregated monthly to report the tons of NOx on a rolling 12-month basis.

After NOx CEMs installed, compliance with the NOx 12-month rolling totals will be determined using the hourly NOx emission rate (lb/mmBtu) and hourly heat rate (mmBtu/hr) values, described in Appendix 3-BP.

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# RENEWABLE OPERATING PERMIT APPLICATION

## AI-001: ADDITIONAL INFORMATION

*This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.*

SRN: B2796	Section Number (if applicable): 4
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1. Additional Information ID AI-TEST
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### Additional Information

2. Is This Information Confidential?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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The existing ROP requires stack testing every 20 calendar quarters. Most recent stack testing for FG-CTG-BP was performed in 2017. Tables 1, 2, and 3 (attached) include emissions data demonstrating compliance with the NOx limit in the ROP. No change in emissions will occur after installation of the CEMS or combustion monitoring equipment.



**TABLE NO. 1**  
**NO<sub>x</sub> & CO EMISSIONS TESTING RESULTS**  
**Belle River Power Plant - Unit 12-1**  
**June 1 & 2, 2017**

Test	Test Date	Test Time	Unit Load (GMW)	Stack Temperature (°F)	Fuel Flow (lb/sec)	Inlet Guide Vane Angle	Compressor		Heat Input (MMBtu/hr)	Emissions (ppm@15%O <sub>2</sub> ) <sup>(1)</sup>	
							Discharge Temperature	Discharge Pressure		NOx	CO
High	1-Jun-17	7:40-9:22	83.7	1016.1	12.1	84.0	669.7	165.7	1,055.2	6.4	11.7
Mid-High		9:50-11:33	72.1	1036.8	11.0	79.0	672.8	149.4	956.7	6.2	11.3
Mid-Low	2-Jun-17	7:30-9:15	62.0	1061.9	10.1	71.2	659.3	134.2	878.4	6.2	8.3
Low		9:39-11:19	52.1	1099.9	8.9	57.4	636.3	115.3	774.0	6.2	8.1
<b>Average:</b>			<b>67.5</b>	<b>1053.7</b>	<b>10.5</b>	<b>72.9</b>	<b>659.5</b>	<b>141.2</b>	<b>916.1</b>	<b>6.3</b>	<b>9.9</b>

(1) Permit Limit = 9 ppm@15%O<sub>2</sub>

(2) Permit Limit = 25 ppm@15%O<sub>2</sub>

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**TABLE NO. 2**  
**NO<sub>x</sub> & CO EMISSIONS TESTING RESULTS**  
**Belle River Power Plant - Unit 12-2**  
**June 7 & 8, 2017**

Test	Test Date	Test Time	Unit Load (GMW)	Stack Temperature (°F)	Fuel Flow (lb/sec)	Inlet Guide Vane Angle	Compressor Discharge Temperature	Compressor Discharge Pressure	Heat Input (MMBtu/hr)	NOx Emissions (ppm@15%O <sub>2</sub> ) <sup>(1)</sup>		CO Emissions (ppm@15%O <sub>2</sub> ) <sup>(2)</sup>	
										NOx	CO	NOx	CO
High	7-Jun-17	7:09-8:51	80.4	1008.5	10.4	84.0	668.4	165.0	901.5	7.0	18.3		
Mid-High		9:40-11:23	70.0	1035.8	9.5	79.4	675.2	149.5	826.1	7.4	8.1		
Mid-Low	8-Jun-17	7:00-8:42	61.0	1059.4	8.8	72.3	667.8	135.2	762.4	7.4	7.7		
Low		9:09-10:57	52.0	1092.5	7.8	61.2	656.2	118.9	678.3	7.2	7.4		
<b>Average:</b>			<b>65.9</b>	<b>1049.1</b>	<b>9.1</b>	<b>74.2</b>	<b>666.9</b>	<b>142.2</b>	<b>792.1</b>	<b>7.3</b>	<b>10.4</b>		

(1) Permit Limit = 9 ppm@15%O<sub>2</sub>

(2) Permit Limit = 25 ppm@15%O<sub>2</sub>

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**TABLE NO. 3**  
**NO<sub>x</sub> & CO EMISSIONS TESTING RESULTS**  
 Belle River Power Plant - Unit 13-1  
 June 10, 2017

Test	Test Date	Test Time	Unit Load (GMW)	Stack Temperature (°F)	Fuel Flow (lb/sec)	Inlet Guide Vane Angle	Compressor		Heat Input (MMBtu/hr)	Emissions	
							Discharge Temperature	Discharge Pressure		NOx Emissions (ppm@15%O <sub>2</sub> ) <sup>(1)</sup>	CO Emissions (ppm@15%O <sub>2</sub> ) <sup>(2)</sup>
High	10-Jun-17	11:15-12:56	73.5	1024.1	10.9	84.3	691.3	153.9	950.8	7.1	2.9
Mid-High		13:29-15:07	67.0	1031.5	10.3	81.5	694.4	145.0	895.7	7.0	3.5
Mid-Low		15:28-17:10	60.0	1051.5	9.6	77.0	693.9	134.6	834.8	7.2	3.0
Low		17:35-19:18	52.0	1081.5	8.8	69.6	688.9	121.9	768.2	7.5	1.7
<b>Average:</b>			<b>63.1</b>	<b>1047.2</b>	<b>9.9</b>	<b>78.1</b>	<b>692.1</b>	<b>138.9</b>	<b>862.4</b>	<b>7.2</b>	<b>2.8</b>

(1) Permit Limit = 9 ppm@15%O<sub>2</sub>

(2) Permit Limit = 25 ppm@15%O<sub>2</sub>

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# RENEWABLE OPERATING PERMIT APPLICATION

## AI-001: ADDITIONAL INFORMATION

*This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.*

SRN: B2796	Section Number (if applicable): 4
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1. Additional Information ID AI-RECORDS
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### Additional Information

2. Is This Information Confidential?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Table 4 provides a 2018 summary of emissions from the FG-CTG-BP, with a comparison to annual emission limits.



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**Table 4 – Belle River Peakers Record Keeping Summary (2018)**  
 DTE Energy, Belle River Peaking Plant  
 Administrative Amendment to MI-ROP-B2796-2015B

Emission Unit	Natural Gas Consumption (MMscf/yr)		Operating Hours (hr/yr)	NO <sub>x</sub> (tpy)		CO (tpy)		PM <sub>10</sub> (tpy)	
	Actual	Limit		Actual	Limit	Actual	Limit	Actual	Limit
BR CTG 12-1	1052.8		1063	11.51		10.05		4	
BR CTG 12-2	1117.78		1223	14.61		15.76		3	
BR CTG 13-1	1663.94		1760	20.69		20.63		3	
<b>Total</b>	<b>3834.52</b>	<b>13,600</b>	<b>4,046.00</b>	<b>46.81</b>	<b>230</b>	<b>46</b>	<b>382</b>	<b>10</b>	<b>50.4</b>

