

Michigan Department of Environmental Quality
Air Quality Division

State Registration Number
P0465

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
Mi-ROP-P0465-2018

Holland Board of Public Works - Holland Energy Park

SRN: P0465

Located at

1 Energy Park Way, Holland, Ottawa County, Michigan 49423

Permit Number: MI-ROP-P0465-2018

Staff Report Date: July 30, 2018

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) requires that the Michigan Department of Environmental Quality (MDEQ), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

TABLE OF CONTENTS

July 30, 2018 - STAFF REPORT	3
September 4, 2018 - STAFF REPORT ADDENDUM	9

RENEWABLE OPERATING PERMIT

July 30, 2018 - STAFF REPORT

Purpose

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act of 1990 and Michigan's Administrative Rules for Air Pollution Control pursuant to Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source's applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

General Information

Stationary Source Mailing Address:	Holland Board of Public Works - Holland Energy Park 625 Hastings Avenue Holland, Michigan 49423
Source Registration Number (SRN):	P0465
North American Industry Classification System (NAICS) Code:	221112
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Initial Issuance
Application Number:	201700117
Responsible Official:	Mr. Joel Davenport, Operations Director 616-355-1252
AQD Contact:	Kaitlyn DeVries, Environmental Quality Analyst 616-558-0552
Date Application Received:	September 7, 2017
Date Application Was Administratively Complete:	November 27, 2017
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	July 30, 2018
Deadline for Public Comment:	August 29, 2018

Source Description

Holland Board of Public Works – Holland Energy Park is a power plant located in Holland, Ottawa County, Michigan. The facility is located just east of downtown Holland, Michigan, near the wetlands of the Macatawa River, which empties into Lake Macatawa. The plant itself is located on an existing industrial (brownfield) site. The surrounding area is wetlands to the north and commercial and residential in the other directions.

The plant is a combined Heat and Power (CHP) plant designed as a combined cycle, cogeneration facility consisting of two (2) natural gas-fired combustion turbine generators (CTG), two (2) heat recovery steam generators (HRSG), and a steam turbine generator (STG) for electric generation to the Holland community. The plant has a capacity of more than 250,000,000 BTU per hour heat input. The high efficiency CTG/HRSG trains utilize low NOx burners, selective catalytic reduction (SCR) for Nitrogen Oxide (NOx) control and an oxidation catalyst is used for Carbon Monoxide (CO) and Volatile Organic Compound (VOC) control. Aqueous ammonia is used as the reagent.

Other ancillary equipment is also located on site, consisting of items such as an auxillary boiler and emergency engines.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2017**.

TOTAL STATIONARY SOURCE EMISSIONS

Pollutant	Tons per Year
Carbon Monoxide (CO)	3.68
Lead (Pb)	0.03 lbs
Nitrogen Oxides (NO _x)	21.55
Particulate Matter (PM)	5.18
Sulfur Dioxide (SO ₂)	0.72
Volatile Organic Compounds (VOCs)	2.67

The following table lists Hazardous Air Pollutant emissions as calculated for the year 2017 by AQD:

Individual Hazardous Air Pollutants (HAPs) **	Tons per Year
Total Hazardous Air Pollutants (HAPs)	0.6

**As listed pursuant to Section 112(b) of the federal Clean Air Act.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

Regulatory Analysis

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is located in Ottawa County, which is currently designated by the United States Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of Nitrogen Oxides, Carbon Monoxide, and Volatile Organic Compounds, exceeds 100 tons per year.

The stationary source is considered to be a minor source of HAP emissions because the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, is less than 10 tons per year and the potential to emit of all HAPs combined are less than 25 tons per year.

EUAUXBOILER, EUFUELHTR, EUCOOLTWR, EUNGINE, EUPENGINE, EUFUELTK, FGSPACEHEATERS and FGCTGHRSG at the stationary source were subject to review under the Prevention of Significant Deterioration (PSD) regulations of 40 CFR 52.21, because at the time of New Source Review permitting the potential to emit of nitrogen oxides, carbon monoxide, and volatile organic compounds was greater than 100 tons per year. The source was also subject to PSD for PM, PM10, PM2.5, and BACT for Green House Gases (GHG) and applicable requirements were incorporated into the permit. The Permit to Install issuance underwent a public comment period due to the PSD regulations requirements in the original iteration of the permit (PTI No. 107-13) and since this was considered a non-controversial source; no comments were received. All permitted emission units and flexible groups at the stationary source underwent Best Available Control Technology (BACT) analysis.

Greenhouse Gas Recordkeeping and emissions calculations are included in this ROP as a result of the BACT analysis. Holland Board of Public Works requested and AQD approved the use of the Greenhouse Gas Reporting Rule 40 CFR Part 98 emission factors to calculate CO_{2e} emissions. Appropriate emissions calculation guidelines are identified in Appendix 7 of the ROP.

All emission units at the stationary source underwent toxics review. The engines were excluded from the T-BACT analysis because they are subject to the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR Part 63, Subpart ZZZZ. Ammonia and H₂SO₄ were the only toxic air contaminants (TACs) that were not covered under the PSD BACT analysis. Ammonia emissions from potential ammonia slip from the SCR process utilized for NO_x control on the CTGHRSG units is built into the design and management of the SCR system. Certain TAC's emitted from the facility were also modeled, and the modeling indicated that the impacts comply with the requirements of Rule 225.

EUAUXBOILER at the stationary source is subject to the Standards of Performance for Small Industrial-Commerical-Institutional Steam Generating Units promulgated in 40 CFR Part 60, Subparts A and Dc.

EUNGINE at the stationary source is subject to the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subparts A and JJJJ. Initial performance testing has been conducted, as required

EUPENGINE at the stationary source is subject to the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subparts A and IIII.

EUNGINE and EUPENGINE at the stationary source are subject to the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR Part 63, Subparts A and ZZZZ (Area Source MACT). The AQD is not delegated the regulatory authority for this area source MACT. The facility maintains compliance with the applicable requirements of 40 CFR Part 63, Subparts A and ZZZZ via the requirements of 40 CFR Part 60, Subpart JJJJ and IIII for EUNGINE and EUPENGINE, respectively.

FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the Standards of Performance for Stationary Combustion Turbines promulgated in 40 CFR Part 60, Subparts A and KKKK. As a result of being subject to the provisions of this part, the turbines are exempt from Subparts GG, Da, Db, and Dc.

FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units promulgated in 40 CFR Part 60, Subparts A and TTTT.

FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the federal Acid Rain program promulgated in 40 CFR Part 72.

FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the Cross-State Air Pollution Rule NO_x Annual Trading Program pursuant to 40 CFR Part 97, Subpart AAAAA.

FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the Cross-State Air Pollution Rule NO_x Ozone Season Group 2 Trading Program pursuant to 40 CFR Part 97, Subpart EEEEE.

FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the Cross-State Air Pollution Rule SO₂ Group 1 Trading Program pursuant to 40 CFR Part 97, Subpart CCCCC.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

The particulate matter (PM, PM₁₀, and PM_{2.5}) emission limitations from FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) are not subject to the federal Compliance Assurance Monitoring rule under 40 CFR Part 64, because FGCTGHRSG at the stationary source do not have a control device for PM, PM₁₀, and PM_{2.5}.

EUNGENGINE at the stationary source does not have emission limitations or standards that are subject to the federal Compliance Assurance Monitoring rule pursuant to 40 CFR Part 64, because the unit does not have potential pre-control emissions over the major source thresholds. EUNGENGINE has an oxidation catalyst for CO and VOC control and an operating limit of 144 hours per year.

The pound per hour (pph) emission limitations and the ppmvd at 15% oxygen emission limitations for Nitrogen Oxides and Carbon Monoxide, from FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source are exempt from the federal Compliance Assurance Monitoring (CAM) regulation under 40 CFR 64.2(b)(1)(vi), because the emission limits are monitored on a continuous basis, meeting the CAM exemption for a continuous compliance determination method. Carbon Monoxide (CO) and Nitrogen Oxides (NO_x) are directly measured in parts per million (ppm) from the continuous emissions monitoring system (CEMS), and the pound per hour emission rate for CO and NO_x are calculated using the ppm emissions from the CEMS for each unit, and the gas flow rate, thus meeting the continuous compliance determination method. Additionally, the emission limitation for Nitrogen Oxides, in ppmvd at 15% oxygen, from FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is exempt from the federal Compliance Assurance Monitoring (CAM) regulation under 40 CFR 64.2(b)(1)(i), because the emission limitation is addressed by 40 CFR Part 60, Subpart KKKK, the Standards of Performance for Stationary Combustion Turbines constructed after February 18, 2005.

The emission limitation for Volatile Organic Compounds (VOC) from FGCTGHRSG (EUCTGHRSG10 and EUCTGHRSG11) at the stationary source is subject to the federal Compliance Assurance Monitoring rule under 40 CFR Part 64. This emission unit has a control device and potential pre-control emissions of Volatile Organic Compounds is greater than the major source threshold level.

Emission Unit ID	Pollutant/ Emission Limit	UAR(s)	Control Equipment	Monitoring (Including Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM* ?
EUCTGHRSG 10	VOC/4 ppmvd at 15% O ₂	R 336.1205 (1)(a) & (b), R 336.1702 (a), R 336.2810	Oxidation Catalyst	CO CEMS (4 ppmvd CO at 15% O ₂)	FGCTGHRSG	No
EUCTGHRSG 11	VOC/4 ppmvd at 15% O ₂	R 336.1205 (1)(a) & (b), R 336.1702 (a), R 336.2810	Oxidation Catalyst	CO CEMS (4 ppmvd CO at 15% O ₂)	FGCTGHRSG	No

*Presumptively Acceptable Monitoring (PAM)

Carbon Monoxide (CO) emissions are measured by the CEMS. The CO concentration is used as a surrogate for VOC emissions because CO and VOC emission are formed as a result of incomplete combustion. Increased CO emissions typically occur in conjunction with increased VOC emissions. Additionally, stack test data for both units from 2017, indicated that the emissions for both CO and VOC are within 0.3 ppmvd at 15% O₂, which is similar. Therefore, the CO emissions are used as an indicator of the oxidation catalyst performance for reasonable assurance of compliance with the VOC limit, since both CO and VOC have a 4 ppmvd at 15% O₂ emission limitation.

Please refer to Parts B, C and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

Source-wide Permit to Install (PTI)

Rule 214a requires the issuance of a Source-wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

Streamlined/Subsumed Requirements

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

Non-applicable Requirements

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

Processes in Application Not Identified in Draft ROP

There were no processes listed in the ROP Application as exempt devices under Rule 212(4). Exempt devices are not subject to any process-specific emission limits or standards in any applicable requirement.

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Action taken by the MDEQ, AQD

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Heidi Hollenbach, Grand Rapids District Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

Michigan Department of Environmental Quality
Air Quality Division

State Registration Number
P0465

RENEWABLE OPERATING PERMIT

ROP Number
MI-ROP-N2804-2018

September 4, 2018 - STAFF REPORT ADDENDUM

Purpose

A Staff Report dated July 30, 2018, was developed in order to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1). The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

General Information

Responsible Official:	Mr. Joel Davenport, Operations Director 616-355-1252
AQD Contact:	Kaitlyn DeVries, Environmental Quality Analyst 616-558-0552

Summary of Pertinent Comments

No pertinent comments were received during the 30-day public comment period.

Changes to the July 30, 2018 Draft ROP

No changes were made to the draft ROP.