

State Registration Number
N7421

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-N7421-2022

DTE GAS COMPANY WILLOW COMPRESSOR STATION

State Registration Number (SRN): N7421

Located at

3020 East Michigan Avenue, Ypsilanti, Washtenaw County, Michigan 48111

Permit Number: MI-ROP-N7421-2022

Staff Report Date: January 10, 2022

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) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

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Michigan Department of Environment, Great Lakes, and Energy
Air Quality Division

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January 10, 2022 - 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; and Michigan's Administrative Rules for Air Pollution Control promulgated under 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:	DTE Gas Company Willow Compressor Station 3020 East Michigan Avenue Ypsilanti, Michigan 48111
Source Registration Number (SRN):	N7421
North American Industry Classification System (NAICS) Code:	486210
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Initial Issuance
Application Number:	201900057
Responsible Official:	Chris Conly, Manager Transmission & Storage Operations 248-685-9606
AQD Contact:	Diane Kavanaugh Vetort, Senior Environmental Quality Analyst 517-416-3537
Date Application Received:	March 22, 2019
Date Application Was Administratively Complete:	March 22, 2019
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	January 10, 2022
Deadline for Public Comment:	February 9, 2022

Source Description

DTE Gas Company Willow Compressor Station (DTE Willow facility) owns and operates the Willow Run Compressor Station (3020 East Michigan Avenue, Ypsilanti) and the Willow Run Gate Station (120 Rawsonville Road, Belleville). The area surrounding the facility is mixed industrial, commercial, and residential. The DTE Willow facility is an existing natural gas transmission gate station. The process takes natural gas from a pipeline at a lower pressure, compresses it, and sends it down the pipeline at an increased pressure. The existing natural gas compression station has equipment necessary for the compression of natural gas onto distribution pipelines.

DTE Willow facility has installed and is operating a 7,700 horsepower (HP), simple-cycle natural gas-fired combustion turbine. The turbine is equipped with dry ultra-low NOx burners and a combustion air inlet filter NOx emission controls. They also have installed and are operating: one 4,735 HP natural gas fired reciprocating engine (RICE) with a catalytic oxidation system; two 2,500 HP natural gas fired RICE with an oxidation catalyst for compressing gas; one 5000 HP RICE with an oxidation catalyst for compressing gas; one 1,818 HP natural gas fired emergency engine manufactured in 2011 or later; five 3 MMBTU/hr natural gas fired boilers used for heating; six 125,000 BTU/hr natural gas indirect fired heaters, and one 13 MMBTU/hr and four 14 MMBTU/hr natural gas fired inline process heaters. Three additional heaters (comfort & hot water) are listed in the ROP but are yet to be installed.

DTE has both a malfunction abatement program (MAP) and a startup shut down malfunction (SSM) plan for various equipment.

The SSM Plan: covers one natural gas fired reciprocating internal combustion engine (4-stroke lean burn) and the associated oxidation catalyst system. This includes a Catalyst, pressure drop measurement equipment, and a Continuous Parameter Monitoring system (CPMS) for measuring the inlet temperature to the OC and includes a thermocouple and data acquisition system (CPMS-T).

This facility has become subject to Title V of the Clean Air Act (CAA) for Hazardous Air Pollutants (HAP). Per Rule 210(4) in April 201, upon startup of the new compression engines installed under PTI 44-16A which for the purposes of Rule 210(4) constitutes commencing operations as a major source. Therefore, an administratively complete ROP application was required to be received no later than April 25, 2019.

The newly installed equipment is a part of a larger project that will handle natural gas moving operations in conjunction with the construction of the Nexus pipeline. The equipment currently on site was not sufficient to handle the increased volume of natural gas. Nexus is installing a natural gas metering station directly adjacent to the compressor station, which also is the site of the four (4) inline heaters (EUILHTR1-4) as listed in PTI 44-16A.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year 2020.

TOTAL STATIONARY SOURCE EMISSIONS

Pollutant	Tons per Year
Carbon Monoxide (CO)	4.5
Lead (Pb)	NA
Nitrogen Oxides (NO _x)	16
Particulate Matter (PM)	<1
Sulfur Dioxide (SO ₂)	<1
Volatile Organic Compounds (VOCs)	2

The following table lists Hazardous Air Pollutant emissions as calculated for the year 2020 by MAERS:

Individual Hazardous Air Pollutants (HAPs) **	Pounds per Year
Formaldehyde	301

**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 in Washtenaw County, which is currently designated by the United States Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

Washtenaw County is currently designated by the United States Environmental Protection Agency (USEPA) as a non-attainment area with respect to the 8-hour ozone standard.

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 and carbon dioxide exceeds 100 tons per year, and the potential to emit of any single HAP regulated by Section 112 of the federal Clean Air Act, is equal to or more than 10 tons per year and/or the potential to emit of all HAPs combined is equal to or more than 25 tons per year.

The stationary source is considered a “synthetic minor” source in regard to the Prevention of Significant Deterioration regulations of 40 CFR 52.21 because the stationary source accepted legally enforceable permit conditions limiting the potential to emit of NOx to less than 250 tons per year.

EUENGINE1, EUEMGRICE1, EURICE1, EURICE2, and EURICE3 at the stationary source are subject to the Standards of Performance for New Stationary Sources (NSPS) for Stationary Spark Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subparts A and JJJJ.

EUTURBINE1 at the stationary source is subject to the NSPS for Stationary Combustion Turbines promulgated in 40 CFR Part 60, Subparts A and KKKK.

EURICE1, EURICE2, EURICE3, and EUGINE1 at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ.

FGBLRMACT-SM: EUBOILER1, EUBOILER2, EUBOILER3, EUBOILER4, EUBOILER5, and FGBLRMACT-LG: EUILHTR1, EUILHTR2, EUILHTR3, EUILHTR4 at the stationary source are subject to the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters promulgated in 40 CFR Part 63, Subparts A and DDDDD (Boiler MACT). FGBLRMACT-SM and FGBLRMACT-LG are the current regulatory templates added to the ROP in place of the single existing Air Use Permit to Install (PTI) Boiler MACT Table.

PERMIT HISTORY

The stationary source currently has two Air Use Permit to Install (PTI) at this facility: PTI 246-07A and 44-16B. PTI 246-07A is for one 4,735 hp natural gas fired reciprocating engine with catalytic oxidation system. PTI 44-16A permitted one 7,700 hp (ISO) simple-cycle natural gas-fired combustion turbine, three (3) non-emergency natural gas fired reciprocating internal combustion engines (RICE) with oxidation catalysts, one (1) 1,818 hp natural gas fired emergency RICE, four (4) boilers, four (4) inline

heaters, and eight (8) mod (comfort) heaters. This facility became a major source for HAPs, NOx, and CO as a result of issuance of PTI 44-16A. In late 2019 DTE obtained PTI 44-16B for administrative changes, and to install three heaters, and remove a comfort heater. Another comfort heater was never installed and the current ROP contains six (6).

EUENGINE1 has emission limits for NOx, CO, and VOC and a natural gas usage limit. Performance testing is required by the NSPS Subpart JJJJ to demonstrate compliance. It is required to have a Startup Shut down Malfunction Plan. In addition to the federal NSPS, the special conditions have underlying applicable requirements: Rule 205(3), 40 CFR 52.21(c)&(d), Rule 1803, Rule 1804, Rule 225, Rule 702(a), Rule 910, Rule 911, Rule 2001, Rule 2003, and Rule 2004.

EUTURBINE has emission limits for NOx, and CO. Performance testing is required by the NSPS Subpart KKKK to demonstrate compliance. It is required to have Malfunction Abatement Plan (MAP). In addition to the federal NSPS, the special conditions have underlying applicable requirements: Rule 205(1)(a) & (b), 40 CFR 52.21(c)&(d), Rule 224, Rule 225, Rule 702(a), Rule 910, Rule 911, Rule 912, Rule 2001, Rule 2003, and Rule 2004.

EUEMGRICE1 has emission limits for NOx, CO, and VOC and operating hours limits for non-emergency operation. Performance testing is required by the NSPS Subpart JJJJ to demonstrate compliance. It is required to have a maintenance plan. In addition to the federal NSPS, the special conditions have underlying applicable requirements: Rule 205(1)(a) & (b), 40 CFR 52.21(c)&(d), Rule 224, Rule 225, Rule 702(a), Rule 2001, Rule 2003, and Rule 2004.

EURICE1, EURICE2, and EURICE3 have emission limits for NOx, CO, and VOC. Performance testing is required by the NSPS Subpart JJJJ to demonstrate compliance. In addition to the federal NSPS, the special conditions have underlying applicable requirements: Rule 205(1)(a), 40 CFR 52.21(c)&(d), Rule 224, Rule 225, Rule 702(a), Rule 911, Rule 2001, Rule 2003, and Rule 2004.

EUBOILER1, EUBOILER2, EUBOILER3, EUBOILER4, EUMODHTR1, EUMODHTR2, EUMODHTR3, EUMODHTR4, EUMODHTR5, EUMODHTR6, EUILHTR1, EUILHTR2, EUILHTR3, EUILHTR4, EUHWHEATER, EUBARD, and EUFURNACE have an emission limit for NOx as a flexible group FGNOX. In addition to the federal NSPS, the special conditions have underlying applicable requirements: Rule 205(1)(a), and (3), 40 CFR 52.21(c)&(d), Rule 224, Rule 225, Rule 702(a).

FGENGMACT4Z-ENGINE has emission limits and applicable requirements of the RICE MACT for EUENGINE1. FGENGMACT4Z-RICE has emission limits and applicable requirements of the RICE MACT for EURICE1, EURICE2, and EURICE3. The Template Tables for each EU(s) were issued in each of their respective PTIs.

FGRULE285(2)(mm) is a Template Table in the ROP that covers exemption of transmission and distribution systems or field gas from gathering lines.

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 emission limitation(s) or standard(s) for Carbon Monoxide from EUENGINE1, with the underlying applicable requirement(s) of 40 CFR 52.21(d), R 336.2803, and R 336.2804, at the stationary source are subject to the federal Compliance Assurance Monitoring (CAM) regulation pursuant to 40 CFR Part 64, because EUENGINE1 uses a control device to comply with the emission limit and has potential pre-control emissions over the major source threshold. The source is not required to submit a CAM Plan during this initial Title V application, but one need to be submitted with the next renewal application.

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.

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

The following table lists processes that were included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement.

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EUTANK6	5,000 gallon glycol/water mixture tank	Rule 212(4)(d)	Rule 284(2)(i)
EUCBBOILER	0.454 MMBTU/hr Natural gas fueled boiler used to ensure natural gas line does not freeze located in the compressor building	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUFURNACE	2 units @ 80,000 BTU/hr, natural gas fueled, used for comfort heating and cooling in the main office building	Rule 212(4)(c)	Rule 282(2)(b)(i)

Draft ROP Terms/Conditions Not Agreed to by Applicant

The following table lists terms and/or conditions of the draft ROP that the AQD and the applicant did not agree upon and outlines the applicant’s objections pursuant to Rule 214(2). The terms and conditions that the AQD believes are necessary to comply with the requirements of Rule 213 shall be incorporated into the ROP.

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 EGLE, 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 Scott Miller, Jackson 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.

State Registration Number
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RENEWABLE OPERATING PERMIT
February 14, 2022 - STAFF REPORT ADDENDUM

ROP Number
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Purpose

A Staff Report dated January 10, 2022, was developed 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) of the administrative rules promulgated under Act 451. 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:	Chris Conly, Manager Transmission & Storage Operations 248-685-9606
AQD Contact:	Diane Kavanaugh Vetort, Senior Environmental Quality Analyst 517-416-3537

Summary of Pertinent Comments

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

Changes to the January 10, 2022 Draft ROP

No changes were made to the Draft ROP.