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

| State Registration Number | | ROP Number |
|---|---|---|
| N2915 | **RENEWABLE OPERATING PERMIT STAFF REPORT** | MI-ROP-N2915-2023 |

**Toyota Motor North America R&D (TMNA R&D)**

State Registration Number (SRN): N2915

Located at

1555 and 1588 Woodridge Avenue, Ann Arbor, Washtenaw County, Michigan 48105

Permit Number: MI-ROP-N2915-2023

Staff Report Date: October 2, 2023

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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## 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: | Toyota Motor North America Research and Development (TMNA R&D)<br>1555 and 1588 Woodridge Avenue<br>Ann Arbor, Michigan 48105 |
| Source Registration Number (SRN): | N2915 |
| North American Industry Classification System (NAICS) Code: | 541715 |
| Number of Stationary Source Sections: | 1 |
| Is Application for a Renewal or Initial Issuance? | Renewal |
| Application Number: | 202200099 |
| Responsible Official: | Adam Karibian, VP-Technical Strategy Planning<br>734-695-3587 |
| AQD Contact – District Inspector: | Diane Kavanaugh Vetort, Senior Environmental Quality Analyst<br>517-416-3537 |
| AQD Contact – ROP Writer: | Sam Liveson, Senior Environmental Engineer<br>313-405-1357 |
| Date Application Received: | April 28, 2022 |
| Date Application Was Administratively Complete: | April 28, 2022 |
| Is Application Shield in Effect? | Yes |
| Date Public Comment Begins: | October 2, 2023 |
| Deadline for Public Comment: | November 1, 2023 |

## Source Description

Toyota Motor North America R&D (TMNA R&D) operates a vehicle research and testing facility in Ann Arbor, Michigan, Washtenaw County. Engine and vehicle performance testing is conducted within engine test stands/cells and within chassis dynamometer chambers located in the Evaluation Building (located at 1555 Woodridge) and at the Powertrain Building (located at 1588 Woodridge) on the Ann Arbor campus. Engine emissions from six engine test cells/stands (EU-EG1, EU-EG2, EU-EG5, EU-TM1, EU-TM4, and EU-TM5 are controlled via dedicated individual catalytic oxidizers referred to as the catalytic control system (CCS). Engine emissions from four engine test cells/stands (EU-UPDOWN, EU-EG3, EU-EG4, and EU-EG6) are either uncontrolled or controlled via individual catalytic converters (production catalysts). Three engine test cells/stands (EU-EG7, EU-EG8, and EU-EG9) are controlled by a shared thermal oxidizer. Controls are subject to Compliance Assurance Monitoring (CAM). Engines and vehicles are fueled with gasoline and are permitted to utilize ethanol. The chassis dynamometers and several engine test stands/cells may burn diesel fuel. The facility is also permitted to have two 1,573 brake horse power (1,141 kilowatt) natural-gas fired engine generators equipped with an oxidizing catalyst and LEANOX air-to-fuel controllers. The facility has a source-wide material limit for natural gas. The facility is located in a wooded light industrial area with some residences located 600 feet from the facility.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2022**.

**TOTAL STATIONARY SOURCE EMISSIONS**

| Pollutant | Tons per Year |
|---|---|
| Carbon Monoxide (CO) | 29.2 |
| Lead (Pb) | 0.0 |
| Nitrogen Oxides ($NO_x$) | 21.0 |
| PM10* | 0.7 |
| Sulfur Dioxide ($SO_2$) | 0.3 |
| Volatile Organic Compounds (VOCs) | 6.2 |

* Particulate matter (PM) that has an aerodynamic diameter less than or equal to a nominal 10 micrometers.

This source is an area source of hazardous air pollutant (HAP) emissions pursuant to Section 112(b) of the federal Clean Air Act. No HAP emissions data is reported.

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.

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 county is currently designated as attainment for all other criteria pollutants (sulfur dioxide, carbon monoxide, lead, nitrogen dioxide, and particulate matter PM10 and PM2.5).

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70 because the potential to emit of carbon monoxide exceeds 100 tons per year.

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

The stationary source is considered a "synthetic minor" source in regards to the Prevention of Significant Deterioration regulations of the Michigan Air Pollution Control Rules Part 18, Prevention of Significant Deterioration of Air Quality because the stationary source accepted legally enforceable permit conditions limiting the potential to emit of carbon monoxide to less than 250 tons per year. The facility potential to emit of CO is 248.76 tons per year. Source-wide CO emissions are limited to 249.0 tons per year.

The facility has organized its emission units into the following flexible groups:

| Flexible Group | Description | Emission Units |
|---|---|---|
| FG-CAM | All compliance assurance monitoring (CAM) requirements, pursuant to 40 CFR Part 64. | EU-EG1, EU-EG2, EU-EG3, EU-EG4, EU-EG5, EU-EG6, EU-TM1, EU-TM4, EU-TM5, EU-EG7, EU-EG8, EU-EG9 |
| FG-ULEV | Testing where the engines or other vehicle components tested meet ULEV emission standards. | EU-ANECHOIC, EU-ENVIRON, EU-UPDOWN, EU-EG3, EU-EG4, EU-CHDY1, EU-CHDY2, EU-CHDY3, EU-CHDY4, EU-CHDY5, EU-CHDY6, EU-CHDY7, EU-CHDY8, EU-CHDY9, EU-CHDY10 |
| FG-LEV | Testing where the engines or other vehicle components tested meet LEV emission standards. | EU-ANECHOIC, EU-ENVIRON, EU-UPDOWN, EU-EG3, EU-EG4, EU-CHDY1, EU-CHDY2, EU-CHDY3, EU-CHDY4, EU-CHDY5, EU-CHDY6, EU-CHDY7, EU-CHDY8, EU-CHDY9, EU-CHDY10 |
| FG-CONTROLLED | Testing where the engines tested are controlled through either catalytic or thermal oxidation. | EU-EG6, EU-EG1, EU-EG2, EU-EG5, EU-TM1, EU-TM4, EU-TM5, EU-EG7, EU-EG8, EU-EG9 |
| FG-UNCONTROLLED | Testing where the engines tested have uncontrolled emissions. | EU-COLD, EU-EG3, EU-EG4, EU-CHDY6, EU-CHDY7 |
| FG-TANKS | Fuel storage tanks from Permit to Install No. 186-13E. | EU-TANK1, EU-TANK5, EU-TANK6, EU-TANK7 |
| FG-GENSETS | Two natural gas-fired engine generators, each equipped with an oxidizing catalyst and LEANOX air to fuel controllers. | EU-GENSET1, EU-GENSET2 |
| FG-GDFMACT | Fuel storage tanks subject to 40 CFR Part 63, Subpart CCCCCC - National Emission Standard for Hazardous Air Pollutants for Gasoline Dispensing Facilities at Area Sources. | EU-TANK1, EU-TANK5, EU-TANK6, EU-TANK7, EU-TANK8, EU-TANK9 |
| FG-RICEMACT | Existing emergency stationary spark ignition reciprocating internal combustion engines that have less than 500 brake horsepower located at an area source of HAPs subject to 40 CFR Part 63, Subpart ZZZZ - National Emission Standard for Hazardous Air Pollutants for | EU-EMERGEN |

| Flexible Group | Description | Emission Units |
|---|---|---|
| | Stationary Reciprocating Internal Combustion Engines | |
| FG-RULE287(2)(c) | Paint booths exempt from obtaining a Permit to Install per Rules 278, 278a and 287(2)(c). | EU-PAINTBOOTH |
| FG-COLDCLEANERS | Cold cleaners exempt from obtaining a Permit to Install per Rules 278, 278a and Rule 281(2)(h) or 285(2)(r)(iv). | EU-COLDCLEAN_PT1, EU-COLDCLEAN_PT2, EU-COLDCLEAN_EV1 |

FG-GENSETS 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.

EU-EMERGEN (natural gas-fired emergency engine 892 horsepower) and FG-GENSETS at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines promulgated in 40 CFR Part 63, Subparts A and ZZZZ. FG-GENSETS Table contains both 40 CFR Part 60, Subparts A and JJJJ applicable requirements, and 40 CFR Part 63, Subparts A and ZZZZ higher level citation.

FG-TANKS, EU-TANK8, and EU-TANK9 at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities promulgated in 40 CFR Part 63, Subparts A and CCCCCC. The AQD is not delegated the regulatory authority for this area source MACT. FG-TANKS consists of gasoline underground storage tanks, EU-TANK1, EU-TANK5, EU-TANK6, and EU-TANK7. FG-TANKS, EU-TANK8, and EU-TANK9 are less than 75 cubic meters (19,815 gallons) and therefore New Source Performance Standard (NSPS) Subpart Kb is not applicable per 40 CFR 60.110b(a). EU-TANK2 was removed from FG-TANKS. The tank was replaced by permit exempt EU-TANK8. EU-TANK9 submerged fill is not required due to the tank volume being less than 250 gallons.

The AQD's Rules 287 and 290 were revised on December 20, 2016. FG-RULE287(2)(c) and FG-RULE290 are flexible group tables created for emission units subject to these rules. Emission units installed before December 20, 2016, can comply with the requirements of Rule 287 and Rule 290 in effect at the time of installation or modification as identified in the tables. However, emission units installed or modified on or after December 20, 2016, must comply with the requirements of the current rules as outlined in the tables.

On March 1, 2023, Toyota received Permit to Install No. 38-23 to remove a 14,560 hours restriction on the facility's generator sets (FG-GENSETS) due to projected increases in use, and to modify NOx and VOC emission factors for FG-GENSETS because Toyota anticipates emissions will increase as the generators age. The changes to FG-GENSETS will result in an increase in CO emissions. In order to comply with the facility-wide limit of 249 tpy CO, Toyota proposed and was issued a decrease in the amount of fuel used in the test cells while uncontrolled. The facility-wide limit on uncontrolled fuel in test cells (FG-UNCONTROLLED) was decreased from 23,500 to 22,995 gal/yr. In November of 2018, the facility received Permit to Install No. 186-13E, which reorganized the emission units and flexible groups significantly and added a Source-Wide Table for operational flexibility and for the facility to restrict CO emissions to below the Prevention of Significant Deterioration major source level.

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."

Engine test cell EU-UPDOWN 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. It is controlled by an individual production catalyst. Its maximum annual potential pre-controlled CO emissions are 91 tons CO per year. This is calculated considering a maximum hourly fuel usage of 3 gallons per hour, and a pre-controlled emission factor of 6,930 pounds CO per 1000 gallons of fuel. [8760 hours per year]*[3 gallons fuel per hour]*[6930 pounds CO per 1000 gallon of fuel]*[1 ton per 2000 pounds] = 91 tons CO per year pre-control emissions.

The emission limitation(s) or standard(s) for carbon monoxide from EU-EG1, EU-EG2, EU-EG3, EU-EG4, EU-EG5, EU-EG6, EU-EG7, EU-EG8, EU-EG9, EU-TM1, EU-TM4, and EU-TM5 at the stationary source are subject to the federal Compliance Assurance Monitoring rule under 40 CFR Part 64. These emission units have control devices and potential pre-control emissions of carbon monoxide greater than the major source threshold level.

The following Emission Units/Flexible Groups are subject to CAM:

| Emission Unit/Flexible group ID | Pollutant/ Emission Limit | UAR(s) | Control Equipment | Monitoring (Include Monitoring Range) | Emission Unit/ Flexible Group for CAM | PAM? * |
|---|---|---|---|---|---|---|
| EU-EG3, EU-EG4, EU-EG6 | CO/249.0 tpy | R 336.1205 (1)(a) & (b) | Each engine dynamometer is equipped with individual ULEV or LEV catalysts | Catalyst temperature using in-line thermocouples (a maximum temperature of 1,200°C) | FG-CAM | No |
| EU-EG1, EU-EG2, EU-EG5, EU-TM1, EU-TM4, EU-TM5 | CO/249.0 tpy | R 336.1205 (1)(a) & (b) | Each engine dynamometer is equipped with a standalone catalyst unit identified as the catalyst control system (CCS) | Catalyst temperature using in-line thermocouples (between 250°C based on an hourly average or the average of the instantaneous readings over the duration of the test if tests are under an hour, and the maximum temperature specified by the manufacturer); fuel consumption using installed flow meters (less than 5 gallons fuel consumption per hour unless the temperature | FG-CAM | No |

| Emission Unit/Flexible group ID | Pollutant/ Emission Limit | UAR(s) | Control Equipment | Monitoring (Include Monitoring Range) | Emission Unit/ Flexible Group for CAM | PAM? * |
|---|---|---|---|---|---|---|
| | | | | is greater than 250°C) | | |
| EU-EG7, EU-EG8, EU-EG9 | CO/249.0 tpy | R 336.1205 (1)(a) & (b) | Controlled by a shared thermal oxidizer (TO) | Combustion chamber temperature is measured continuously using an in-line thermocouple (minimum temperature of 1,425°F) | FG-CAM | No |

*Presumptively Acceptable Monitoring (PAM)

The stationary source proposed CAM related monitoring and recordkeeping of their catalytic converter, catalytic oxidizer, and thermal oxidizer based on the type of air pollution control equipment used. The ROP contains applicable requirements for installing monitoring devices, monitoring timeframes, and compliant operating ranges in addition to record keeping and maintenance. Additional details shall be represented in the actual CAM Plan and RTO Malfunction Abatement Plan the facility maintains and may be adjusted in the future based on manufacturer changes, new information, testing or other acceptable data.

Catalytic Oxidizers (Catalyst Control System):
The temperature at the inlet to the catalyst bed is a key catalytic oxidizer operating parameter. The inlet gas stream must be heated to the minimum temperature at which catalytic oxidation will occur. Above this minimum temperature, catalytic oxidation occurs, and as temperature increases, control efficiency also increases.

For a particular type of catalyst, there is a maximum operating temperature, above which the catalyst begins to sinter and will not work properly. Monitoring the bed outlet temperature can ensure that the temperature within the bed does not exceed its working limit. In addition, because catalytic oxidation should produce a rise in temperature over the catalyst, the bed outlet temperature is an indicator that minimum oxidation temperatures are occurring in the unit.

When the catalyst becomes contaminated or masked, the control efficiency of the unit decreases. Catalyst deactivation will result in increased CO emissions. The catalyst should be tested periodically to determine its performance. In lieu of testing catalyst activity, TMNA replaces the catalyst in accordance with the manufacturer's recommendations.

Temperature into or out of the CCS is measured because temperature excursions can indicate operational issues, which can prevent the desired chemical reaction from taking place in the catalyst bed. Too low a temperature reduces the activity of the intended chemical/catalyst reaction. When the temperature is too high, sintering may occur, which can damage the catalyst unit. Each CCS is equipped with an inlet blower which activates to prevent the catalyst temperature from becoming too hot and becoming damaged. The engine will automatically shut down if the temperature gets too hot.

During some dyno tests, minimum catalyst temperature over the hour cannot be achieved due to:

- Short test duration
- Engine idling

- Smaller, more efficient engines
- Engine spike testing, during which the engine RPMs are increased and then cut

During dyno testing when the minimum average temperature cannot be met at the inlet or outlet of the catalyst and the engine is combusting fuel, TMNA R&D will maintain an hourly fuel consumption less than or equal to 19 liters (5 gal), to ensure that emissions are not exceeded. TMNA R&D will keep documentation to demonstrate that hourly fuel consumption, during tests where the catalyst does not achieve the minimum temperature, does not exceed 19 liters (5 gal). Documentation may include:

- Calculated fuel usage based on the type of tests being performed
- Measurement of fuel during the test, or over several cycles of the tests
- Monitoring system which calculates average hourly fuel consumption

Daily monitoring of the temperature of the catalyst will help ensure proper operation of the CCS. In cases where the minimum average catalyst temperature is not achieved, fuel consumption monitoring will help ensure emission compliance.

In January 2015, TMNA R&D conducted performance tests for several test patterns. Results of those performance tests indicate the engine dynos had emissions well below permitted emission rates as follows:

| EU/Test Cycle | CO ER (lb/hr) | CO FG Emission Limit (lb/hr) |
|---|---|---|
| EU-EG5/Controlled high speed | 0.0157 | 79.4 |
| EU-EG5/TOGO | 0.00986 | 79.4 |
| EU-EG5/Composite | 0.00652 | 79.4 |
| EU-TM5/Shift | 4.2 | 30.54 |
| EU-TM5/Differential | 4.08 | 30.54 |
| EU-TM5/Launch | 1.5 | 30.54 |

In April 2018, TMNA R&D performed an engineering study to monitor engine and catalyst performance criteria for various tests and determine if other performance data could be used in lieu of temperature monitoring during those tests in which the engine exhaust does not maintain a minimum catalyst temperature of 250°C. Several graphs depicting engine performance vs emissions are included in the following sections. Based on the data, TMNA R&D has concluded that fuel consumption can be monitored to demonstrate compliance when average hourly catalyst temperatures are below 250°C. Monitoring fuel consumption and maintaining an hourly fuel consumption less than or equal to 19 liters (5 gal) will ensure that emissions are maintained at less than the permitted emission limits.

Individual Catalysts (Catalytic Converters):
Some testing is done using catalysts which are an integral part of the engine being tested. As the catalysts are not used for prolonged periods of time before being replaced, the maximum temperature selected is to protect the catalyst from damage. No additional monitoring is required.

TMNA R&D designs the individual catalysts for their vehicles. Based on the catalyst material design, a maximum temperature of 1,200°C is reasonable for all TMNA R&D individual catalysts to prevent damage to catalyst materials.

Thermal Oxidizer:
CO emissions from EU-EG7, EU-EG8, and EU-EG9 are controlled by a shared TO. The TO chamber temperature was selected because it is indicative of the thermal incineration operation. A decrease in temperature is indicative of higher CO concentrations. By maintaining the operation temperature at or above the minimum, a level of control efficiency can be expected to be achieved.

Auto ignition temperature is the minimum temperature required to ignite a gas or vapor in air without a spark or flame being present. The auto ignition temperature of CO is 1,128°F, the indicator range selected for the TO chamber temperature is a minimum of 1,425°F, which is approximately 300°F higher than auto ignition temperature. When an excursion occurs corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation.

The permit to install for EU-EG7, EU-EG8 and EUEG9, specifies that the thermal oxidizer must maintain a minimum temperature of 1425°F, and a minimum retention time of 0.5 seconds. The CO destruction efficiency of the thermal oxidizers requires a minimum of 90%. Specification sheets for Catalytic Products, Inc., Model Quadrant SR-8000 thermal oxidizer notes that 1425°F is the normal operating temperature to destroy CO. Performance testing has not been required for the thermal oxidizer. The indicator range of TO chamber temperature was selected to maintain a temperature above the auto ignition temperature of CO. A decrease in temperature is indicative of higher CO concentrations.

If the temperature falls below the normal operating range the thermal oxidizer will alarm. The engines will automatically shut down if an RTO failure is detected and TMNA will initiate corrective action. If the weekly data handling/monitoring system check indicates issues with the monitoring system or data, Central Maintenance will be notified to correct the issue.

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.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-N2915-2017 are identified in Appendix 6 of the ROP.

| PTI Number | | | |
|---|---|---|---|
| 186-13C | 186-13 | 45-03C | |

**Streamlined/Subsumed Requirements**

The following table lists explanations of any streamlined/subsumed requirements included in the ROP pursuant to Rules 213(2) and 213(6). All subsumed requirements are enforceable under the streamlined requirement that subsumes them.

The below conditions were streamlined/subsumed in PTI No. 38-23. The $NO_x$ and CO emission limits in these conditions are below $NO_X$ and CO emission limits in Table 1 of 40 CFR Part 60, Subpart JJJJ for Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG. The facility must comply with the emissions standards in Table 1 per 40 CFR 60.4233(e). Both the streamlined limits from PTI No. 38-23 and the subsumed limits from NSPS JJJJ use the same units of measurement and time period/operating scenario.

| Emission Unit/Flexible Group ID | Condition Number | Streamlined Limit/ Requirement | Subsumed Limit/ Requirement | Stringency Analysis |
|---|---|---|---|---|
| FG-GENSETS | SC I.1 | 0.57 g/hp-hr $NO_X$ (R 336.1205(1)(a), 40 CFR 52.21(c) & (d)) | 1.0 g/hp-hr $NO_X$ (40 CFR 60.4233(e), Table 1 of 40 CFR Part 60, Subpart JJJJ) | The streamlined limit is more stringent than the subsumed NSPS limit. |
| FG-GENSETS | SC I.2 | 0.9 g/hp-hr CO (R 336.1205(1)(a), 40 CFR 52.21 (d)) | 2.0 g/hp-hr CO (40 CFR 60.4233(e), Table 1 of 40 CFR Part 60, Subpart JJJJ) | The streamlined limit is more stringent than the subsumed NSPS limit. |

**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 |
|---|---|---|---|
| EU-1588Heat | Thirty-one similar natural gas fired heaters, boilers, and/or hot water tanks that have a maximum heat input of <2 MMBTU/hr and a combined heat input of <15 MMBTU/hr used in the 1588 Building. | R 336.1212(4)(c) | R 336.1282(2)(b)(i) |
| EU-EvalHeat | Twenty-one similar natural gas fired heaters, boilers, and/or hot water tanks that have a maximum heat input of <5 MMBTU/hr and a combined heat input of <20 MMBTU/hr used in the Evaluation Building. | R 336.1212(4)(c) | R 336.1282(2)(b)(i) |
| EU-E1Heat | Four similar natural gas fired heaters, boilers, and/or hot water tanks that have a maximum heat input of <2 MMBTU/hr and a combined heat input of <4 MMBTU/hr used in the E1 Building. | R 336.1212(4)(c) | R 336.1282(2)(b)(i) |
| EU-E2Heat | Five similar natural gas fired heaters, boilers, and/or hot water tanks that have a maximum heat input of <3 MMBTU/hr and a combined heat input of <7 MMBTU/hr used in the E2 Building. | R 336.1212(4)(c) | R 336.1282(2)(b)(i) |

| PTI Exempt Emission Unit ID | Description of PTI Exempt Emission Unit | Rule 212(4) Citation | PTI Exemption Rule Citation |
|---|---|---|---|
| EU-EnviroHeat | 0.53 MMBTU/hr natural gas fired boiler used to provide space heat to the environmental chamber. | R 336.1212(4)(c) | R 336.1282(2)(b)(i) |
| EU-PaintboothHeater | 680,000 BTU/hr natural gas fired burner used to provide space heat to the paint booth. | R 336.1212(4)(c) | R 336.1282(2)(b)(i) |

**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 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 Brad Myott, Field Operations Manager. 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.

## Purpose

A Staff Report dated October 2, 2023, 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: | Adam Karibian, VP-Technical Strategy Planning<br>734-695-3587 |
| AQD Contact – District Inspector: | Diane Kavanaugh Vetort, Senior Environmental Quality Analyst<br>517-416-3537 |
| AQD Contact – ROP Writer: | Sam Liveson, Senior Environmental Engineer<br>313-405-1357 |

## Summary of Pertinent Comments

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

## Changes to the October 2, 2023 Draft ROP

No changes were made to the draft ROP.