



REGION 5

CHICAGO, IL 60604

ELECTRONIC MAIL

DELIVERY RECEIPT REQUESTED

Amy Kapuga
Principal Environmental Engineer
Consumers Energy
amy.kapuga@cmsenergy.com

RE: Request for Operating Limits / Monitoring Petition under 40 C.F.R. Part 63, Subpart YYYY,
NESHAP for Stationary Combustion Turbines
Consumers Energy, Jackson, Michigan

Dear Amy Kapuga:

The U.S. Environmental Protection Agency (EPA) has received and reviewed a petition dated January 29, 2024, from CMS Energy, doing business as Consumers Energy (CMS or you). The petition revises and supplements CMS's June 23, 2023 petition. The petition requests the use of Gas Producer Turbine Speed (%NGP) and Inlet Air Temperature (T1) for satisfying operating limits to demonstrate compliance with the formaldehyde emissions limitation for lean premix gas-fired combustion turbines under 40 C.F.R. § 63.6125(b) at the Muskegon River Compressor Station in Marion, Michigan. In summary, EPA partially approves and partially denies the CMS petition to use %NGP and T1 as operating limits under the regulations at 40 C.F.R. Part 63, Subpart YYYY.

Regulatory Background

40 C.F.R. Part 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines (Subpart YYYY) establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major stationary sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

40 C.F.R. § 63.6095(a)(3) requires the owner or operator of a new or reconstructed lean premix gas-fired stationary combustion turbine or a diffusion flame gas-fired stationary combustion turbine that started up on or before March 9, 2022, to comply with the emissions limitations and operating limitations of Subpart YYYY no later than March 9, 2022.

40 C.F.R. § 63.6100 requires that each new or reconstructed lean premix gas-fired stationary combustion turbine must comply with the emission limitations and operating limitations in Table 1 and Table 2 of Subpart YYYY. Table 1 provides that each new or reconstructed lean premix gas-fired stationary combustion turbine must comply with an emission limit of 91 ppbvd formaldehyde or less at 15% O₂, except during turbine startup. The period for turbine startup is subject to the limits specified at 40 C.F.R. § 63.6175. Table 2 requires each stationary combustion turbine that is required to comply with the formaldehyde emissions limitation and is not using an oxidation catalyst to maintain any operating limitations approved by the Administrator.

40 C.F.R. § 63.6120(e) states that if the owner or operator's stationary combustion turbine is not equipped with an oxidation catalyst, it must petition the Administrator for operating limitations that it will monitor to demonstrate compliance with the formaldehyde emission limitation in Table 1. The owner or operator must measure these operating parameters during the initial performance test and continuously monitor thereafter. 40 C.F.R. § 63.6120(f) provides the specific information that must be included in a petition to the Administrator for approval of additional operating limitations to demonstrate compliance with the formaldehyde emission limitation in Table 1.

40 C.F.R. § 63.6125(b) requires that owners or operators of a stationary combustion turbine that is required to comply with the formaldehyde emission limitation and not using an oxidation catalyst must continuously monitor any parameters specified in the approved petition to comply with operating limitations specified in Table 2 and as specified in Table 5 of the Subpart.

All terms used in this letter have their ordinary meaning unless such terms are defined in the Clean Air Act, 42 U.S.C. §§ 7401 *et seq.*, or Subpart YYYY, in which case they have the meaning ascribed to them in those authorities.

CMS's Petition

CMS owns and operates one gas-fired lean premix stationary combustion turbine identified as EUTURBINE2-2 at the Muskegon River Compressor Station in Marion, Michigan. The turbine was constructed after January 14, 2003, is not equipped with an oxidation catalyst, and is an "affected source" under Subpart YYYY; therefore, the compliance deadline was March 9, 2022.

CMS submitted its petition under 40 C.F.R. § 63.6120(e) for justifying the required information under 40 C.F.R. § 63.6120(f)(1) through (5). CMS requests that EPA accept monitoring of Lean Premix Mode (LPM), Gas Producer Turbine Speed (%NGP), and Inlet Air Temperature (T1) as parameters to meet the Subpart YYYY monitoring requirements for lean premix combustion equipped gas-fired turbines, instead of utilizing an oxidation catalyst.

CMS claims that LPM "is dependent on" %NGP and T1. CMS claims that lean premix combustion provides "the mixing necessary to ensure complete combustion of the fuel and minimize emissions of CO and UHCs [unburned hydrocarbons] including formaldehyde."

EPA's Analysis

The petition addresses the required information described in 40 C.F.R. § 63.6120(f)(1) through (5), as summarized below. EPA makes the following determinations regarding the lean premixed gas-fired combustion turbine under Subpart YYYYY, which is operating without an oxidation catalyst, and is subject to emission and operating limitations.

Based on the information provided by CMS, EPA makes the following findings:

(1) CMS's petition clearly proposes to monitor the identified %NGP and T1 parameters, along with monitoring LPM.

(2) CMS's discussion in its petition of the relationship between %NGP and T1, and formaldehyde emissions, and how limitations on these parameters will serve to limit formaldehyde emissions, is insufficient to support the requested parameters. The fact that a gas turbine is lean premix does not guarantee that it will meet the 91 ppbvd formaldehyde standard. The October 6, 2022, February 14, 2023, and January 16, 2024, emissions testing conducted showed compliance with the formaldehyde standard within parts of the proposed ranges of %NGP and T1.

(3) In an email on January 29, 2024, CMS proposed upper and lower values for the T1 parameter (see table below). However, both of the proposed T1 values are out of the range of test conditions. CMS proposed a lower value for the %NGP parameter. CMS has not demonstrated that limiting operations to within the ranges of proposed values would ensure compliance.

Parameter	T1 (°F)	%NGP
CMS Proposed Limits	-19.1 – 87.8	≥97.9%
Test Conditions	6.9 – 64.8	98.3 – 99.98%
Approved Limits	-10.4 – 87.8	97.9 – 100.0%

The acceptable lower T1 limit was calculated by:

[Lowest temp tested at] – ((91 ppb limit – 5 ppb buffer – [Highest ppb tested at lower temperatures]) / [Testing Factor]), where Testing Factor = 2

The “Highest ppb tested at lower temperatures” was 69 ppb at 35.8 °F on May 24, 2023, however EPA believes it would be appropriate to use the average of that value, and the highest ppb from the facility's most recent testing.

The acceptable upper T1 limit was calculated by:

[Highest temp tested at] – ((91 ppb limit – 5 ppb buffer – [Highest ppb tested at higher temperatures]) / [Testing Factor]), where Testing Factor = 2

(4) In its petition, CMS described the methods it would use to measure and the instruments it would use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments. CMS provided the manufacturer documentation requested by EPA.

(5) In its petition, CMS described the frequency and methods of instrument recalibration it would use. CMS provided the manufacturer documentation requested by EPA.

CMS has not demonstrated that limiting operations to within the full ranges of proposed values of the parameters %NGP and T1 at the Muskegon River Compressor Station would ensure compliance with the 91 ppbvd formaldehyde emissions standard. EPA therefore approves the petition for the turbine to operate between a T1 of -10.4 – 87.8 °F when the turbine is operating between 97.9 – 100.0% NGP, and in LPM. EPA denies the petition for all other ranges.

EPA would consider updating the ranges if CMS provides information showing that the formaldehyde standard is met at wider ranges of operating conditions.

We have coordinated this determination with the Office of Enforcement and Compliance Assurance (OECA) and the Office of Air Quality Planning and Standards (OAQPS). If you have any further questions, please contact Jacob Herbers of my staff at Herbers.Jacob@epa.gov.

Sincerely,

**MICHAEL
HARRIS**

Digitally signed by
MICHAEL HARRIS
Date: 2024.02.21
15:43:59 -06'00'

Michael D. Harris
Division Director
Enforcement and Compliance Assurance Division

cc: Jenine Camilleri
Enforcement Unit Supervisor, Air Quality Division
Michigan Department of Environment Great Lakes and Energy (EGLE)
CamilleriJ@michigan.gov

Chris Hare
District Supervisor, Saginaw Bay District
Michigan Department of Environment Great Lakes and Energy (EGLE)
HareC@michigan.gov