



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 5**  
**77 WEST JACKSON BOULEVARD**  
**CHICAGO, IL 60604-3590**

**ELECTRONIC MAIL**  
**DELIVERY RECEIPT REQUESTED**

Brandi Campbell  
Sr. Environmental Specialist  
University of Michigan  
[campbelb@umich.edu](mailto:campbelb@umich.edu)

RE: Request for Operating Limits / Monitoring Petition under 40 C.F.R. Part 63,  
Subpart YYYY, NESHAP for Stationary Combustion Turbines  
University of Michigan, Ann Arbor, Michigan

Dear Ms. Campbell:

The U.S. Environmental Protection Agency (EPA) has received and reviewed a revised petition dated June 5, 2023, from the University of Michigan (UM). The petition requests the use of Turbine % Load 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 UM's Central Power Plant in Ann Arbor, Michigan. In summary, EPA approves your petition to use % load and T1 as operating limits within limited ranges, 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% O<sub>2</sub>, 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 you 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.

### **UM's Petition**

UM owns and operates a gas-fired lean premix stationary combustion turbine identified as the Central Power Plant in Ann Arbor, 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.

UM 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). UM requests that EPA accept monitoring of turbine % load 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.

UM claims that "proper operation of the LPM [lean premix mode] technology will ensure lowest emissions."

### **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 UM, EPA makes the following findings:

- (1) UM's petition clearly proposes to monitor the identified % load and T1 parameters, along with monitoring LPM.
- (2) UM's discussion of the relationship between % load 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. However, the emissions testing conducted at the Central Power Plant on August 23, 2022, and April 12-13, 2023, showed compliance within the formaldehyde standard, and within the proposed ranges of % load and T1.
- (3) UM proposed upper and lower values of 50-100% for the % load parameter, and 32.7-104 °F for the T1 parameter. UM has demonstrated that limiting operations to within the ranges of proposed values would ensure compliance.
- (4) In follow-up emails on January 30, 2023, February 24, 2023, and February 24, 2023, UM adequately 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. UM provided the manufacturer documentation that EPA requested.
- (5) In follow-up emails on January 30, 2023, February 24, 2023, and February 24, 2023, UM adequately described the frequency and methods of instrument recalibration it would use. UM provided the manufacturer documentation that EPA requested.

In summary, UM has demonstrated that limiting operations to within the full ranges of proposed values of the parameters % load and T1 would ensure compliance with the 91 ppbvd formaldehyde emissions standard. EPA approves the petition for the facility to operate between 50-100% load, and 32.7-104.0 °F inlet air temperature.

EPA therefore approves UM's June 5, 2023 petition for operating and monitoring limits under Subpart YYYYY. This approval is based on the information submitted to EPA by the company. Should UM change the operating conditions of the turbine to an operation which is different than the operating conditions represented in this approval such that formaldehyde emissions increase because of the change, UM must submit a revised petition to address the change(s).

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](mailto:Herbers.Jacob@epa.gov).

Sincerely,

**MICHAEL  
HARRIS**

Digitally signed by  
MICHAEL HARRIS  
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14:40:03 -05'00'

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