



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF AIR AND RADIATION

**MARCH 31, 2022**

Ms. Janna L. Spitz  
Plant Manager  
Alternate Designated Representative  
Jackson Generating Station  
2219 Chapin Street  
Jackson, Michigan 49203

Re: Petition to use hourly gross calorific value analysis in calculation of hourly heat input for units 7EA, LM1, LM2, LM3, LM4, LM5, and LM6 at Jackson Generating Station (Facility ID (ORISPL) 55270)

Dear Ms. Spitz:

The United States Environmental Protection Agency (EPA) has reviewed the December 8, 2017 petition submitted by Consumers Energy (Consumers) under 40 CFR 75.66 requesting permission to use hourly average measurements, rather than monthly averages, of the gross calorific value (GCV) of pipeline natural gas to perform emissions calculations for units 7EA, LM1, LM2, LM3, LM4, LM5, and LM6 at Jackson Generating Station (Jackson). EPA approves the petition, with conditions, as discussed below.

## **Background**

Consumers owns and operates Jackson, which is located in Jackson, Michigan. Jackson consists of seven combined cycle combustion turbines—units LM1 through LM6 each serve an electricity generator with a nominal design rating of 50.0 MW and Unit 7EA serves an electricity generator with a nameplate capacity of 79.2 MW. Steam produced by the individual combined cycle combustion turbines is directed to two steam turbines and two electricity generators with nameplate capacities of 105.0 MW each. Each combustion turbine and associated duct burner combusts pipeline natural gas exclusively.

According to Consumers, Jackson units 7EA and LM1 through LM6 are subject to the Acid Rain Program and Cross State Air Pollution Rule (CSAPR) trading programs for sulfur dioxide (SO<sub>2</sub>) and annual and ozone-season nitrogen oxides (NO<sub>x</sub>). Consumers is therefore required to continuously monitor and report SO<sub>2</sub>, NO<sub>x</sub>, and carbon dioxide (CO<sub>2</sub>) mass emissions, NO<sub>x</sub> emission rate, and heat input for these units in accordance with 40 CFR part 75.

Acid Rain and CSAPR-affected units that meet the definition of “gas-fired” or “oil-fired” in 40 CFR 72.2 may use the excepted methodology in appendix D to part 75 to determine SO<sub>2</sub> mass emissions and

unit heat input instead of installing continuous emission monitoring systems (CEMS). Consumers has elected to use the appendix D methodology for all the units at Jackson.

The appendix D methodology requires continuous monitoring of the fuel flow rate and periodic sampling of the fuel characteristics, including sulfur content, GCV, and density (if needed). As per section 2.3.4.1 of appendix D, the GCV of pipeline natural gas must be determined at least once in every month in which the fuel is combusted for 48 hours or more (and at least once in each calendar quarter in which the unit operates). If multiple GCV samples are taken and analyzed in a particular month, section 2.3.4.1 provides that, “the GCV values from all samples shall be averaged arithmetically to obtain the monthly GCV.” Furthermore, section 2.3.7(c)(1) of appendix D states that, “[i]f multiple samples are taken and averaged, apply the monthly average GCV to the entire month.”

Thus, for units such as those at Jackson that combust pipeline natural gas, for each hour of unit operation in a given month, the measured hourly fuel flow rate and the average monthly GCV value are used to calculate the hourly unit heat input. The hourly heat input rate is then multiplied by a default emission rate of 0.0006 SO<sub>2</sub> lb/mmBtu to calculate the hourly SO<sub>2</sub> mass emissions.

Jackson’s fuel supplier, Vector Pipeline L.P, owns, operates, and maintains continuous gas chromatographs which provide hour-by-hour measurements of the GCV of the fuel burned at the facility. Consumers believes the most accurate hourly heat input rates are obtained when hourly GCV values are coupled with hourly measurements of fuel flow rate. In view of this, Consumers submitted a petition on December 8, 2017 to EPA requesting permission to use hourly GCV values, rather than monthly averages, in the emission calculations for units 7EA and LM1 through LM6.

## **EPA’s Determination**

EPA approves Consumers’ petition to use hourly measurements of the GCV of pipeline natural gas, as an option in lieu of monthly arithmetic average GCV values, in the emissions calculations. The Agency concurs that using hourly, rather than monthly, GCV values together with hourly fuel flow rates is likely to provide more accurate hourly heat input rate data. Furthermore, hour-by-hour measurement of the GCV far exceeds the minimum sampling frequency for pipeline natural gas (i.e., once per month) specified in section 2.3.4.1 of appendix D. EPA notes that approval of the requested authorization to use hourly GCV measurements does not preclude Consumers from alternatively continuing to use monthly average GCV values in accordance with the part 75 regulations.

## **Conditions of Approval**

As a condition of this approval, for periods of missing GCV data, Consumers shall use substitute data values in the calculations, as follows:

1. Provided that at least one valid GCV measurement is obtained in a given month, substitute, for each hour of the missing data period, the arithmetic average of the GCV values from the hour before and the hour after the missing data incident; or

2. In accordance with section 2.4.1 of appendix D to part 75, if no valid GCV values are obtained in a given month, substitute, for each hour of the missing data period, the maximum potential GCV value of 110,000 Btu per 100 standard cubic foot (scf) from table D-6 in appendix D.

Because Jackson's fuel supplier operates the gas chromatographs and has an economic incentive to ensure that the GCV measurements produced by the chromatographs are not biased low (while Consumers has an analogous economic incentive to ensure that the GCV measurements are not biased high), EPA considers it reasonable to treat the gas chromatographs for purposes of this petition in the same manner as gas billing meters are treated under the part 75 regulations. Accordingly, in these circumstances EPA believes it is reasonable to approve Consumers' petition without establishing conditions regarding the operation and maintenance of the chromatographs or related quality assurance/quality control procedures.

EPA's determination relies on the accuracy and completeness of the information provided by Consumers in the December 8, 2017 petition and subsequent e-mail communication (September 22, 2021) and is appealable under 40 CFR part 78. If you have any questions regarding this determination, please contact Stacey Zintgraff at [zintgraff.stacey@epa.gov](mailto:zintgraff.stacey@epa.gov) or (202) 564-2204.

Sincerely,

Rona Birnbaum, Director  
Clean Air Markets Division

cc: Jason Prentice, CMS Energy  
Doug Mallory, CMS Energy  
Michael Comphor, EPA Region 5  
Karen Kajji-Mills, EGLE