February 6, 2020

Mr. Jeffrey Hanson
Primary Designated Representative
Director, Environmental Services & Corporate Sustainability
Alliant Energy Corporation
4902 North Biltmore Lane
P.O. Box 77007
Madison, WI 53707-1007

Re: Petition to use an alternative fuel flowmeter calibration procedure for units CT-03 and CT-04 at the Riverside Energy Center (facility ID (ORISPL) 55641)

Dear Mr. Hanson,

The United States Environmental Protection Agency (EPA) has reviewed the January 6, 2020 petition submitted by Wisconsin Power and Light Company (WPL), a subsidiary of Alliant Energy Corporation, under 40 CFR 75.66(c) requesting approval of an alternative calibration procedure for initial certification, ongoing quality assurance, and recertification of fuel flowmeters that are being or may be used to measure fuel flow rates at units CT-03 and CT-04 at the Riverside Energy Center. EPA approves this petition, with conditions, as discussed below.

Background

WPL owns and operates the Riverside Energy Center (Riverside) in Beloit, Wisconsin. Riverside units CT-03 and CT-04 are natural gas-fired combined cycle combustion turbines each serving an electricity generator with a nominal design rating of 232.9 MW as well as a heat recovery steam generator and a combined steam turbine serving an electricity generator with a nominal design rating of 260.1 MW. According to WPL, units CT-03 and CT-04 are subject to the Acid Rain Program and the Cross-State Air Pollution Rule. WPL is therefore required to continuously monitor and report sulfur dioxide (SO_2), nitrogen oxides (NO_X), and carbon dioxide (CO_2) mass emissions, NO_X emission rate, and heat input for the units in accordance with 40 CFR part 75.

To meet the SO_2 mass and heat input monitoring requirements, WPL has elected to use the monitoring methodology in appendix D to part 75. Section 2.1 of appendix D requires continuous monitoring of the fuel flow rate to each affected unit using gas and/or oil fuel flowmeters that meet initial certification requirements set forth in section 2.1.5 and ongoing quality assurance requirements set forth in section 2.1.6.

Section 2.1.5 specifies three acceptable methods to certify a fuel flowmeter: (1) by design (this option is available for orifice, nozzle, and venturi flowmeters only); (2) by measurement under laboratory conditions using an approved method; or (3) by in-line comparison against a reference meter that either meets the design criteria in (1) above or that within the previous 365 days has met the accuracy requirements of appendix D by measurement using an approved method under (2) above. Certain approved measurement methods are listed in section 2.1.5.1. However, the section provides that unlisted methods using equipment traceable to National Institute of Standards and Technology (NIST) standards may also be used, subject to EPA approval pursuant to a petition submitted under § 75.66(c). Section 2.1.6 generally allows ongoing quality assurance tests to be carried out using the same methods as section 2.1.5.

Riverside units CT-03 and CT-04 are equipped with Coriolis fuel flowmeters (model Promass 83F, serial numbers MA0AB616000 and MA02C516000) manufactured by Endress-Hauser to measure natural gas fuel flow. Riverside also anticipates the possibility of using additional like-kind fuel flowmeters at units CT-03 and CT-04 in the future. Each individual flowmeter must meet the initial certification requirements set forth in section 2.1.5 of appendix D and the ongoing quality assurance requirements set forth in section 2.1.6.

Emerson Micro Motion, Inc (Emerson MMI) has developed a calibration procedure it calls the Transfer Standard Method (TSM). According to Emerson MMI, the TSM uses equipment that is traceable to NIST standards. According to the WPL petition, each flowmeter identified above has been tested for initial certification using the Emerson MMI TSM and will be calibrated for ongoing quality assurance purposes using the same method.

Coriolis flowmeters are not orifice, nozzle, or venturi flowmeters and therefore do not qualify for certification based on their design. Further, the Emerson MMI TSM is not listed in section 2.1.5.1 of appendix D as an approved method. However, EPA has previously evaluated and approved the use of the Emerson MMI TSM as an alternative certification and quality assurance testing method for Coriolis flowmeters at other facilities. In view of these circumstances, WPL submitted a petition to EPA under § 75.66(c) requesting approval of the use of the Emerson MMI TSM as an alternative certification and quality assurance testing method for Coriolis flowmeters at Riverside. WPL requests approval to use the TSM process not only for the flowmeters identified by the serial numbers above but also for additional like-kind Coriolis fuel flowmeters that WPL may use at the facility in the future.

EPA's Determination

EPA reviewed the information provided by WPL in the January 6, 2020 petition. The petition describes the alternative calibration procedure that WPL requests approval to use to verify the accuracy of the natural gas fuel flowmeters installed at CT-03 and CT-04 and any other like-kind Coriolis fuel flowmeters to be installed at Riverside.

EPA approves use of the Emerson MMI TSM calibration procedure for initial certification of the fuel flowmeters (serial numbers MA0AB616000 and MA02C516000) installed on Riverside units CT-03 and CT-04. The basis for this approval is as follows:

A1. The alternative calibration methodology used equipment traceable to NIST standards. In Emerson MMI's TSM, the candidate fuel flowmeter to be tested for accuracy is

calibrated against a reference meter that was calibrated against a "Global Reference Meter" which, in turn, was calibrated using Micro Motion's "Primary Flow Stand." The Primary Flow Stand is an ISO 17025-accredited calibration system that uses equipment traceable to NIST standards. Thus, the reference meters used to test Riverside's flowmeters had fully traceable calibrations through an accredited path back to NIST standards.[1]

A2. The calibration procedure followed for initial certification of Riverside's flowmeters met the requirements of section 2.1.5.2(a) of appendix D to part 75 for in-line testing of a candidate flowmeter by comparison against a reference flowmeter. Specifically:

a. The reference flowmeters and secondary elements (i.e. temperature transmitters and pressure transducers) used to test Riverside's flowmeters had been calibrated within 365 days prior to the comparison testing;
b. The comparison testing was performed in a laboratory over a period of less than seven operating days; and
c. For the candidate flowmeter, three test runs were conducted at each of three flow rate levels with each test run lasting 20 minutes in duration.

A3. At each tested flow rate level, the fuel flowmeters demonstrated accuracy better than the accuracy requirement specified in section 2.1.5 of appendix D – 2.0 percent of the flowmeter's upper range value (URV). The test results are summarized in Table 1 below.

Table 1 – Average three-run natural gas fuel flowmeter accuracy results

Flow rate level	Flowmeter s/n MA0AB616000 Accuracy (% of URV)	Flowmeter s/n MA02C516000 Accuracy (% of URV)
Low – Normal minimum unit operating load flow rate	0.01%	0.06%
Mid – Flow rate equally spaced between minimum and full operating load	0.03%	0.06%
High – Normal full unit operating load flow rate	0.07%	0.05%

EPA also approves the use of the Emerson MMI TSM calibration procedure to meet the applicable on-going quality assurance requirements for the fuel flowmeters installed on

[1] The Primary Flow Stand calibration system is equipment that has been accredited by NVLAP according to ISO/IEC 17025.

Riverside units CT-03 and CT-04 under section 2.1.6 of appendix D, subject to the following conditions:

B1. The application of the Emerson MMI TSM for each future accuracy test must meet the requirements of section 2.1.5.2(a) of appendix D as part of the basis for EPA's approval of use of the TSM for the initial certification of the fuel flowmeters; and

B2. The three flow rate levels tested in each future accuracy test must correspond to: (1) normal full unit operating load, (2) normal minimum unit operating load, and (3) a load point approximately equally spaced between the full and minimum unit operating loads.

EPA further approves the use of the Emerson MMI TSM calibration procedure to meet the applicable initial certification and on-going quality assurance requirements for like-kind Coriolis fuel flowmeters used in the future at Riverside subject to the satisfaction, for each such like-kind fuel flowmeter, of all approval conditions set forth in paragraphs (A1), (A2), (A3), (B1), and (B2) of this approval for the fuel flowmeters identified by serial numbers above.

EPA's determination relies on the accuracy and completeness of the information provided by WPL and is appealable under 40 CFR part 78. If you have any questions regarding this determination, please contact Charles Frushour at (202) 343-9847 or by e-mail at frushour.charles@epa.gov. Thank you for your continued cooperation.

Sincerely,

/s/
Reid P. Harvey
Director
Clean Air Markets Division

cc: Charles Frushour, CAMD
Louis Nichols, CAMD
Michael Compher, EPA Region 5
Andy Seeber, Wisconsin DNR