



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

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OFFICE OF
AIR AND RADIATION

Mr. Michael J. Jirousek
Manager, Air and Waste Programs and
Alternate Designated Representative
FirstEnergy Generation
800 Cabin Hill Drive
Greensburg, PA 15601

Re: Petition to use an alternative default SO₂ emission rate to determine SO₂ mass emissions under the low mass emissions methodology for Units 1A and 1B at FirstEnergy's West Lorain Plant (Facility ID (ORISPL) 2869)

Dear Mr. Jirousek:

The United States Environmental Protection Agency (EPA) has reviewed the July 29, 2015 petition submitted by FirstEnergy Generation (FirstEnergy) under 40 CFR 75.66, together with supporting e-mails,¹ requesting permission to use an alternative default sulfur dioxide (SO₂) emission rate to determine SO₂ mass emissions for Units 1A and 1B at the West Lorain Plant (West Lorain) under the low mass emissions (LME) excepted methodology starting as of January 1, 2014. EPA approves the petition, with conditions, as discussed below.

Background

FirstEnergy owns and operates seven combustion turbines at its West Lorain power plant in Lorain, Ohio. West Lorain Units 1A and 1B combust diesel oil and serve generators with nameplate capacity ratings of approximately 65 MW. According to FirstEnergy, the units currently are subject to the Cross-State Air Pollution Rule (CSAPR) trading programs for SO₂ emissions and annual and ozone-season nitrogen oxides (NO_x) emissions and before 2015 were subject to similar trading programs under Ohio's state implementation plan (SIP) provisions implementing the Clean Air Interstate Rule (CAIR). FirstEnergy is therefore required to continuously monitor and report SO₂ and NO_x mass emissions and heat input for Units 1A and 1B in accordance with 40 CFR part 75. To meet these requirements, FirstEnergy has historically determined the reported data using the optional LME methodology set forth in § 75.19.

After a unit has initially qualified to use the LME methodology, in order to maintain that qualification the unit's owner or operator must demonstrate annually that the unit's mass emissions as determined under the LME methodology for each annual or ozone-season control

¹ FirstEnergy sent additional supporting information in e-mails dated 3/25/2016, 3/28/2016, and 3/29/2016.

period remain below specified ceiling levels.² In the case of a unit subject to part 75 requirements for SO₂, annual NO_x, and ozone-season NO_x emissions, the unit's reported mass emissions must be no more than 25 tons of SO₂ annually, less than 100 tons of NO_x annually, and no more than 50 tons of NO_x during each ozone season.³ If an applicable ceiling is exceeded for a given control period, the unit is prospectively disqualified from using the LME methodology and the owner or operator must meet its monitoring and reporting obligations using another approved part 75 methodology by no later than December 31 of the year following the year of the control period for which the ceiling was exceeded.⁴ As a condition of any subsequent requalification to use the LME methodology, the owner or operator is required to demonstrate, based on actual monitored emissions data, that the unit's mass emissions did not exceed any of the specified ceiling levels for the control periods in at least three years after the year of the control period for which the ceiling was exceeded.⁵

To determine SO₂ mass emissions under the LME methodology (in tons), the owner or operator computes an hourly SO₂ mass emissions value for each hour of the control period by multiplying the applicable SO₂ emission rate for the highest-sulfur fuel combusted in that hour (in pounds of SO₂ per million Btu (lb/mmBtu)) times the applicable heat input value for that hour (in mmBtu), sums the hourly SO₂ mass emissions values for all hours of the control period, and converts the sum from pounds to tons.⁶ For diesel oil, the owner or operator may use either a default SO₂ emission factor of 0.5 lb/mmBtu from table LM-1 in § 75.19 or, if lower, a fuel-specific SO₂ emission rate based on a federally enforceable permit condition limiting the sulfur content of the diesel oil combusted in the unit.⁷ If the option to use a fuel-specific SO₂ emission rate is elected, the owner or operator must periodically determine the sulfur content of the diesel oil actually combusted, and keep records, either in accordance with one of the oil sampling and analysis options in section 2.2 of appendix D to part 75 or using an industry consensus standard prescribed in the unit's federally enforceable permit or in another applicable federal or state regulation.⁸

In 2014, West Lorain Units 1A and 1B operated for more hours than in any other recent year, causing the units' 2014 SO₂ mass emissions as determined under the LME methodology to exceed the 25-ton ceiling for ongoing qualification to use the LME methodology.⁹ For purposes of determining the units' 2014 SO₂ mass emissions, FirstEnergy used the 0.5 lb/mmBtu default SO₂ emission factor from table LM-1 of § 75.19 because in 2014 the units did not have a

² § 75.19(b)(1).

³ § 75.19(a)(1)(i)(A).

⁴ § 75.19(b)(2).

⁵ § 75.19(b)(5).

⁶ § 75.19(c)(4).

⁷ § 75.19(c)(1)(i). The provision specifies that the fuel-specific SO₂ emission rate for fuel oil subject to a federally enforceable permit condition limiting the oil's sulfur content is computed as the sulfur content limit (expressed in terms of percent sulfur by weight (% S)) times a conversion factor of 1.01. For example, a sulfur content limit of 0.1% S corresponds to a fuel-specific SO₂ emission rate of 0.101 lb/mmBtu.

⁸ *Id.*

⁹ The estimated SO₂ mass emission amounts for Units 1A and 1B were 44 tons and 27 tons, respectively.

federally enforceable permit condition limiting the sulfur content of the diesel oil combusted. In June 2015, FirstEnergy asked the Ohio Environmental Protection Agency to modify the units' operating permit to include a federally enforceable permit condition limiting the units' SO₂ emission rate to 0.1 lb/mmBtu, which EPA considers functionally equivalent to a permit condition establishing a sulfur content limit of 0.099% S for the oil combusted.¹⁰ FirstEnergy considers this sulfur content limit conservatively higher than the sulfur content of any oil that will actually be delivered to West Lorain. The federally enforceable permit condition limiting the units' SO₂ emission rate became effective on September 22, 2015 and effectively limits the sulfur content of any oil combusted by the units on or after that date.¹¹

Because of the failed 2014 annual demonstrations and the need for three years of actual monitored emissions data as part of any requalification application, absent EPA's approval of an exception to the requirements of § 75.19 summarized above, under § 75.19(b)(2) and (5) West Lorain Units 1A and 1B would be disqualified from using the LME methodology for 2016 and at least two subsequent years. On July 29, 2015, FirstEnergy submitted a petition requesting permission to use the newly established federally enforceable 0.1 lb/mmBtu SO₂ emission rate limit as an alternative default SO₂ emission rate for purposes of determining SO₂ mass emissions for Units 1A and 1B under the LME methodology starting as of January 1, 2014. If the requested alternative default SO₂ emission rate had been used to determine the units' SO₂ mass emissions for 2014, the mass emissions for each unit would have been below the 25-ton ceiling level and the 2014 annual demonstration would have been satisfactory, thereby avoiding disqualification and enabling FirstEnergy to continue using the LME methodology with a fuel-specific SO₂ emission rate of 0.1 lb/mmBtu once the federally enforceable permit condition became effective (so long as all ongoing qualification requirements to use the LME methodology continue to be met after 2014).

In support of its request, FirstEnergy also provided information on its program for sampling and analyzing the sulfur content of the oil combusted at the West Lorain units. FirstEnergy analyzes samples from each oil delivery and periodically analyzes samples from the oil storage tank. According to the analysis results FirstEnergy provided to EPA, the highest sulfur content of any sample analyzed during 2013, 2014, or 2015 was 0.012% S, corresponding to an SO₂ emission rate of approximately 0.012 lb/mmBtu. This emission rate is well below the alternative default SO₂ emission rate of 0.1 lb/mmBtu that FirstEnergy is seeking permission to use for purposes of determining reported SO₂ mass emissions starting as of January 1, 2014.

EPA's Determination

EPA has reviewed the information provided by FirstEnergy in the July 29, 2015 petition and subsequent e-mails requesting permission to use an alternative default SO₂ emission rate of 0.1 lb/mmBtu to determine SO₂ mass emissions for West Lorain Units 1A and 1B under the LME methodology starting as of January 1, 2014. EPA has also reviewed the information

¹⁰ EPA computed the functionally equivalent sulfur content limit of 0.099% S by dividing the SO₂ emission rate limit of 0.1 lb/mmBtu by the conversion factor of 1.01 specified in § 75.19(c)(1)(i).

¹¹ The limit became federally enforceable as part of a permit-to-install on September 22, 2015 and was incorporated into the units' title V operating permit as of February 25, 2016.

provided regarding FirstEnergy's oil sampling procedures and analysis results. EPA approves FirstEnergy's request to use an alternative default SO₂ emission rate of 0.1 lb/mmBtu for the period from January 1, 2014 through September 21, 2015 based on determinations that (1) in this instance, using the alternative default SO₂ emission rate would not result in understatement of the units' SO₂ mass emissions, and (2) in this instance, temporarily disqualifying the units from using the LME methodology is not necessary to serve the purposes of either part 75 in general or § 75.19 in particular. Starting on September 22, 2015, FirstEnergy may use a fuel-specific SO₂ emission rate of 0.1 lb/mmBtu under the terms of § 75.19(c)(1)(i) because the units' 2014 SO₂ mass emissions, as redetermined based on this approval, will no longer exceed the 25-ton ceiling for ongoing qualification to use the LME methodology.

EPA's determinations are based on the following three considerations. First, if not for the failed 2014 annual demonstrations, the establishment of a federally enforceable permit condition limiting the units' SO₂ emission rate to 0.1 lb/mmBtu would make FirstEnergy eligible to use that rate as a fuel-specific SO₂ emission rate for Units 1A and 1B under the LME methodology starting as of September 22, 2015, the date when the permit condition became federally enforceable. Second, FirstEnergy operated an oil sampling and analysis program at West Lorain starting before January 1, 2014 that would have satisfied the requirement under § 75.19(c)(1)(i) to operate an oil sampling and analysis program meeting certain criteria when using a fuel-specific SO₂ emission rate under the LME methodology, and FirstEnergy continues to operate that program. Finally, the records from FirstEnergy's oil sampling and analysis program demonstrate to a reasonably high degree of certainty that the sulfur content of the oil actually combusted in Units 1A and 1B in 2014 and 2015 was sufficiently low to ensure compliance with a fuel-specific SO₂ emission rate of 0.1 lb/mmBtu in the period from January 1, 2014 through September 21, 2015 if a federally enforceable permit condition allowing the use of such a rate had been in place.

EPA's approval of FirstEnergy's request is subject to the following conditions:

1. First Energy may use an SO₂ emission rate of 0.1 lb/mmBtu to determine the reported SO₂ mass emissions for West Lorain Units 1A and 1B for each hour on or after January 1, 2014 in which the analysis of fuel oil samples indicates that the oil sulfur content is 0.099% S or less. If the analysis of fuel oil samples indicates that the oil sulfur content exceeds 0.099% S, then FirstEnergy must apply the default SO₂ emission factor of 0.5 lb/mmBtu from table LM-1 in 40 CFR § 75.19 until such time as the analysis of subsequent fuel oil samples demonstrates that the oil sulfur content is 0.099% S or less.
2. In order to ensure that the oil sulfur content does not exceed 0.099% S, FirstEnergy must sample and analyze the oil and keep records in accordance with § 75.19.
3. FirstEnergy must resubmit the quarterly electronic data reports for 2014, 2015, and the first, second, and third quarters of 2016 using an SO₂ emission rate of 0.1 lb/mmBtu to determine the reported SO₂ mass emissions (except as otherwise

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provided in paragraph 1 above). Please contact Craig Hillock at (202) 343-9105 for resubmission assistance.

4. FirstEnergy must provide EPA with a copy of the Ohio Environmental Protection Agency's written concurrence with the provisions of this approval that concern data reported for 2014, when the units were subject to Ohio's SIP provisions implementing CAIR.¹² (This copy should be directed to the attention of Louis Nichols, whose contact information is provided below.)

EPA's determination relies on the accuracy and completeness of the information provided by FirstEnergy and is appealable under 40 CFR part 78. If you have any questions regarding this determination, please contact Louis Nichols at (202) 343-9008 or by e-mail at Nichols.Louis@epa.gov. Thank you for your continued cooperation.

Sincerely,



Reid P. Harvey, Director
Clean Air Markets Division

cc: Louis Nichols, CAMD ✓
Loretta Lehrman, EPA Region 5
Todd Brown, OEPA

¹² See OAC 3745-109-07(F)(2)(a), 3745-109-13(F)(2), 3745-109-20(F)(2)(a); accord 40 CFR 96.175(b)(1), 96.275(b), 96.375(b)(1).