Sulfur Dioxide Emissions from Large Sources in Michigan

Michigan Department of Environment, Great Lakes, and Energy
Air Quality Division
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The Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Air Quality Division (AQD) submits this report pursuant to the United States Environmental Protection Agency's (USEPA) Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS). Specifically, Title 40 of the Code of Federal Regulation, Part 51.1205(b) states, *"For any area where modeling of actual SO_2 emissions serve[s] as the basis for designating such area as attainment for the 2010 SO_2 NAAQS, the air agency shall submit an annual report to the EPA Regional Administrator by July 1 of each year…. that is available for public inspection, that documents the annual SO_2 emissions of each applicable source in each such area and provides an assessment of the cause of any emissions increase from the previous year."*

The applicable sources in Michigan are five power plants, a cement manufacturing plant, and a paper manufacturing plant. Specifically, the sources are the WE Energy Presque Isle power plant in Marquette, the Consumers Energy J.H. Campbell power plant in West Olive, the Consumers Energy Dan E. Karn power plant in Essexville, the Lansing Board of Water & Light Eckert and Erickson power plants in Lansing, the Lafarge Cement plant in Alpena, and the Escanaba Paper mill in Escanaba.

Annual SO_2 emissions for the seven emission sources are derived from each company's annual reporting to EGLE via the Michigan Air Emissions Reporting System (MAERS) forms. The emissions for year 2020 are compared to the 2012-2014 emissions to determine if there were increases. All seven sources continue to emit well below the 2012-2014 emission levels. The Presque Isle power plant reports zero emissions and has permanently ceased operations. It will be removed from future annual SO_2 reports.

Based on the analysis of 2020 emissions compared to modeled emissions, it is reasonable to conclude that no additional modeling is necessary. The existing modeling that was approved by the USEPA in its attainment/unclassifiable determination for the affected counties, using 2012-2014 emissions data, can still be relied upon to demonstrate that the NAAQS continues to be met in these areas.

Background

On June 2, 2010, the USEPA revised the primary NAAQS for SO_2 to 75 parts per billion (ppb) on a 1-hour average. The Clean Air Act requires states to recommend to the USEPA appropriate designations of areas in the state relative to the new NAAQS. This can be determined with ambient air monitoring or with modeling when monitoring is not available. The USEPA makes the final designation determination.

Designations for the new 1-hour SO_2 standard were performed in three rounds. Round 1 covered areas which, based on ambient air quality monitoring data for the years 2009-2011, showed violations of the 1-hour SO_2 standard. That standard was not being met at the EGLE monitoring station located at Southwestern High School in Detroit. Consequently, in July 2013, the USEPA formally designated a portion of southern Wayne County as “nonattainment” of the SO_2 standard. This formal designation required EGLE to develop a State Implementation Plan (SIP) for bringing the area into compliance with the NAAQS for SO_2. On May 31, 2016, EGLE submitted its SO_2 SIP strategy for southern Wayne County to the USEPA for final approval. The USEPA has proposed partial approval and partial disapproval of the SIP submittal and is developing a Federal Implementation Plan for the nonattainment area.

Round 2 covered stationary sources that either emitted more than 16,000 tons of SO_2 in 2012 or emitted more than 2,600 tons of SO_2 with a 2012 emission rate of at least 0.45 pounds (lbs.) of SO_2 per million BTU. Sources announcing, as of March 2, 2015, future retirements were not covered. The USEPA identified eight coal-fired power plants in Michigan that met this criterion. The affected companies provided dispersion modeling for these facilities using either actual SO_2 emissions or allowable emissions, at their discretion. Modeling showed that only one area, a portion of St. Clair County, was not attaining the NAAQS. On July 1, 2016, the USEPA designated the counties of Bay, Eaton, Ingham, Marquette, Monroe, and Ottawa as attainment/unclassifiable and a portion of St. Clair County as nonattainment. SO_2 emissions from two coal-fired power plants in St. Clair County; DTE Belle River and DTE St. Clair; when modeled, show SO_2 levels that exceed the 1-hour standard. EGLE submitted a Clean Data Determination in 2020 to the USEPA based on SO_2 monitoring near the two power plants showing the area to be attaining the NAAQS. The USEPA has not yet acted on the submittal but is expected to approve it.

Round 3 affects two stationary sources subject to the USEPA Data Requirements Rule. Under this rule, designations are required for areas having sources that emit more than 2,000 tons per year of SO_2 that were not addressed in previous rounds. The two sources conducted dispersion modeling using actual emissions which showed impacts meeting the NAAQS for SO_2. EGLE submitted its attainment designation recommendations for the two sources to the USEPA in January 2017 and the USEPA designated the two areas attainment/unclassifiable on April 9, 2018. With the designation comes the requirement that EGLE include the two sources in the SO_2 emissions report due each July.

Data Requirements Rule – Ongoing Data Requirements

The dispersion modeling for Rounds 2 and 3 could be performed using actual emissions or allowable emissions at the company's discretion. The Data Requirements Rule requires that when actual emissions are used for modeling and the USEPA designates an area as attainment of the NAAQS, states must submit to the USEPA an annual SO_2 emissions report by July 1 of each year showing the latest annual emissions from each modeled facility. If emissions have increased from the levels modeled, the state must explain the reason for the increase to the USEPA. The USEPA may determine that modeling needs to be redone using the higher emissions to ensure that the SO_2 impacts are not causing the area to go into nonattainment.

Annual SO_2 Emissions

A listing of annual SO_2 emissions for the five affected power plants and for the cement plant and paper mill reside in the EGLE MAERS database. Emissions for 2012-2014 as well as the last several years from the power plants and the paper and cement plants are listed in the following table.

The USEPA's attainment/unclassifiable designations of the counties in which these plants are located is based on dispersion modeling using the SO_2 emissions for the years 2012-2014. The purpose of this annual report is to show updated emissions for 2020 and to compare them to the 2012-2014 emissions. If the more recent emissions are less than the modeled emissions, a conclusion can reasonably be made that modeling with the more recent emissions data will not show increased SO_2 impacts in the attainment/ unclassifiable areas.

Power Plant	Annual Tons of SO_2 Emissions					
	2012	2013	2014	2018	2019	2020
CE J.H. Campbell	21501	23627	25760	5011	5780	3956
CE DE Karn	6853	8561	6353	751	563	602
BWL Eckert	3677	2256	2312	1227	150	27
BWL Erickson	2685	3903	3626	2129	2072	1704
WE Presque Isle	6028	6000	6306	4609	856	0
Other Sources						
Lafarge Cement	7820	10087	2503	1994	1858	1680
Escanaba Paper	1210	1950	2068	742	865	660

Analysis

For the 2020 analysis year, the power plant SO_2 emissions continue to be well below those used in the modeling (2012-2014), as reflected in the table above. The table also shows the same to be true for the paper and cement plants. EGLE therefore concludes that new modeling is not required for the plants subject to Rounds 2 and 3 because the affected areas are reasonably expected to continue to show attainment of the SO_2 NAAQS.

Public Comment

EGLE will notify the public that this report is available for a 30-day comment period. Any comments received will be responded to by EGLE and included in the final document.

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