



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

April 16, 2020

Mr. Kurt Thiede
Regional Administrator
U.S. EPA Region 5
77 West Jackson Boulevard
Mail Code: R-19J
Chicago, IL 60604-3507

Re: Preliminary Recommendation for Porter County,
Indiana, for the 2010 Primary 1-Hour Sulfur
Dioxide (SO₂) National Ambient Air Quality
Standard (NAAQS) – Round 4 Designations

Dear Mr. Thiede:

This letter is in response to United States Environmental Protection Agency's (U.S. EPA's) memorandum, "Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard – Round 4", dated September 5, 2019, concerning the schedule and process for the completion of area designations by the court-ordered date of December 31, 2020. U.S. EPA intends to designate Indiana's remaining undesignated area, Porter County, Indiana, in Round 4. The Indiana Department of Environmental Management (IDEM) is recommending a designation of "attainment/unclassifiable" for Porter County under the 2010 primary 1-hour SO₂ standard, as shown in Table 1.

County/Area	Recommendation
Porter County	Attainment/Unclassifiable

The September 5, 2019, guidance memo indicates that U.S. EPA will issue designations based primarily on ambient monitoring data, including data from U.S. EPA-approved monitor(s) that were installed and began operating by January 2017 pursuant to the Data Requirements Rule (DRR). States may submit recommendations and supporting information for area designations to U.S. EPA by May 1, 2020. States that choose to submit recommendations should identify the area boundaries and whether they recommend areas be designated as "attainment/unclassifiable", "nonattainment", or "unclassifiable" on the basis of currently available information such as 2017-2019 monitoring data. States should certify 2019 monitoring data by May 1, 2020.

Indiana's recommendation is based on quality-assured and certified 2017-2019 SO₂ monitoring data for Porter County. Three-year design values for 2017-2019 for the two

active monitoring sites in Porter County show the area monitors are well below the 2010 primary 1-hour SO₂ standard of 75 parts per billion (ppb), as shown in Table 2.

Site ID	Site Name	Three-Year Design Value (ppb) 2017-2019	2010 Primary 1-Hour SO₂ NAAQS (ppb)
181270028	ArcelorMittal-Burns Harbor	47	75
181270011	Dune Acres Substation	28	

Indiana's recommendation is supported by a thorough analysis of the quality assured, certified SO₂ monitoring data, as well as previous modeling that demonstrates the SO₂ monitoring network and SO₂ monitoring data for Porter County are sufficient for the purpose of the area's designation of "attainment/unclassifiable" under the standard. Details are provided in the enclosure titled, "Indiana's Preliminary Recommendation for the Designation of Porter County Under the 2010 Primary 1-Hour Sulfur Dioxide National Ambient Air Quality Standard - Round 4 - Technical Support Document".

This submittal consists of one (1) hard copy of the required documentation. An electronic version of the submittal in PDF format that is identical to the hard copy is also being submitted and has been sent to John Mooney, U.S. EPA Region 5 Air Director, Pamela Blakley, U.S. EPA Region 5 Air Program manager, Doug Aburano, Chief of U.S. EPA Region 5 Attainment Planning and Maintenance Section, and Chris Panos of U.S. EPA Region 5.

Thank you for this opportunity to submit Indiana's recommendation for Round 4 area designations under the 2010 primary 1-hour SO₂ standard. If you have any questions or need additional information, please contact Keith Baugues, Assistant Commissioner, Office of Air Quality, at (317) 232-8222 or kbaugues@idem.IN.gov.

Sincerely,



Bruno L. Pigott
Commissioner

BP/kb/sd/bc/gf/as
Enclosure

1. Indiana's Preliminary Recommendation for the Designation of Porter County Under the 2010 Primary 1-Hour Sulfur Dioxide National Ambient Air Quality Standard - Round 4 - Technical Support Document

cc: John Mooney, U.S. EPA Region 5 (no enclosures)
Pamela Blakley, U.S. EPA Region 5 (no enclosures)
Doug Aburano, U.S. EPA Region 5 (no enclosures)
Chris Panos, U.S. EPA Region 5 (no enclosures)

John Summerhays, U.S. EPA Region 5 (no enclosures)
Keith Baugues, IDEM-OAQ (no enclosures)
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Enclosure 1

**Indiana's Preliminary Recommendation for the Designation
of Porter County Under the 2010 Primary 1-Hour Sulfur
Dioxide National Ambient Air Quality Standard - Round 4**

Technical Support Document

April 2020

**Submitted by:
The Indiana Department of Environmental Management**

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1.0 Overview

On June 2, 2010, the United States Environmental Protection Agency (U.S. EPA) revised the 2010 primary 1-hour sulfur dioxide (SO₂) national ambient air quality standard (NAAQS), establishing a new primary 1-hour standard at a level of 75 parts per billion (ppb) based on a three-year average of the annual 99th percentile of the 1-hour daily maximum concentrations (75 FR 35520).¹ When a new NAAQS is issued, U.S. EPA must designate areas as “attainment/unclassifiable”, “nonattainment”, or “unclassifiable”. To date, three rounds of designations have been completed under the 2010 primary 1-hour SO₂ NAAQS for most areas of the country. U.S. EPA has until a court-ordered date of December 31, 2020, to complete the fourth and final round of designations.

Guidance concerning the designations process is provided in U.S. EPA’s memorandum, “Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard – Round 4”, dated September 5, 2019 (referred to hereafter as U.S. EPA’s September 5, 2019, memo).² The designations will be based primarily on ambient monitoring data, including data from U.S. EPA-approved monitor(s) that were installed and began operating by January 2017 pursuant to the Data Requirements Rule (DRR).³ States may submit recommendations and supporting information for area designations to U.S. EPA by May 1, 2020. States that choose to submit recommendations should identify the area boundaries and whether they recommend areas be designated as “attainment/unclassifiable”, “nonattainment”, or “unclassifiable” on the basis of currently available information such as the 2017-2019 monitoring data. 2019 SO₂ monitoring data must be certified by May 1, 2020.

In Indiana, Porter County is the only area that remains to be designated. Per the DRR, the Indiana Department of Environmental Management (IDEM) elected to characterize the air quality in Porter County using monitoring data from a new SO₂ monitor installed near the ArcelorMittal-Burns Harbor (Burns Harbor) facility, a large source of SO₂ emissions in Porter County subject to the DRR. Operation of the new monitor began January 1, 2017. U.S. EPA will designate the entirety of Porter County in Round 4.⁴

¹ <https://www.govinfo.gov/content/pkg/FR-2010-06-22/pdf/2010-13947.pdf>.

² <https://www.epa.gov/sulfur-dioxide-designations/area-designations-2010-primary-sulfur-dioxide-national-ambient-air-0>.

³ On August 21, 2015, U.S. EPA finalized and promulgated the DRR for the 2010 primary 1-hour SO₂ NAAQS (80 FR 51052) (<https://www.govinfo.gov/app/details/FR-2015-08-21/2015-20367>). In that final rulemaking, U.S. EPA required the characterization of ambient SO₂ air quality around sources emitting 2,000 or more tons per year of SO₂. The air quality characterization that was prescribed to be carried out could be done through ambient monitoring or through dispersion modeling. Where monitoring was elected, approved monitoring networks were required to begin operating by January 1, 2017.

⁴ See Technical Support Document: Chapter 13 Intended Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard for Indiana, <https://www.epa.gov/sites/production/files/2017-12/documents/13-in-so2-rd3-final.pdf>.

Burns Harbor installed and began operating a new, U.S. EPA-approved SO₂ monitoring site by January 1, 2017, for the purpose of the area’s designation. The Dune Acres Substation SO₂ monitoring site, an existing SO₂ monitoring site, is also located in Porter County. Indiana has quality assured and certified 2017-2019 SO₂ monitoring data from the two active monitoring sites. The three-year design values for 2017-2019 for both sites are well below the 2010 primary 1-hour SO₂ standard, as shown in Table 1.

Site ID	Site Name	Three-Year Design Value 2017-2019 (ppb)	2010 Primary 1-Hour SO ₂ NAAQS (ppb)
181270028	ArcelorMittal-Burns Harbor	47	75
181270011	Dune Acres Substation	28	

Accordingly, Indiana is recommending a designation of “attainment/unclassifiable” for Porter County under the 2010 primary 1-hour SO₂ standard, as shown in Table 2.

County/Area	Recommendation
Porter County	Attainment/Unclassifiable

The following sections of this technical support document include a detailed analysis of the air monitoring data and discussion of the monitor siting to support Indiana’s designation recommendation.

1.1 Background

Implementation of the 2010 primary 1-hour SO₂ standard began in 2013, when U.S. EPA issued designations for monitored areas based on certified 2010-2012 monitoring data. U.S. EPA entered into a consent decree with the Sierra Club and Natural Resources Defense Council in 2015, which established a timeline for designations in all remaining areas of the country in three additional rounds: Round 2 by July 2, 2016, Round 3 by December 31, 2017, and Round 4 by December 1, 2020.

- Areas designated in Round 2 included unmonitored areas around large sources in U.S. EPA’s Air Markets Database that in 2012 emitted more the 16,000 tons of SO₂ or had emissions of more than 2,600 tons of SO₂ and an emission rate of at least 0.45 lbs SO₂/MMBtu. U.S. EPA also issued nonattainment designations for areas with newly monitored violations.
- Areas designated in Rounds 3 and 4 include those areas near sources that are subject to U.S. EPA’s DRR. Subject sources identified by U.S. EPA include

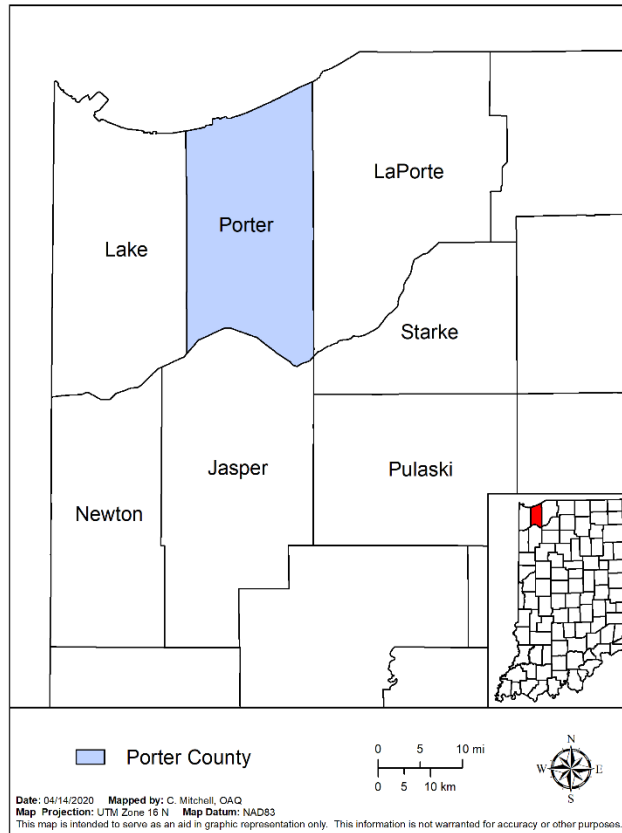
those with emissions of 2,000 tons of SO₂ per year or more and lower emitting sources thought to be contributing to SO₂ violations.

- Round 3 designations were issued by December 31, 2017, for areas around DRR sources that elected to use modeling data for the characterization of air quality.
- Round 4 designations must be issued by December 31, 2020, for areas around DRR sources that elected to install and operate new air monitor(s) for the characterization of air quality.

1.2 Geographical Description

Porter County is located in Northwest Indiana and is bordered by Lake County (Indiana) to the west, Lake Michigan to the north, LaPorte County to the east, and Jasper County to the south, as shown in Figure 1. Lake, LaPorte, and Jasper counties are designated as “attainment/unclassifiable” under the 2010 primary 1-hour SO₂ standard.⁵

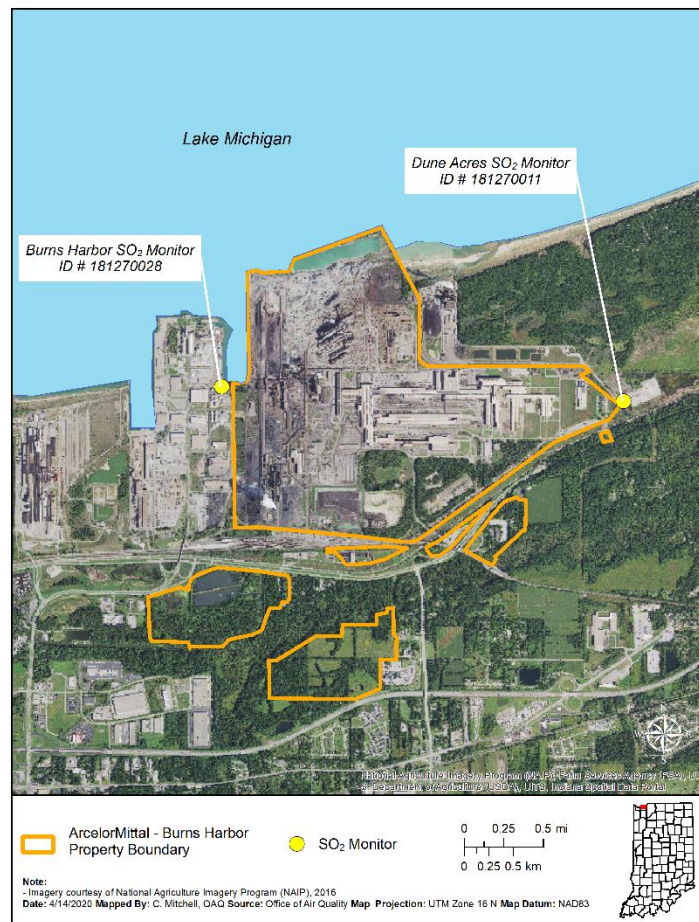
Figure 1: Map of Porter County and Surrounding Counties in Northwest Indiana



⁵ <https://www.federalregister.gov/documents/2018/01/09/2017-28423/air-quality-designations-for-the-2010-sulfur-dioxide-so2>.

The Burns Harbor facility is located in Burns Harbor, Westchester Township, Porter County, Indiana. It is bordered by Lake Michigan to the north and U.S. Highway 12 to the south. The NIPSCO - Bailly Generating Station property and the Indiana Dunes National Park lie to the east. The industrialized Port of Indiana is located to the west. Woodlands, residential areas, and lighter industry lie to the south. The Dune Acres Substation SO₂ monitor is located on the east edge of the Burns Harbor property. The Burns Harbor SO₂ monitor is located on the western edge of the Burns Harbor property. Figure 2 presents an overview of the Burns Harbor facility and the surrounding area.

Figure 2: Map of Burns Harbor and Surrounding Area



2.0 Air Quality Monitoring Data

U.S. EPA's September 5, 2019, memo indicates that it may designate an area as "attainment/unclassifiable" if information indicates it meets the SO₂ NAAQS and does not likely contribute to a violation in a nearby area. U.S. EPA will base Round 4 designations on the most recent three years (i.e., 2017-2019) of ambient air quality monitoring data.

The SO₂ monitoring network for Porter County includes the ArcelorMittal-Burns Harbor monitor (ID 181270028) and the Dune Acres Substation monitor (ID 181270011). SO₂ ambient air quality monitoring data from both monitors has been quality assured and certified for 2017-2019. Three-year design values for the Burns Harbor and Dune Acres Substation monitors for 2017-2019 are 47 ppb and 28 ppb respectively, demonstrating the area’s attainment of the 2010 primary 1-hour SO₂ standard, as shown in Table 3.

Site ID	Site Name	99 th Percentile Values (ppb)			Three-Year Design Value (ppb)	2010 Primary SO ₂ NAAQS (ppb)
		2017	2018	2019	2017-2019	
181270028	ArcelorMittal-Burns Harbor	33.2	28.0	79.0	47	75
181270011	Dune Acres Substation	29.0	23.0	32.0	28	

2.1 Monitor Site Placement

Indiana followed U.S. EPA guidance and worked with U.S. EPA to ensure the appropriate placement of ambient air monitors to ensure sufficient data for the basis of Porter County’s designation under Round 4.⁶ Air quality analyses were conducted to determine the proper site location(s) and number of SO₂ monitor(s) necessary to characterize air quality surrounding the Burns Harbor facility. Modeling was conducted based on meteorological data and emissions data to determine locations of maximum 1-hour SO₂ modeled impacts. Burns Harbor facility emissions were modeled, as well as emissions from other area sources including the NIPSCO - Bailly and NIPSCO – Michigan City Generating Stations, and U.S. Steel – Gary Works in Lake County.

Burns Harbor is an integrated steel mill consisting of two blast furnaces, three hot strip mill furnaces, plate mill furnaces, two coke batteries, three basic oxygen furnaces (BOF) hot metal desulfurization steel making processes, five power station boilers, and a sinter plant. There are also two blast furnace gas flares and a clean coke oven gas flare which emit a small amount of SO₂. Some processes, such as the BOF steel making processes, have roof monitor SO₂ emissions in addition to stack SO₂ emissions. The blast furnaces also have non-point slag pit loadout fugitive SO₂ emissions which are modeled as volume sources. Highest SO₂ concentrations were shown to occur along the western property boundary of Burns Harbor extending west over the Port of Indiana.

⁶ U.S. EPA guidance concerning implementation of the 2010 primary 1-hour SO₂ standard includes the “SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (TAD)” (February 2016 Draft) (<https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf>) and “Sulfur Dioxide (SO₂) National Ambient Air Quality Standards Designations Modeling Technical Assistance Document” (August 2016 Draft) (<https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf>).

A culpability study was conducted to determine which emission source groups had the largest modeled impact in the maximum concentration “hot spot” zone. The Burns Harbor Power Station Boilers #8 – 12 and C&D furnaces were determined to be culpable for the maximum SO₂ impacts. An SO₂ monitor site was proposed to be located along the western property line of Burns Harbor near to these units, to capture any high concentrations coming from Burns Harbor and properly characterize the air quality in the area. It was determined that the installation of the Burns Harbor SO₂ monitor, in addition to the existing Dune Acres Substation SO₂ monitor, would constitute an appropriate SO₂ monitoring network.

The details of the modeling methodology and results are contained in “Enclosure 2 - ArcelorMittal-Burns Harbor Modeling Protocol to Support Monitoring Approach for the Data Requirements Rule” of Indiana’s June 30, 2016, submission to U.S. EPA regarding Rounds 3 and 4 designations for the 2010 primary 1-hour SO₂ standard and air characterization under the DRR.⁷ In a letter dated August 5, 2016, U.S. EPA concurred that Indiana’s recommended placement of a monitoring site directly west of the power station boilers and blast furnaces was acceptable and would augment the existing Dune Acres Substation SO₂ monitor for the characterization of air quality in the vicinity of Burns Harbor. On October 31, 2016, U.S. EPA approved IDEM’s ambient air monitoring network plan for 2017, which included the Burns Harbor SO₂ monitoring site.

The new ambient air monitor was installed in the approved location near the area of maximum impacts in order to accurately characterize the air quality to compare with the 2010 1-hour SO₂ NAAQS. Operation of the U.S. EPA-approved monitoring site began by January 1, 2017, as required by the DRR.⁸ As such, Indiana believes the 2017-2019 quality assured, certified monitoring data is sufficient as a basis for the area’s designation as “attainment/unclassifiable”.

3.0 Jurisdictional Boundaries

Indiana recommends the designation of “attainment/unclassifiable” for the entirety of Porter County.

4.0 Conclusion

U.S. EPA’s September 5, 2019, memo states that U.S. EPA may designate an area as “attainment/unclassifiable” if information indicates it meets the SO₂ NAAQS and does not likely contribute to a violation in a nearby area based on the most recent three years (i.e., 2017-2019) of ambient air quality monitoring data. Quality-assured, certified

⁷ https://www.in.gov/idem/airquality/files/nonattainment_so2_round_3_4_enc_2.pdf.

⁸ IDEM’s January 13, 2017, letter to U.S. EPA concerning Round 3 designations (https://www.in.gov/idem/airquality/files/nonattainment_so2_round_3_4_prelim_recs.pdf) provides documentation of the monitor installation and operation in Attachment 5 (https://www.in.gov/idem/airquality/files/nonattainment_so2_round_3_4_prelim_recs_attch_5.pdf).

SO₂ ambient air quality monitoring data for 2017-2019 for Porter County demonstrates the area is attaining the 2010 primary 1-hour SO₂ standard and does not contribute to a violation of the standard in a nearby area.

Indiana followed U.S. EPA guidance and worked with U.S. EPA to determine the appropriate number and location of SO₂ monitoring sites for the characterization of air quality in Porter County. A thorough air quality analysis was conducted to determine maximum modeled impacts and appropriate monitor placement for capturing maximum SO₂ concentrations in the area surrounding the Burns Harbor facility. The installation of the U.S. EPA-approved Burns Harbor SO₂ monitor, in addition to the existing Dune Acres Substation SO₂ monitor, constitutes an adequate SO₂ air monitoring network for Porter County. As such, the monitoring sites are appropriately located and the quality assured, certified monitoring data for 2017-2019 is sufficient for making the air quality designation.

In conclusion, based on the thorough analysis of air quality monitoring data, Indiana recommends that Porter County be designated as “attainment/unclassifiable” under the 2010 primary 1-hour SO₂ standard.

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