



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

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Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

October 10, 2019

Ms. Cathy Stepp
Regional Administrator
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3950

Re: Request for Redesignation and Maintenance
Plan for Attainment of the Partial Morgan County,
IN 2010 Primary 1-Hour Sulfur Dioxide
Nonattainment Area

Dear Ms. Stepp:

The Indiana Department of Environmental Management (IDEM) submits a Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, IN 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area.

The attached enclosure consists of the following:

Redesignation Petition and Maintenance Plan

- A formal request that the Morgan County, Indiana Nonattainment Area for the 2010 primary 1-hour sulfur dioxide standard be redesignated to “attainment” and reclassified as “maintenance”. It contains and meets the requirements set forth in Section 107 of the Clean Air Act and in U.S. EPA Redesignation Guidance.
- The appendices of the document contain Air Quality System (AQS) Monitoring Data Values for the years 2012 - 2018.
- A maintenance year of 2030 is established.

Throughout the development of these submittals IDEM staff worked with U.S. EPA Region 5 to ensure that any potential concerns regarding this submission were addressed. We would appreciate U.S. EPA's continued efforts to communicate regularly with us as it reviews these submittals.

IDEM provided a 30-day public comment period and an opportunity for a public hearing concerning this submittal on the *Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, IN 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area*. A public hearing was not requested and there were not

Ms. Cathy Stepp
Page 2 of 2

any comments received. Please refer to the Supporting Document for further information and dates regarding the public participation process.

This request consists of one (1) hardcopy of the required documentation. An electronic version of the submittal in PDF format that is identical to the hard copy has been sent to Doug Aburano, Chief of U.S. EPA Region 5's Attainment Planning and Maintenance Section and Chris Panos of U.S. Region 5.

IDEM requests that U.S. EPA proceed with review and approval of this submittal. If you have any questions or need additional information, please contact Brian Callahan, Chief, Air Quality Standards and Implementation Section, Office of Air Quality at (317) 232-8244 or bcallaha@idem.IN.gov.

Sincerely,



Keith Baugues
Assistant Commissioner
Office of Air Quality

KB/sad/bc/gf/lf

Enclosure:

Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, IN 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area

cc: Doug Aburano U.S. EPA Region 5 (no enclosure)
Chris Panos, U.S. EPA Region 5 (no enclosure)
John Summerhays, U.S. EPA Region 5 (no enclosure)
Sara Arra, U.S. EPA Region 5 (no enclosure)
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Scott Deloney, IDEM-OAQ (no enclosure)
Brian Callahan, IDEM-OAQ (no enclosure)
Gale Ferris, IDEM-OAQ (no enclosure)
Leslie Ferguson, IDEM-OAQ (w/ enclosure)
File Copy

Request for Redesignation and
Maintenance Plan for Attainment of the
Partial Morgan County, IN 2010 Primary
1-Hour Sulfur Dioxide Nonattainment
Area

**Clay and Washington Townships,
Morgan County, Indiana**

Developed By:

The Indiana Department of
Environmental Management

October 2019

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- A Air Quality System (AQS) Monitor Data Values for the Morgan County, Indiana 2010 Primary 1-Hour SO₂ Nonattainment Area

- B Supplement to the 1-Hour Sulfur Dioxide Attainment Demonstration and Technical Support Document for the Morgan County, IN Nonattainment Area

- C Public Participation Process Documentation

Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, IN 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area

Clay and Washington Townships, Morgan County, Indiana

1.0 Introduction

This document supports Indiana's request that Clay and Washington Townships in the Morgan County, IN Nonattainment Area be redesignated from nonattainment to attainment for the 2010 primary 1-hour sulfur dioxide (SO₂) standard. The Morgan County, IN Nonattainment Area has recorded four (4) years of complete, quality-assured ambient air quality monitoring data from 2015 – 2018 demonstrating attainment of the 1-hour SO₂ standard.

Indiana's request is based on Section 107(d)(3)(D) of the Clean Air Act (CAA), which states:

- (D) The Governor of any State may, on the Governor's own motion, submit to the Administrator a revised designation of any area or portion thereof within the State. Within 18 months of receipt of a complete State redesignation submittal, the Administrator shall approve or deny such redesignation. The submission of a redesignation by a Governor shall not affect the effectiveness or enforceability of the applicable implementation plan for the State.

Section 107(d)(3)(E) of the CAA establishes specific requirements to be met in order for an area to be considered for redesignation including:

- (a) A determination that the area has attained the SO₂ national ambient air quality standard (NAAQS).
- (b) A state implementation plan (SIP) for the area under Section 110(k) of the CAA that is fully approved.
- (c) A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP or other federal requirements.
- (d) A maintenance plan under Section 175A of the CAA that is fully approved.
- (e) A determination that all Section 110 and Part D requirements of the CAA have been met.

Indiana is formally requesting a redesignation of Clay and Washington Townships in the Morgan County, IN Nonattainment Area to attainment.

The requirements for redesignation are addressed in Section 2.0 of this document.

1.1 Sulfur Dioxide

SO₂ is part of a group of highly reactive gases known as oxides of sulfur (SO_x) and is primarily derived from fossil fuel combustion at power plants and other industrial facilities. SO₂ is one of the “six” criteria air pollutants regulated under the federal CAA. SO₂ is considered to be harmful to human health and has been linked with many adverse health effects, particularly within the respiratory system. SO₂ is also a primary contributor to acid rain, which causes acidification of lakes and streams, damages trees at high elevations, and damages sensitive forest soils.

1.2 National Ambient Air Quality Standards

SO₂ is one of the six criteria air pollutants that scientists have identified as being particularly harmful to humans and the environment. NAAQS have been developed for these six pollutants and are used as measurements of air quality. The CAA requires United States Environmental Protection Agency (U.S. EPA) to set primary standards at a level judged to be “requisite to protect the public health with an adequate margin of safety” and establish secondary standards that are requisite to protect public welfare from “any known or anticipated effects associated with the pollutant in the ambient air,” including effects on crops, vegetation, wildlife, buildings and national monuments, and visibility.

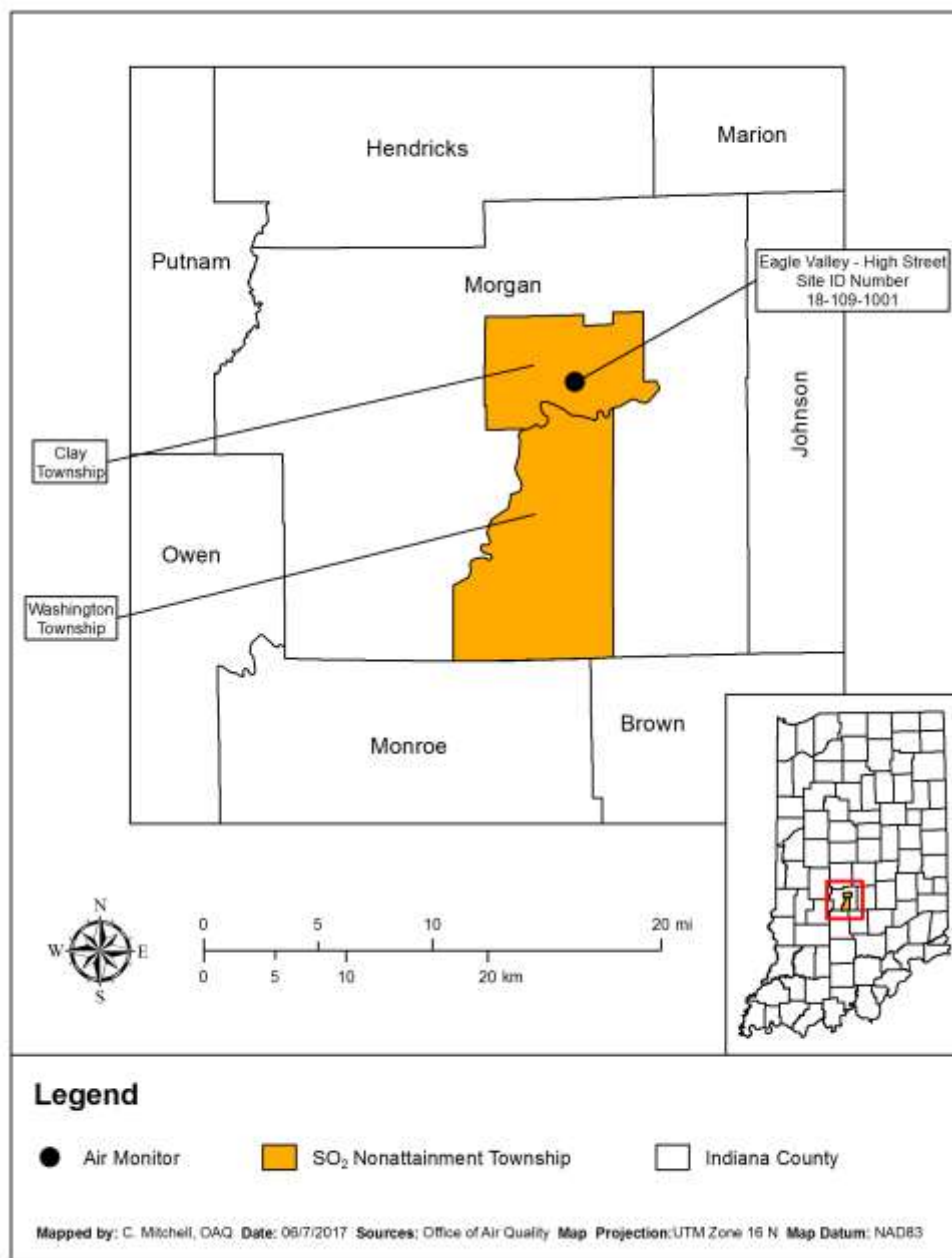
On June 2, 2010, U.S. EPA promulgated a new primary NAAQS for SO₂, replacing the two primary standards of 140 parts per billion (ppb) evaluated over 24-hours and 30 ppb evaluated over an entire year with a 1-hour standard of 75 ppb. The 2010 primary 1-hour SO₂ NAAQS was published in the June 22, 2010, *Federal Register* (FR), at 75 FR 35520, with an effective date of August 23, 2010. The primary SO₂ NAAQS is met when the 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentration at any ambient air quality monitor in an area does not exceed 75 ppb. This three-year average is termed the “design value” for the monitor. The design value for a nonattainment area is the highest monitored design value in the area.

On July 25, 2013, using monitored air quality data measured during 2009, 2010, and 2011, U.S. EPA designated Clay and Washington Townships in Morgan County, IN, nonattainment under Subpart 1 of Section 107(d)(1) of the CAA (78 FR 47191). These designations became effective on October 4, 2013 establishing an attainment date of October 4, 2018.

1.3 Geographical Description

U.S. EPA designated four nonattainment areas comprised of nine townships in five counties in the State of Indiana for the 2010 primary 1-hour SO₂ NAAQS. As depicted in Figure 1.1, the Morgan County, IN Nonattainment Area consists of Clay and Washington Townships. Morgan County is located in central Indiana and is surrounded by the Indiana counties of Hendricks, Marion, Johnson, Brown, Monroe, Owen, and Putnam.

Figure 1.1: Map of the Morgan County, IN 2010 Primary 1-Hour SO₂ Nonattainment Area



1.4 Status of Air Quality

There is currently one monitor measuring SO₂ concentrations in the Morgan County, IN Nonattainment Area (Eagle Valley – High Street; Site ID# 18-109-1001). The monitor is operated by Indianapolis Power and Light (IPL). A listing of the site, with annual 99th percentile daily maximum 1-hour values from 2012 – 2018 and corresponding design values retrieved from U.S. EPA's Air Quality System (AQS) database, are shown in Table 2.1. The location of the monitoring site for this nonattainment area is shown in Figure 1.1.

SO₂ monitoring data for the past four (4) years, 2015-2018, demonstrates that the air quality meets the 2010 primary 1-hour SO₂ standard in the nonattainment area. This fact, accompanied by the permanent and enforceable decreases in emission levels discussed in Section 2.3, justifies a redesignation to attainment for Indiana's nonattainment area based on Section 107(d)(3)(E) of the CAA.

2.0 Requirements for Redesignation

U.S. EPA has published guidance in the document "Procedures for Processing Requests to Redesignate Areas to Attainment," issued September 4, 1992, to Regional Air Directors.¹ In addition, U.S. EPA has published guidance specific to SO₂ titled "Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions," issued April 23, 2014, to Regional Air Division Directors.² This Request for Redesignation and Maintenance Plan is based on the Redesignation Guidance and SO₂ Nonattainment Area SIP Guidance, supplemented with additional guidance received from U.S. EPA Region V staff. The SO₂ guidance, as well as Section 107(d)(3)(E) of the CAA, lists the requirements that must be met by nonattainment areas prior to consideration for redesignation to attainment. The specific requirements for redesignation are discussed below.

2.1 Attainment of the SO₂ national ambient air quality standard (NAAQS).

- 1) A demonstration that the NAAQS for SO₂, as published in 40 Code of Federal Regulations (CFR) 50.17, has been attained.
- 2) Ambient monitoring data quality-assured in accordance with 40 CFR Part 50, Appendix T have been recorded in the U.S. EPA AQS database and made available for public view.

Attainment of the NAAQS for SO₂ is demonstrated in two ways: ambient air monitoring and atmospheric dispersion modeling.

¹ https://www.epa.gov/sites/production/files/2016-03/documents/calagni_memo_-_procedures_for_processing_requests_to_redesignate_areas_to_attainment_090492.pdf

² https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf

2.1.1 Ambient Air Monitoring Data

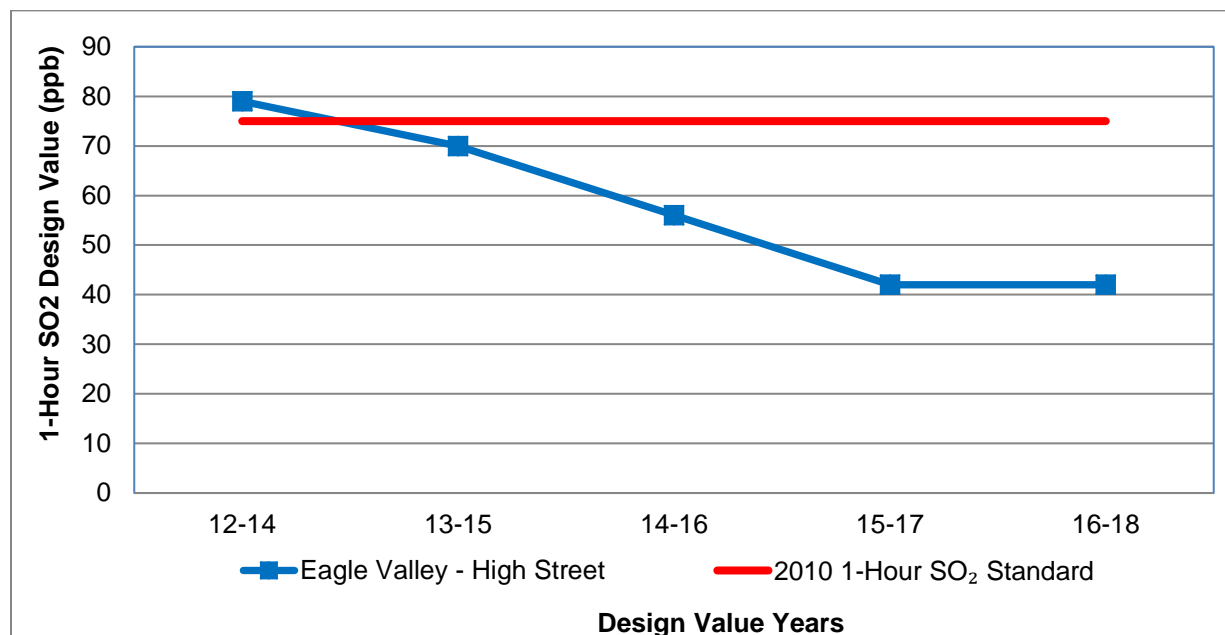
As explained in 40 CFR 50, Appendix T, three (3) complete years of SO₂ monitoring data are required to demonstrate attainment at a monitoring site. The 1-hour SO₂ NAAQS is met at an air quality monitoring site when the three-year average of the annual 99th percentile daily maximum 1-hour value concentration is less than or equal to 75 ppb. When this occurs, the site is deemed to be in attainment. The 1-hour primary design value is rounded to the nearest whole number or 1 ppb (i.e. decimals 0.5 and greater are rounded up to the nearest whole number, and any decimal lower than 0.5 is rounded down to the nearest whole number). Values equal to or below 75 ppb meet the standard; values greater than 75 ppb exceed the standard. These data handling procedures are applied on an individual basis at each monitor in the area. An individual site's three-year average of the 99th percentile daily maximum 1-hour average SO₂ concentration is called the site's design value. The air quality design value for the area is the highest design value among all sites in the area. The data from the SO₂ monitor within the Morgan County, IN Nonattainment Area is evaluated according to the procedures outlined in 40 CFR 50 Appendix T.

Table 2.1 lists the annual 99th percentile daily maximum 1-hour values from 2012 – 2018 and corresponding design values for the monitoring site in the Morgan County, IN Nonattainment Area demonstrating that the NAAQS for SO₂ has been attained. Graph 2.1 displays 2012 – 2018 three-year design values for the Morgan County, IN Nonattainment Area. U.S. EPA's Design Value Report for this period, taken from U.S. EPA's AQS database, shows certified data for this period for the Morgan County, IN Nonattainment Area is included in Appendix A.

Table 2.1: Monitoring Data for the Morgan County, IN 2010 Primary 1-Hour SO₂ Nonattainment Area (Annual 99th Percentile and Design Values in ppb)

Site ID	County	Site Name	99 th Percentile Values							3-Year Design Values				
			2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016
										-	-	-	-	-
181091001	Morgan	Eagle Valley-High Street	82	64	90	56	23	47	55	2014	2015	2016	2017	2018
										79	70	56	42	42

Graph 2.1: SO₂ Design Value Trends for the Morgan County, IN Nonattainment Area, 2012-2018



2.1.2 Atmospheric Dispersion Modeling

Indiana Department of Environmental Management (IDEM) has performed extensive modeling of the Morgan County, IN Nonattainment Area to determine the effect of local and national emission control strategies on SO₂ levels and to demonstrate attainment of the SO₂ NAAQS. This modeling was performed in conjunction with the attainment plan submitted on October 2, 2015.³ On February 8, 2019, IDEM provided supplemental information to the attainment demonstration and technical support document for the Morgan County, IN nonattainment area.⁴ This supplement was conducted per U.S. EPA's request for additional analyses to accurately characterize representative background concentrations in Morgan County. In response, IDEM conducted several analyses to revise the background concentrations and update the air dispersion modeling analysis supporting a revised attainment demonstration for the Morgan County, IN nonattainment area.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD version 18081) was the regulatory air quality model used for the 1-hour SO₂ attainment demonstration modeling of the Morgan County, IN Nonattainment Area. Five years, 2013 – 2017, of surface meteorological data from the Indianapolis, IN National Weather Service (NWS) site was used in conjunction with five years of concurrent upper-air meteorological data from Lincoln, Illinois.

The modeled concentrations are the highest 4th high 1-hour maximum daily SO₂

³ http://www.in.gov/idem/airquality/files/attainment_so2_multi_2015_demo_attach_k.pdf

⁴ https://www.in.gov/idem/airquality/files/attainment_so2_multi_20190208_supplement.pdf

concentration values (i.e. the 99th percentile daily maximum) averaged across five years for allowable limits established through source-specific limits adopted at Title 326 Indiana Administrative Code (IAC) 7-4-11.1. There are several federal rules including the Cross State Air Pollution Rule (CSAPR), Mercury and Air Toxics Standards (MATS), and National Emission Standards for Hazardous Air Pollutants for Major Sources (NESHAP): Industrial, Commercial, and Institutional Boilers and Process Heaters that apply to the sources in this area.

Modeling conducted in conjunction with IDEM's February 8, 2019, submittal determined a maximum impact from modeled sources of 7.69 $\mu\text{g}/\text{m}^3$. Background values, determined by two methodologies, were then added to the maximum modeled impact to determine compliance with the 1-hour SO_2 standard. The first modeling run used a single background concentration for all seasons and hours and showed a design value of 103.69 $\mu\text{g}/\text{m}^3$ (39.6 ppb). The second modeling run used season and hour-specific background concentrations and showed a design value of 117.33 $\mu\text{g}/\text{m}^3$ (44.8 ppb). In both cases the modeled design values for Morgan County are below the 1-hour SO_2 NAAQS of 75 ppb or 196.2 $\mu\text{g}/\text{m}^3$ and, therefore, demonstrate that limits outlined in the attainment plan, and found at 326 IAC 7-4-11.1, are adequate to provide for attainment and maintenance of the NAAQS for SO_2 . For a comprehensive discussion of the modeling, refer to Appendix B "Supplement to the 1-Hour Sulfur Dioxide Attainment Demonstration and Technical Support Document for the Morgan County, IN Nonattainment Area".

2.2 Approved State Implementation Plan

Section 191(a) of Subpart 5 of Part D, Title 1 of the CAA requires states with SO_2 nonattainment areas to submit a plan (referred to as an "attainment demonstration") within eighteen months of the effective date of the designations (i.e. by April 4, 2015) detailing how the SO_2 standard will be attained as expeditiously as practicable but no later than five years after the effective date of the designation (i.e. by October 4, 2018). On October 2, 2015, Indiana submitted the attainment demonstration for the Morgan County, IN Nonattainment Area to U.S. EPA. The attainment demonstration for Morgan County was subsequently approved by U.S. EPA effective October 23, 2019 (84 FR 49659).

2.3 Permanent and Enforceable Improvement in Air Quality

Two facilities were included in the 1-hour SO_2 attainment demonstration and technical support document for the Morgan County, IN Nonattainment Area submitted to U.S. EPA for review and approval on October 2, 2015. These facilities are: IPL's – Eagle Valley Generating Station and Hydraulic Press Brick (HPB). These facilities are required to comply with emission limits in 326 IAC 7-4-11.1 adopted to demonstrate compliance with the 1-hour SO_2 standard.

In Table 2.2, actual SO₂ emissions were extracted from U.S. EPA's Air Markets Program Data (AMPD),⁵ and IDEM's Office of Air Quality's Emission Inventory Tracking System (EMITS).⁶ As demonstrated in Table 2.2, permanent and enforceable reductions were achieved within the Morgan County, IN Nonattainment Area, with the retirement of all six electric generating units at the Eagle Valley Generating Station by April 15, 2016, and the construction of a combined cycle natural gas combustion turbine generation facility that began operation in 2018.⁷ In addition, significant reductions at the Non-EGU point source in the area (i.e. HPB) also occurred with control technologies being added in preparation for meeting their new emission limitations by January 1, 2017. These permanent and enforceable reductions of SO₂ emissions have contributed to attainment of the NAAQS. SO₂ emissions from these sources declined by approximately 75% between the nonattainment-year (2011) and the attainment-year (2015) and then an additional 24.9% compared to the most-recent-year of reported emissions (2018) resulting in attainment of the 2010 primary 1-hour SO₂ NAAQS.

Table 2.2: Actual SO₂ Emission Reductions from EGUs & Contributing Non-EGU Point Sources, Morgan County, IN (tons per year)

Affected Source	Type of Reduction	Effective Date of Reduction	2011 Non-Attainment-Year	2015 Attainment-Year	2011-2015 Change	2018	2011-2018 Change
IPL - Eagle Valley	Unit Retirement & Fuel Switch	January 1, 2017 (326 IAC 7-4-11.1)	10,875	2,756	-8,119	0 ^a	-10,875
Hydraulic Press Brick	Operational Limits		350 ^b	15 ^b	-335	7 ^b	-343
TOTAL			11,225	2,771	-8,454	7	-11,218

^a All coal-fired units retired in 2016. Natural gas operations began in 2018.

^b This facility was on a 3-year reporting schedule. 2011 represents 2010 reported emissions and 2015 represents 2016 emissions.

IDEM has performed modeling of the nonattainment area to determine the effect of emission control strategies on SO₂ and to demonstrate attainment of the standard. Modeling results for Morgan County, IN Nonattainment area demonstrated that the area would attain the standard by January 1, 2017. Additionally, the IPL – Eagle Valley Generating Station ceased operation of all coal-fired units in 2016. As a result of the retirement of all IPL – Eagle Valley Generating Station's coal-fired units and the permanent and enforceable SO₂ emission limits and operational requirements implemented at HPB identified in 326 IAC 7-4-11.1, as outlined in Table 2.3, SO₂ emissions in the Morgan County, IN Nonattainment Area have decreased significantly

⁵ <http://www.epa.gov/airmarkets/>

⁶ <https://www.epa.gov/air-emissions-inventories>

⁷ https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=80427892&dDocName=80427250&Render=web&allowInterrupt=1&noSaveAs=1&fileName=80427250.pdf

ensuring the area will continue to maintain compliance with the 2010 primary 1-hour SO₂ standard. These facilities are prohibited from reducing or removing emissions controls (anti-backsliding) following the redesignation of the area unless such a change is first approved by U.S. EPA as a revision to Indiana's SIP consistent with Section 110(l) of the CAA.

In addition, SO₂ emissions are limited by new source performance standards (NSPS) under Sections 111 and 129 of the CAA; and the national emission standards for hazardous air pollutants (NESHAP) under Section 112 of the CAA. Several recent U.S. EPA air quality regulations on EGUs and other large sources (such as various types of boilers and incinerators) have the potential to significantly further reduce SO₂ emissions (e.g. CSAPR, MATS, and, NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters). Permanent and enforceable control measures have led to reductions of SO₂ from point sources and other emission source sectors (e.g. Clean Air Non-road Diesel Rule, Highway Heavy Duty Engines Rule, and the application of tighter federal standards on new vehicles).

Table 2.3: 1-Hour SO₂ Emission Rate Limits, Morgan County, IN (326 IAC 7-4-11.1)

Source	Emission Unit	Emission Limit or Other Requirements	Emission Limit (lbs/MMBtu)
IPL - Eagle Valley	Combustion Turbine 1	Burn Natural Gas	
	Combustion Turbine 2		
	Aux. Boiler		
	Dew Point Heater		
Hydraulic Press Brick	Kiln 3	Do Not Operate	
	Kiln 4	Minimum control efficiency of 50% or 2.5 lbs/MMBtu, whichever is less stringent	6.0
	Kiln 5	Minimum control efficiency of 50% or 2.5 lbs/MMBtu, whichever is less stringent	6.0

Indiana commits that any changes to its rules, or emission limits applicable to SO₂ sources, as required for maintenance of the SO₂ standard in the Morgan County, IN Nonattainment Area, will be submitted to U.S. EPA for approval as a SIP revision. This will include, where appropriate, a demonstration based on modeling that the standard will be maintained. Indiana does intend, upon redesignation, to apply 326 IAC 2-2 (PSD Requirements) rather than 326 IAC 2-3 (Emission Offsets) for permitting any new sources or modifications. Indiana, through IDEM's Office of Compliance and Enforcement, has the legal authority and necessary resources to actively enforce any violations of its rules or permit provisions. After redesignation, Indiana intends to

continue enforcing all rules that relate to the emission of sulfur dioxide in the Morgan County, IN Nonattainment Area.

Indiana has a longstanding and fully implemented NSR program. This program is addressed in 326 IAC 2. The rule includes provisions for the Prevention of Significant Deterioration (PSD) in 326 IAC 2-2. Indiana's PSD program has been approved by U.S. EPA as part of its SIP (69 FR 29071).

2.4 Approved Maintenance Plan

A maintenance plan provides for the continued attainment of the air quality standard for a period of 10 years after U.S. EPA has formally redesignated the area to attainment. The plan also provides assurances that if there is a subsequent violation of the air quality standard, measures in the maintenance plan will prevent any future occurrences through contingency measures that would be triggered.

Indiana submits the Maintenance Plan found in Section 3.0 of this document for U.S. EPA's consideration and approval. Once the Maintenance Plan is approved, the area will have a fully approved implementation plan under CAA section 110(k).

2.5 Section 110 and Part D Requirements

Prior to redesignation, a state containing a nonattainment area must demonstrate compliance with all requirements applicable to the area under Section 110 and Part D of the CAA. This means the state must meet all requirements that applied to the area prior to, and at the time of, the submission of a complete request for redesignation to attainment.

2.5.1 Section 110 CAA Requirements

Section 110(a) of the CAA contains the general requirements for a SIP. Only the Section 110 requirements that are linked with a particular area's designations are the relevant measures to consider in evaluating a redesignation request. Further, Indiana believes that other Section 110 elements that are not connected with nonattainment plan submissions and not linked with an area's attainment status are also not applicable requirements for purposes of redesignation as a state remains subject to these requirements after an area is redesignated to attainment. The requirements of CAA Section 110(a)(2) that are statewide requirements and that are not linked to the SO₂ attainment status of the Morgan County, IN Nonattainment Area are therefore not applicable requirements for purposes of review of Indiana's redesignation request.

U.S. EPA has approved provisions of Indiana's SIP addressing Section 110 requirements, including provisions addressing SO₂. On May 22, 2013, Indiana submitted to U.S. EPA an infrastructure SIP for the 2010 revised SO₂ standard further demonstrating compliance with the requirements "applicable to the area" under CAA Section 110. CAA Section 110(a)(2) contains the general requirements or infrastructure

elements necessary for U.S. EPA approval of the SIP. These requirements include, but are not limited to, submittal of a SIP that has been adopted by the state after reasonable notice and public hearing. Indiana's infrastructure SIP for the 2010 1-hour SO₂ standard was approved on August 3, 2015 (80 FR 48733).

2.5.2 CAA Part D Plan Requirements for Nonattainment Areas

Part D of the CAA contains requirements applicable to all areas designated nonattainment. SO₂ nonattainment areas must meet the general provisions of Subpart 1 and the specific SO₂ provisions in Subpart 5. The maintenance plan associated with this request for redesignation of the Morgan County, IN Nonattainment Area is a SIP revision for an area designated as a nonattainment area and meets the applicable requirements of Part D of Title 1 of the CAA.

2.5.2.1 Section 172(c) CAA Requirements

Section 172(c) of the CAA contains general requirements for nonattainment plans. These requirements include reasonable further progress, emission inventories, permitting provisions, and other measures for attainment. These requirements were addressed in the attainment demonstration submitted to U.S. EPA on October 2, 2015.

2.5.2.2 Section 173 CAA Requirements

These provisions outline requirements related to permitting of air pollution sources in nonattainment areas. Stationary sources of air pollution are subject to the applicable regulations of 326 IAC 2. These regulations include:

- Prevention of Significant Deterioration (PSD) Permitting Requirements (326 IAC 2-2)
- Emission Offset Permitting Program Requirements (326 IAC 2-3)

These permitting, stationary source monitoring and reporting, preconstruction review, offset ratios and enforceable emission limitation requirements were adopted to implement the federally mandated requirements in Sections 110, 172, and 173 of the CAA.

2.5.2.3 Section 176(c) CAA Requirements

Transportation conformity is required under Section 176(c) of the CAA to ensure that federally supported highway and transit project activities are consistent with (i.e. "conform to") the purpose of the SIP. Indiana's general conformity rules were approved into Section 176(c) of the CAA on January 14, 1998 (63 FR 2146). Transportation conformity applies to areas that are designated nonattainment and those areas redesignated attainment after 1990 (i.e. "maintenance areas") with plans developed under Section 175A of the CAA for transportation-related criteria pollutants. Due to the relatively small and decreasing amounts of sulfur in gasoline and on-road diesel fuel,

transportation conformity rules do not apply to SO₂ unless transportation conformity budgets have been established for other reasons such as SO₂ is found to be a significant contributor to a fine particles (PM_{2.5}) nonattainment area or if the SIP has established an approved or adequate budget for such emissions as part of the reasonable further progress (RFP) attainment or maintenance strategy. Neither of these circumstances applies to the Morgan County, IN Nonattainment Area. Therefore, Indiana did not create mobile source SO₂ emission budgets for the area. As such, transportation conformity is not of concern for the 2010 1-hour SO₂ NAAQS.

2.5.2.4 Section 191(a) CAA Requirements

Section 191(a) of the CAA identifies requirements related to nonattainment plan submission and attainment deadlines. Indiana has submitted all required SIP elements for this area in either previous submittals, or as part of this submittal. On October 2, 2015, Indiana submitted the attainment demonstration for the Morgan County, IN Nonattainment Area to U.S. EPA.

3.0 Morgan County, IN SO₂ Nonattainment Area Maintenance Plan

On July 25, 2013, U.S. EPA designated Clay and Washington Townships in Morgan County, IN, as “nonattainment” under Subpart 1 of Section 107 of the CAA (78 FR 47191). Designations were made based on monitored air quality data measured during 2009, 2010, and 2011. These designations became effective on October 4, 2013. However, ambient air data from the monitor within the Morgan County, IN Nonattainment Area for the 2013 – 2015 through 2016 – 2018 design value periods indicate that the 2010 primary 1-hour SO₂ standard was attained at the end of 2015 in advance of the October 4, 2018, attainment date. In order for the Morgan County, IN Nonattainment Area to be redesignated to attainment, Indiana must submit, and U.S. EPA must approve, a SIP showing maintenance of the SO₂ NAAQS within the nonattainment area for at least 10 years after redesignation.

According to U.S. EPA’s *“Procedures for Processing Requests to Redesignate Areas to Attainment”*⁸ and *“Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions”*⁹, states may generally demonstrate maintenance of the standard “by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory, or by modeling to show that the future mix of sources and emissions rates will not cause a violation of the NAAQS.” Per U.S. EPA guidance, Indiana is relying on the attainment plan to serve as a maintenance plan for the area since it relies on modeling based on maximum allowable emissions. This modeling is based on never-to-exceed maximum-allowable rates that demonstrate attainment of the standard and that the standard will be maintained for the requisite 10 years and beyond without regard to any changes in operation rate in the pertinent sources that do not

⁸ https://www.epa.gov/sites/production/files/2016-03/documents/calagni_memo_-_procedures_for_processing_requests_to_redesignate_areas_to_attainment_090492.pdf

⁹ https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf

involve increases in maximum allowable emissions. The following plan has been developed in support of Indiana's request for redesignation.

U.S. EPA's Redesignation Guidance states that the Maintenance Plan must consist of the following items:

- Attainment Inventory
- Demonstration of Maintenance
- Continued Operation of Monitoring Network
- Verification of Continued Attainment
- Contingency Plan

3.1 Attainment Inventory

U.S. EPA's Redesignation Guidance requires states to identify the level of emissions in the affected area that is sufficient to attain and maintain the NAAQS. To satisfy this requirement, Indiana is submitting an inventory, shown in Table 3.1, based on the allowable limits in 326 IAC 7-4-11.1 for sources identified in the attainment plan submitted in October 2015.

In Table 3.1, emissions are calculated based on the source's allowable limits to emit SO₂. Control strategies were implemented, or were already in place, by January 1, 2017, at all of the affected point sources within the Morgan County, IN Nonattainment Area. These permanent and enforceable reductions of SO₂ emissions have contributed to attainment of the NAAQS.

In 2016, the IPL – Eagle Valley Generating Station permanently retired all coal-fired electric generating units at the facility. Based on this fact, and as a result of the permanent and enforceable SO₂ emission limits and operational requirements implemented at the IPL – Eagle Valley and HPB facilities in 326 IAC 7-4-11.1, EGU and non-EGU point source SO₂ emissions in the Morgan County, IN Nonattainment Area have decreased dramatically.

Table 3.1: SO₂ Emissions for EGUs and Contributing Non-EGU Point Sources, Morgan County, IN (tons per year)

Affected Source	SO ₂ Emissions (tpy)
IPL - Eagle Valley	0 ^a
Hydraulic Press Brick	2,628
TOTAL	2,628

^a All coal-fired units retired in 2016. Natural gas operations began in 2018.

3.2 Demonstration of Maintenance

3.2.1 Modeling

As mentioned in Section 3.0, Indiana is relying on modeling from the attainment plan, and supplemental information submitted to U.S. EPA on February 8, 2019, as the basis for demonstrating maintenance of the SO₂ NAAQS. In Section 2.1.2, it is discussed that AERMOD modeling results for Morgan County showed total 1-hour SO₂ concentration values (i.e. maximum 1-hour SO₂ concentrations added to background concentration values) below the 1-hour SO₂ NAAQS of 75 ppb or 196.2 µg/m³. This modeling was based on never-to-exceed maximum-allowable rates, found at 326 IAC 7-4-11.1, are adequate to provide attainment and maintenance of the standard. Because there are not any large sources of SO₂ projected to enter the nonattainment area, the area can be expected to demonstrate attainment of the standard for the requisite 10 years and beyond without regard to any changes in operation rate of the pertinent sources that do not involve increases in maximum allowable emissions.

Indiana has a longstanding and fully implemented NSR program. This program is addressed in 326 IAC 2. The rule includes provisions for the Prevention of Significant Deterioration (PSD) in 326 IAC 2-2. PSD does not prevent sources from increasing emissions, instead is designed to protect public health and welfare. This program will safeguard that economic growth will occur in a manner consistent with the preservation of existing clean air resources. This program will also guarantee that any decision to permit increased air pollution in any area to which this program applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process. If a company were to notify IDEM of plans to construct or resume operations in the area, any emission unit would be subject to NSR requirements and modeling to ensure that the area will continue to comply with the standard.

3.2.2 Projected Inventory

U.S. EPA's Redesignation Guidance requires states to project emissions for at least the 10 year period following redesignation of the area to attainment. These emissions are shown in Table 3.2.

Because there are no large sources of SO₂ projected to enter the nonattainment area, projected emissions to 2030 for HPB are consistent with the allowable emissions limits in 326 IAC 7-4-11.1. SO₂ emissions for the IPL – Eagle Valley Generating Station are projected to be zero for the year 2030 with the permanent retirement of all coal-fired EGUs in 2016 and replaced with a combined cycle natural gas combustion turbine generation facility.

As a result of the permanent and enforceable SO₂ attainment strategies, operational requirements that took effect on January 1, 2017, and existing national control regulations, SO₂ emissions in the Morgan County, IN Nonattainment Area have

decreased significantly. These measures in conjunction with the closing of the IPL – Eagle Valley Generating Station and HPB taking limits on their SO₂ emission units, confirms the area will continue to maintain compliance with the standard.

Table 3.2: Projected SO₂ Emissions to 2030 Maintenance-Year for EGU and Contributing Non-EGU Point Sources, Morgan County, IN (tons per year)

Affected Source	2030 Projected Emissions (tpy)
IPL - Eagle Valley	0 ^a
Hydraulic Press Brick	2,628
TOTAL	2,628

^a All coal-fired units retired in 2016. Natural gas operations began in 2018.

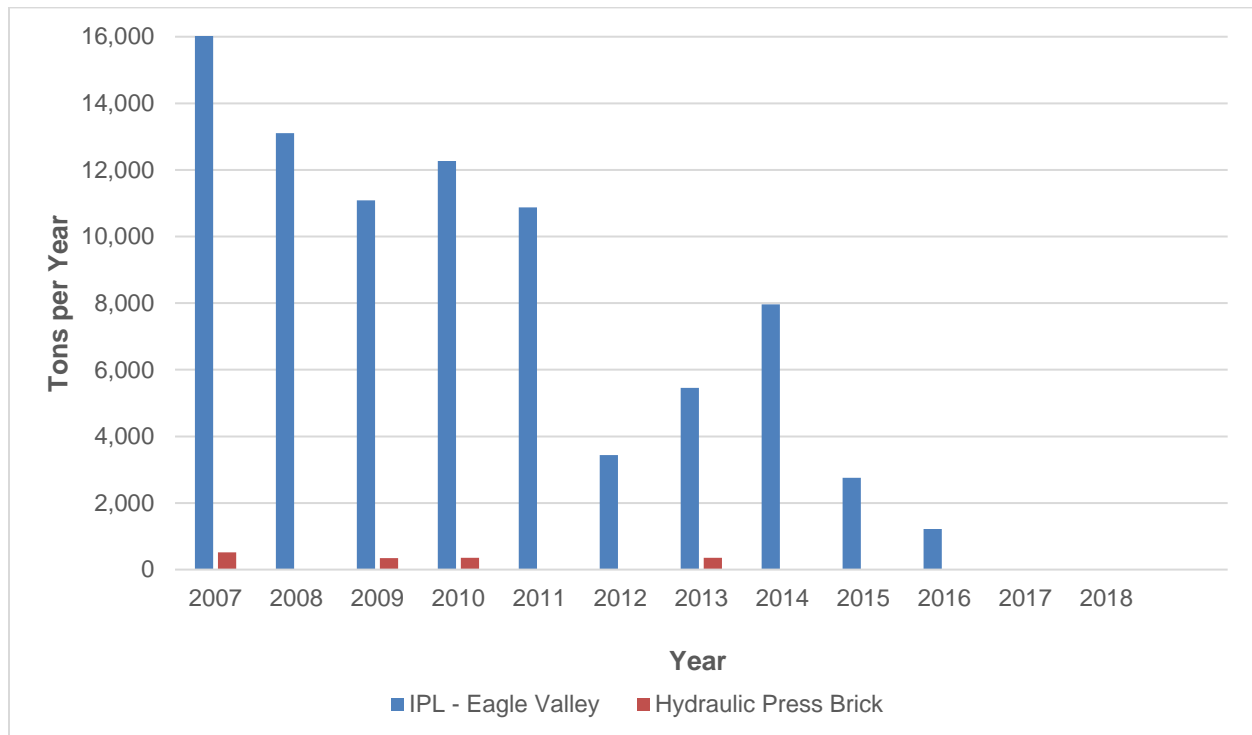
3.2.3 Emission Trends

Graph 3.1 shows the trend in actual reported SO₂ emissions, as retrieved from U.S. EPA's AMPD¹⁰, for the IPL – Eagle Valley Generating Station located within Clay Township for 2007 - 2018. The actual reported SO₂ emissions were retrieved from EMITS¹¹ for HPB for 2007 – 2018. SO₂ emissions decreased substantially with the conversion of the IPL – Eagle Valley Generating Station and in response to national programs affecting all EGUs such as the NSPS under Section 111 and 129 of the CAA, the NESHAP under Section 112 of CAA, CAIR, and now CSAPR.

¹⁰ <https://ampd.epa.gov/ampd/>

¹¹ <https://www.epa.gov/air-emissions-inventories>

Graph 3.1: SO₂ Point Source Emissions in Morgan County, IN Nonattainment Area, 2007-2018



3.3 Monitoring Network

Indiana has committed to continue monitoring SO₂ in the nonattainment area. IDEM will consult with U.S. EPA Region V staff prior to making changes to the existing monitoring network should changes become necessary in the future. Indiana will continue to quality assure the monitoring data to meet the requirements of 40 CFR 50. Indiana will enter all data into AQS in a timely manner in accordance with federal guidelines.

Indiana has quality-assured all SO₂ data shown in Appendix A in accordance with 40 CFR 50.17 and the Quality Assurance Manual. Indiana has recorded the data in the AQS database and the data are available to the public. Further, according to the applicable requirements of 40 CFR 58.10, Indiana will consult with U.S. EPA through the annual review of Indiana's monitoring network prior to making any changes to the existing monitoring network.

3.4 Verification of Continued Attainment

According to U.S. EPA's *"Procedures for Processing Requests to Redesignate Areas to Attainment"*, each State should ensure that it has the legal authority to implement and enforce all measures necessary to attain and maintain the 2010 primary 1-hour NAAQS for SO₂. Indiana maintains the legal authority, necessary resources, and structural

components of its air quality management program to implement and enforce all measures necessary to maintain the NAAQS.

In order to track the progress of the maintenance plan, Indiana commits to periodically reevaluate the modeling assumptions and input data used in the attainment plan as well as monitor contingency plan indicators and triggers as discussed in Section 3.5.

3.5 Contingency Plan

As required by Section 175A(b) of the CAA, Indiana commits to submit to the Administrator, eight (8) years after redesignation, an additional revision of the SIP. The revision will contain Indiana's plan for maintaining the 2010 primary 1-hour NAAQS for SO₂ for an additional ten (10) years beyond the first ten (10) year maintenance period after redesignation.

Indiana commits to adopt and expeditiously implement necessary corrective actions in response to exceeding specified levels or in the event that future violations of the ambient standard occur. Indiana hereby commits to adopt and implement necessary corrective actions in the following circumstances:

3.5.1 Warning Level Response

A Warning Level Response shall be prompted whenever the annual average 99th percentile maximum daily 1-hour SO₂ concentration of 79 ppb occurs in a single calendar year within the maintenance area. A Warning Level Response will consist of a study to determine whether the SO₂ value indicates a trend toward higher SO₂ values or whether emissions appear to be increasing. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measure(s) necessary to reverse the trend, taking into consideration ease and timing for implementation, as well as economic and social considerations. Implementation of necessary control(s) in response to a Warning Level Response trigger will take place as expeditiously as possible, but in no event later than twelve months from the conclusion of the most recent calendar year.

Should it be determined through the Warning Level study that action is necessary to reverse the noted trend, procedures for control selection and implementation outlined under "Action Level Response" shall be followed.

3.5.2 Action Level Response

An Action Level Response shall be prompted whenever a violation of the standard (three-year average of the 99th percentile maximum daily 1-hour SO₂ concentration of 75 ppb or greater) occurs within the maintenance area. In the event that the Action Level is triggered and is not found to be due to an exceptional event, malfunction, or noncompliance with a permit condition or rule requirement, IDEM will determine additional control measure(s) needed to assure future attainment of NAAQS for 1-hour SO₂. In this case, measure(s) that can be implemented within a short period of time will

be selected and be in place within eighteen months from the close of the calendar year that prompted the Action Level. IDEM will also consider the timing of an action level trigger and determine if additional, significant new regulations not currently included as part of the maintenance provisions will be implemented in a timely manner and will constitute an acceptable Action Level response.

3.5.3 Control Measure Selection and Implementation

Adoption of any additional control measure(s) is subject to the necessary administrative and legal process. This process will include posting of notices, an opportunity for public hearing, and other measures required by Indiana law for rulemaking by the State of Indiana's Environmental Rules Board.

If a new measure or control is already promulgated and scheduled to be implemented at the federal or state level and that measure or control is determined to be sufficient to address the upward trend in air quality, additional local measures may be unnecessary. Furthermore, Indiana will submit to U.S. EPA an analysis to demonstrate that the proposed measure(s) are adequate to return the area to attainment.

3.5.4 Contingency Measures

U.S. EPA interprets contingency measure provisions as primarily directed at general programs which can be undertaken on an area wide basis; however, SO₂ presents special considerations. Since SO₂ control measures, are by definition, based upon what is directly and quantifiably necessary to attain the NAAQS, it would be unlikely for an area to implement the necessary emission controls, yet fail to attain the standard. Therefore, for SO₂ programs, U.S. EPA interprets "contingency measures" to mean the State agency has a comprehensive program to identify sources of violations of the 2010 primary 1-hour SO₂ standard and will undertake an aggressive follow-up for compliance and enforcement, including expedited procedures for establishing enforceable consent agreements pending the adoption of revised SIPs.

IDEM will consider necessary contingency measures to be phased-in or implemented from a comprehensive list of measures deemed appropriate and effective at the time the selection is made. Listed below are example measures that may be considered. The selection of measures will be based upon cost-effectiveness, emission reduction potential, economic and social considerations, or other factors that IDEM deems appropriate. IDEM will solicit input from all interested and affected persons in the maintenance area prior to selecting appropriate contingency measures. All of the listed contingency measures are potentially effective or proven methods of obtaining significant reductions of SO₂ emissions. Because it is not possible at this time to determine what control measure(s) will be appropriate at an unspecified time in the future, the list of contingency measures outlined below is not comprehensive. Indiana anticipates that if contingency measure(s) should ever be necessary, it is unlikely that a significant number (i.e., all those listed below) will be required.

1. Require alternative fuel
2. Require SO₂ emissions add-on control technologies for existing emission units
3. Require reduced operating hours
4. Require SO₂ emission offsets for new and modified major sources
5. Require SO₂ emission offsets for new and modified minor sources

No contingency measure shall be implemented without providing the opportunity for full public participation during which the relative costs and benefits of individual measures, at the time they are under consideration, can be fully evaluated.

4.0 Public Participation

In accordance with 40 CFR 51.102, public participation in this request was provided as follows:

Notice of availability of the complete document and a request for the opportunity for a public hearing was made available on IDEM's website on September 4, 2019, at <https://www.in.gov/idem/5474.htm>. It remained posted on the site until at least October 4, 2019.

During the public comment period IDEM did not receive any public comments. The deadline during the public comment period to request a hearing was October 4, 2019. There was not a request for a public hearing and therefore the hearing was not required to be held.

A copy of the legal public notice can be found in Appendix C.

5.0 Conclusions

The Morgan County, IN Nonattainment Area, has attained the 2010 primary 1-hour SO₂ standard. This petition demonstrates that the Morgan County, IN Nonattainment Area has complied with the applicable provisions of the CAA regarding redesignation of SO₂ nonattainment areas. IDEM has prepared a Redesignation Request and Maintenance Plan that meets the requirements of Section 110(a)(1) of the CAA.

Based on this analysis, the Morgan County, IN Nonattainment Area meets the requirements for redesignation under Section 107(d)(3) of the CAA and U.S. EPA guidance. Indiana has demonstrated that air quality improvements are due to permanent and enforceable measures. As a result of the SO₂ attainment strategies and emission limits implemented at HPB, the permanent shut down of all coal-fired electric generating units at the IPL – Eagle Valley Generating Station, and existing national control strategies, SO₂ emissions in the Morgan County, IN Nonattainment Area have decreased significantly, ensuring the area will continue to maintain compliance with the 2010 primary 1-hour SO₂ standard. Indiana has ensured that all CAA requirements necessary to support redesignation have been met.

Consistent with the authority granted to U.S. EPA under Section 107(d)(3) of the CAA, Indiana requests that the Morgan County, IN Nonattainment Area be redesignated from nonattainment to attainment for the 2010 primary 1-hour SO₂ standard simultaneously with U.S. EPA approval of the Redesignation Request and Maintenance Plan provisions contained herein.

APPENDIX A

**Air Quality System (AQS) Monitor Data
Values for the Morgan County, Indiana 2010
Primary 1-Hour SO₂ Nonattainment Area**

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: BJR

DESIGN VALUE REPORT

Report Request ID: 1764693

Report Code: AMP480

Jul. 25, 2019

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	18	109	1001								

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
DESIGN VALUE	42401		

SELECTED OPTIONS

Option Type	Option Value
SINGLE EVENT PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
MERGE PDF FILES	YES
AGENCY ROLE	PQAO
USER SITE METADATA	STREET ADDRESS
QUARTERLY DATA IN WORKFILE	NO
WORKFILE DELIMITER	,
USE LINKED SITES	YES

DATE CRITERIA

Start Date	End Date
2012	2018

APPLICABLE STANDARDS

Standard Description
SO2 1-hour 2010

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
Standard Units: Parts per billion(008)
NAAQS Standard: SO2 1-hour 2010
Statistic: Annual 99th Percentile

Level: 75

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Indiana

<u>Site ID</u>	<u>STREET ADDRESS</u>	2012			2011			2010			3-Year	
		<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Design</u>	<u>Valid</u>
		<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>
18-109-1001	ARS/IPL- Eagle Valley/ CENT	4	82	Y	3	96 *		4	105		94	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
Standard Units: Parts per billion(008)
NAAQS Standard: SO2 1-hour 2010
Statistic: Annual 99th Percentile

Level: 75

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Indiana

Site ID	STREET ADDRESS	2013			2012			2011			3-Year	
		Comp.	99th	Cert&	Comp.	99th	Cert&	Comp.	99th	Cert&	Design	Valid
		Qtrrs	Percentile	Eval	Qtrrs	Percentile	Eval	Qtrrs	Percentile	Eval	Value	Ind.
18-109-1001	AES/IPL- Eagle Valley/ CENT	4	64	Y	4	82	Y	3	96 *		81	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
Standard Units: Parts per billion(008)
NAAQS Standard: SO2 1-hour 2010
Statistic: Annual 99th Percentile

Level: 75

Design Value Year: 2014

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Indiana

<u>Site ID</u>	<u>STREET ADDRESS</u>	2014			2013			2012			3-Year	
		<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Design</u>	<u>Valid</u>
		<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>
18-109-1001	AES/IPL- Eagle Valley/ CENT	4	90	Y	4	64	Y	4	82	Y	79	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
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 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
Standard Units: Parts per billion(008)
NAAQS Standard: SO2 1-hour 2010
Statistic: Annual 99th Percentile

Level: 75

Design Value Year: 2015

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Indiana

<u>Site ID</u>	<u>STREET ADDRESS</u>	2015			2014			2013			3-Year	
		<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Design</u>	<u>Valid</u>
		<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>
18-109-1001	AES/IPL- Eagle Valley/ CENT	4	56	Y	4	90	Y	4	64	Y	70	Y

- Notes:**
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 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
 Standard Units: Parts per billion(008)
 NAAQS Standard: SO2 1-hour 2010

Design Value Year: 2016

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

Statistic: Annual 99th Percentile

Level: 75

State Name: Indiana

<u>Site ID</u>	<u>STREET ADDRESS</u>	2016			2015			2014			3-Year	
		Comp.	99th	Cert&	Comp.	99th	Cert&	Comp.	99th	Cert&	Design	Valid
		<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>
18-109-1001	AES/IPL- Eagle Valley/ CENT	4	23	Y	4	56	Y	4	90	Y	56	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
Standard Units: Parts per billion(008)
NAAQS Standard: SO2 1-hour 2010

Design Value Year: 2017

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

Statistic: Annual 99th Percentile

Level: 75

State Name: Indiana

<u>Site ID</u>	<u>STREET ADDRESS</u>	2017			2016			2015			3-Year	
		<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Design</u>	<u>Valid</u>
		<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>
18-109-1001	AES/IPL- Eagle Valley/ CENT	4	47	Y	4	23	Y	4	56	Y	42	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

Pollutant: Sulfur dioxide(42401)
Standard Units: Parts per billion(008)
NAAQS Standard: SO2 1-hour 2010

Design Value Year: 2018

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

Statistic: Annual 99th Percentile Level: 75 State Name: Indiana

<u>Site ID</u>	<u>STREET ADDRESS</u>	2018			2017			2016			3-Year	
		<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Comp.</u>	<u>99th</u>	<u>Cert&</u>	<u>Design</u>	<u>Valid</u>
		<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Qtrrs</u>	<u>Percentile</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>
18-109-1001	AES/IPL- Eagle Valley/ CENT	4	55	Y	4	47	Y	4	23	Y	42	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jul. 25, 2019

CERTIFICATION EVALUATION AND CONCURRENCE FLAG MEANINGS

FLAG	MEANING
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP255 report or the certification and quality assurance report.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
X	Certification is not required by 40 CFR 58.15 and no conditions apply to be the basis for assigning another flag value
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).

Notes: 1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

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APPENDIX B

**Supplement to the 1-Hour Sulfur Dioxide
Attainment Demonstration and Technical
Support Document for the Morgan County, IN
Nonattainment Area**

**Clay and Washington Townships, Morgan
County, Indiana**

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INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

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Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

February 8, 2019

Ms. Cathy Stepp
Regional Administrator
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604-3950

Dear Ms. Stepp:

Re: Supplement to the 1-Hour Sulfur Dioxide
(SO₂) Attainment Demonstration and
Technical Support Document for the
Morgan County, IN Nonattainment Area

The Indiana Department of Environmental Management (IDEM) developed and is providing supplemental information for the Morgan County, IN nonattainment area to the 1-Hour Sulfur Dioxide Attainment Demonstration and Technical Support Document. IDEM submitted the attainment demonstration to United States Environmental Protection Agency (U.S. EPA) on October 2, 2015.

This supplement addresses U.S. EPA's request to provide additional analyses to characterize representative background concentrations in Morgan County. In response, IDEM has conducted several analyses to revise the background concentrations and update the dispersion modeling supporting a revised attainment demonstration for the Morgan County, IN nonattainment area.

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 has been sent to Mr. Doug Aburano, Chief of U.S. EPA Region 5's Attainment Planning and Maintenance Section, as well as Mr. Chris Panos of U.S. EPA Region 5.

IDEM believes that this supplement to Indiana's attainment plan submittal for the Morgan County, IN nonattainment area satisfies Indiana's obligation under Section 172(c) of the Clean Air Act to demonstrate how the area will attain, and maintain, the 2010 1-hour SO₂ standard.

IDEM requests that U.S. EPA proceed with review and approval of the 1-Hour SO₂ Attainment Demonstration and Technical Support Document for the Morgan County, IN Nonattainment Area. If you have any questions concerning this submittal, please do not hesitate to contact Mr. Mark Derf, Chief, Technical Support and Modeling Section, Office of Air Quality, at (317) 233-5682 or mdarf@idem.IN.gov.

Sincerely,



Keith Baugues
Assistant Commissioner
Office of Air Quality

KB/sd/md/bc/gf/as

Enclosure:

Supplement to the 1-Hour Sulfur Dioxide Attainment Demonstration and Technical Support Document for the Morgan County, IN Nonattainment Area

cc: Doug Aburano, U.S. EPA Region 5 (no enclosure)
Chris Panos, U.S. EPA Region 5 (no enclosure)
John Summerhays, U.S. EPA Region 5 (no enclosure)
Sara Arra, U.S. EPA Region 5 (no enclosure)
Scott Deloney, IDEM-OAQ (no enclosure)
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Amy Smith, IDEM-OAQ (w/enclosure)
File Copy

Supplement to the
1-Hour Sulfur Dioxide Attainment Demonstration and
Technical Support Document
for the
Morgan County, IN Nonattainment Area

Clay and Washington Townships, Morgan County,
Indiana

Prepared By:
Indiana Department of Environmental Management
Office of Air Quality
February 2019

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Introduction

On October 2, 2015, Indiana submitted a document to United States Environmental Protection Agency (U.S. EPA) titled *1-Hour Sulfur Dioxide (SO₂) Attainment Demonstration and Technical Support Document for Central, West Central and Southwest Indiana Nonattainment Areas*.¹ The submittal addressed planning requirements resulting from nonattainment designations issued by U.S. EPA on July 25, 2013 for the following areas: Indianapolis, IN (Wayne, Center and Perry Townships in Marion County); Morgan County, IN (Clay and Washington Townships in Morgan County); Terre Haute, IN (Fayette and Harrison Townships in Vigo County); Southwest, IN (Veale Township in Daviess County and Washington Township in Pike County).²

On August 2, 2018, U.S. EPA proposed to approve the plan provisions for all of the areas except the Morgan County, IN nonattainment area.³ While conducting a review of the Morgan County, IN nonattainment area, U.S. EPA concluded that the background concentration that Indiana used to determine 1-hour SO₂ air quality appeared to understate the impact of unmodeled sources in the area. U.S. EPA requested additional analyses to accurately characterize representative background concentrations in Morgan County. In response, Indiana Department of Environmental Management (IDEM) has conducted several analyses to revise the background concentrations and update the air dispersion modeling analysis supporting a revised attainment demonstration for the Morgan County, IN nonattainment area. Following are technical data and discussions which demonstrate Indiana meets its obligation under Section 172(c) of the Clean Air Act (CAA) for ensuring the area's attainment of the 1-hour SO₂ standard.

1.0 Air Quality and Emissions Trends Analyses

As part of this supplement for the Morgan County, IN attainment demonstration, IDEM evaluated the air quality information for Morgan County to identify potential trends. The trends analyses evaluated 12 years of monitored data from the SO₂ ambient air monitoring site used for nonattainment area designation and SO₂ emissions reported by sources found to be contributing significantly to the monitored violation(s) in the designated nonattainment area. The results of these analyses for Morgan County are discussed below.

1.1 Air Quality Trends Analysis

IDEM conducted an air quality trends analysis for 2006 - 2017 using monitoring data from the Eagle Valley – High Street monitor, Site ID 181091001. This data, presented below in Table 1, Table 2, and Chart 1, shows improved air quality and monitored ambient concentrations below the 1-hour SO₂ standard.

¹ See <https://www.in.gov/idem/airquality/2638.htm>.

² 78 FR 47191 (<https://www.govinfo.gov/content/pkg/FR-2013-08-05/pdf/2013-18835.pdf>).

³ 83 FR 40487 (<https://www.govinfo.gov/content/pkg/FR-2018-08-15/pdf/2018-17582.pdf>).

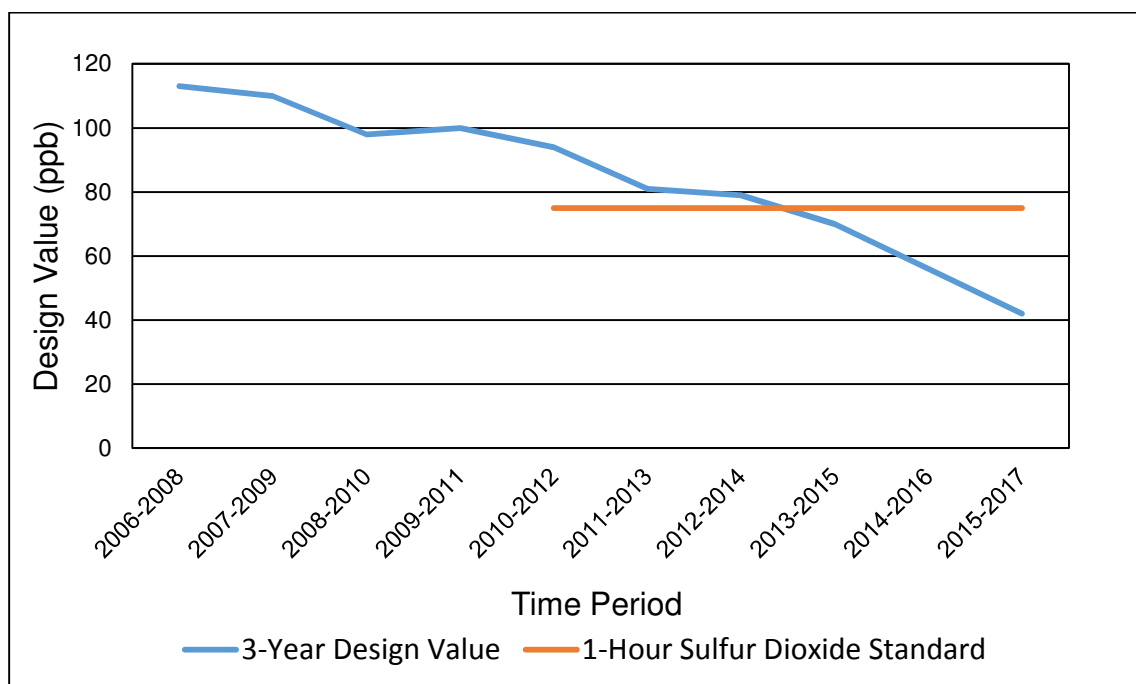
Table 1: Annual SO₂ 99th Percentile 1-Hour Daily Maximum Values, Eagle Valley – High Street Monitor, Site ID 181091001, Morgan County (ppb)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
108	140	91	98	105	96	82	64	90	56	23	47

Table 2: SO₂ 3-Year Design Values, Eagle Valley – High Street Monitor, Site ID 181091001, Morgan County (ppb)

2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017
113	110	98	100	94	81	79	70	56	42

Chart 1: SO₂ 3-Year Design Values, Eagle Valley – High Street Monitor, Site ID 181091001, Morgan County (ppb)



1.2 Emissions Trends Analysis

1.2.1 Emissions

An emissions trends analysis was conducted to include emissions reported by the Morgan County SO₂ sources evaluated for the attainment demonstration. These include Indianapolis Power and Light's Eagle Valley Power Plant (IPL - Eagle Valley) and Hydraulic Press Brick (HPB), a building aggregate manufacturer. As shown in Table 3, substantial decreases in reported SO₂ emissions have occurred at the sources within the nonattainment area. These decreases are a result of permanent and

federally enforceable emissions reductions strategies adopted pursuant to, and outlined in, the October 2, 2015, attainment demonstration.⁴

Table 3: Reported SO₂ Emissions from Contributing Sources in Morgan County (tons per year)

Year	Facility	
	IPL - Eagle Valley	Hydraulic Press Brick Company (HPB)
2006	14,841	542
2007	16,101	515
2008	13,102	
2009	11,091	342
2010	12,266	350
2011	10,875	
2012	3,436	
2013	5,461	353.85
2014	7,959	
2015	2,756	
2016	1,217	14.6
2017	0	

Note 1: IPL - Eagle Valley reported zero SO₂ emissions for 2017 as a result of shutting down their six coal-fired units and installing two natural gas-fired combined cycle combustion turbines.

Note 2: Hydraulic Press Brick is required, per 326 IAC 2-6, to report, at a minimum, triennially.

1.2.2 Permanent and Enforceable Control Measures

IPL - Eagle Valley is located in the Morgan County, IN nonattainment area and is in the current Morgan County SO₂ SIP. IPL - Eagle Valley has historically operated six boilers, units 1 - 6 and a distillate oil fired generator at its generating facility located on Blue Bluff Road in Martinsville, Indiana. IPL - Eagle Valley was issued a Prevention of Significant Deterioration (PSD) permit in October of 2013 to construct and operate two natural gas-fired combined cycle combustion turbines, an auxiliary boiler, a dew point heater, an emergency generator and an emergency fire pump. In 2017, IPL began

⁴ See <https://www.in.gov/idem/airquality/2638.htm>.

operation of the facilities permitted in 2013 and the natural gas-fired units model attainment of the 1-hour SO₂ NAAQS.

Hydraulic Press Brick has historically operated three coal-fired kilns identified as Kilns #3, #4 and #5 at its brick-making facility located on North Tidewater Road in Mooresville, Indiana. In addition to the SO₂ emissions from fuel combustion in the kilns, shale, the raw material used to produce bricks, contains sulfur compounds that also contribute to SO₂ emissions from the brickmaking-process. The company has discontinued operation of Kiln #3 and installed and operates dry sorbent injection for SO₂ emission controls on Kilns #4 and #5. This control technology achieves a 50% SO₂ reduction on average which has been determined to be adequate by IDEM and the U.S. EPA in addressing Hydraulic Press Brick's SO₂ emission contributions in the nonattainment area. Therefore, Kilns #4 and #5 are limited to a minimum control efficiency of 50% or 2.5 lbs of SO₂/MMBtu, whichever is less stringent, with a maximum limit of 6 lbs of SO₂/MMBtu. The company tests the sulfur content of the shale, which is mined onsite, to ensure the use of lower sulfur content shale. This control strategy has reduced sulfur dioxide emissions from the facility and provides a reasonable level of reduction to address its potential impact on SO₂ concentrations in Morgan County.

2.0 Modeling Analysis and Attainment Demonstration

This section presents the technical information used to analyze air quality data and demonstrate attainment of the 1-hour SO₂ standard in Morgan County. The analysis has been conducted according to U.S. EPA's Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions⁵ (U.S. EPA Guidance) and U.S. EPA's Guideline on Air Quality Models - Appendix W to 40 CFR Part 51 (Appendix W).⁶

2.1 Technical Elements of the Modeling Analysis

2.1.1 Model Selection

Per U.S. EPA Guidance and Appendix W, the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) is the preferred regulatory air quality model for 1-hour SO₂ attainment demonstration modeling. As such, the latest AERMOD version 18081 was used for the supplemental attainment demonstration modeling. The appropriate form of the SO₂ standard was modeled, which is the 4th high (99th percentile) of the 1-hour maximum daily SO₂ concentration averaged across five years. This modeled result combined with the appropriate background concentration must be less than or equal to the 1-hour SO₂ National Ambient Air Quality Standard (NAAQS) of 75 ppb. The attainment demonstration modeling results were compared to the 1-hour SO₂ NAAQS expressed as 196.2 micrograms per cubic meter (µg/m³) for dispersion modeling results, which compares to 75 ppb.⁷

⁵ See https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf.

⁶ See https://www3.epa.gov/ttn/scram/appendix_w/2016/AppendixW_2017.pdf.

⁷ 76 FR 69052 (<https://www.state.nj.us/dep/baqp/petition/EPA.pdf>).

As part of the input data required by AERMOD, the mapping of terrain elevations were assigned with the AERMAP (version 18081) terrain preprocessor mapping program. AERMAP determines the elevation heights of all buildings, sources, and receptors included in the air quality modeling. Additionally, the terrain elevation data were obtained from the National Elevation Dataset (NED) based on the Universal Transverse Mercator (UTM) coordinates for the North American Datum (NAD) 1983. These NED elevation files were downloaded from the United States Geological Survey (USGS) web site as recommended by the U.S. EPA modeling Guidance.

The regulatory default setting was selected for the air quality modeling runs and rural land-use classifications were selected for Morgan County. The downwash algorithm was invoked in all air quality modeling where stack heights did not meet the Good Engineering Practice (GEP) stack height.

2.1.2 Receptor Grid and Domain

The receptor grids and modeling domain followed the recommended approach from Appendix W, with some additional built-in conservatism. Receptor spacing for IPL - Eagle Valley was every 50 meters out to a distance of 1,000 meters. The next grid extended using 100 meter spacing out to a distance of 3,000 meters. The outer 250 meter spacing receptor grid extended out to a distance of 6,000 meters.

2.1.3 SO₂ Modeled Sources

Six emission units within IPL - Eagle Valley were modeled, including two turbines, an auxiliary boiler, a heater, emergency generator, and a fire pump. The two combined-cycle combustion turbines and auxiliary boiler operate on natural gas and have realized large reductions in SO₂ emissions. The modeled emission rates are shown below in Table 4.

**Table 4: 1-Hour SO₂ Modeled Emission Rates for Morgan County, IN
Nonattainment Area**

Modeled Source	Emission Unit	Modeled Emission Rate (lbs/hr)
IPL - Eagle Valley	Combustion Turbine 1	3.56
IPL - Eagle Valley	Combustion Turbine 2	3.56
IPL - Eagle Valley	Auxiliary Boiler	0.11
IPL - Eagle Valley	DP Heater	0.029
IPL - Eagle Valley	Emergency Generator	0.022
IPL - Eagle Valley	Fire Pump	0.006

2.1.4 Downwash and GEP Stack Height

The Building Profile Input Program (BPIP) was used to calculate the wind direction specific building dimensions for input to AERMOD. The output from BPIP is read by AERMOD to calculate the aerodynamic downwash for all modeled stacks. All buildings which may affect the aerodynamic downwash in the wake of each modeled stack were included in the program. The length, width, height and location of each building and the height and location of each stack are included as inputs to the program. Per U.S. EPA Guidance and Appendix W, because no stacks have a physical stack height above 65 meters, or approximately 213 feet, thereby not exceeding the GEP stack height formula, all stacks were modeled at their actual stack height. The actual GEP stack height formula is, for stacks in existence prior to January 12, 1979, $H_{GEP} = 2.5H$ and after January 12, 1979, $H_{GEP} = H + 1.5L$, where H is the height of the nearby structure and L is the lesser of the height or projected width of nearby structures within the 5L formula.

2.1.5 Meteorological Data and Modeled Years

Meteorological data from the years 2013 through 2017 were used in the analysis. Surface data from the Indianapolis National Weather Service (NWS) station and upper air data from the Lincoln, Illinois NWS station were processed with the latest version, 18081, of the AERMOD meteorological data processor program, AERMET. These stations represent the nearest locations to the Morgan County, IN SO₂ nonattainment area.

The latest AERMINUTE, version 15272, was used to process the 1-minute wind speed and wind direction Automated Surface Observing System (ASOS) data. The recommended default of 0.5 meters per second (m/s) for the calm wind speed threshold was used when processing the 1-minute wind speed and wind direction ASOS data from Indianapolis. Historically, the NWS meteorological data contains a number of calm wind speeds greater than 10% of the 8,760 annual observation hours. The U.S. EPA

developed the AERMINUTE program in order to reduce that proportion of calm winds by averaging the 1-minute wind speed and wind direction data.

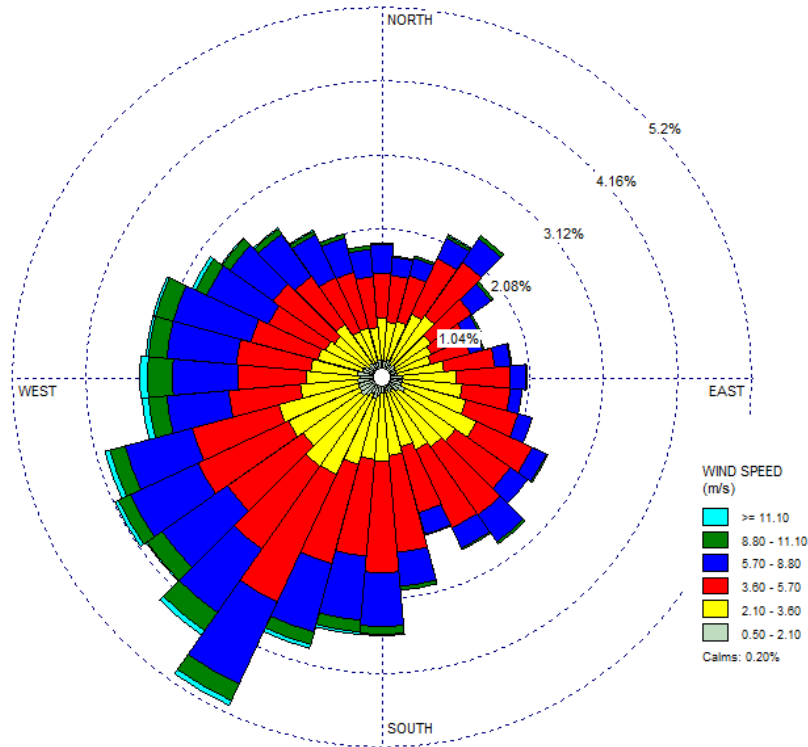
The U.S EPA program AERSURFACE was used to determine the surface characteristics, including albedo, Bowen ratio, and surface roughness, for each of the two NWS meteorological tower locations in Indianapolis. Surface characteristics were determined at each NWS location for 12 wind direction sectors with a recommended default radius of one kilometer.

The albedo and the Bowen ratio surface characteristics were adjusted during the three winter months of December, January, and February in accordance with U.S. EPA Region 5 recommended protocol.⁸ Additionally, a dry or wet Bowen ratio value was used during months when precipitation was above the 70th percentile for wet or below the 30th percentile for dry; otherwise the Bowen ratio value for average soil moisture conditions was used. The surface roughness value for snow cover was used if more than half of the month had days with at least one inch of snow on the ground. Otherwise, the no snow cover surface roughness value was used. Indianapolis NWS had a total of three winter months in which at least half of the days in the month had at least one inch of snow cover on the ground. Three of the four months had a total of 20 days or more with at least one inch of snow on the ground. As a result, the surface roughness snow cover value was not adjusted for the number of days in each month using the no snow cover surface roughness value. Therefore, the surface roughness snow cover value without adjustment was used for these four winter months.

The Indianapolis NWS wind rose plot, for the modeled years 2013 – 2017, is shown in Figure 1 below. The wind rose shows the frequency of the wind direction every ten degrees for specific wind speed ranges. The plot shows the directions from which the wind is blowing in compass degrees and the wind speeds are in meters per second. As can be seen, the prevailing winds at the Indianapolis, IN NWS station are from the southwest for 2013 through 2017.

⁸ See <https://www.pca.state.mn.us/sites/default/files/aq2-50.pdf>.

Figure 1: 2013 - 2017 Indianapolis NWS Wind Rose



2.1.6 SO₂ Background Concentrations

SO₂ background concentrations were developed in accordance with methodologies recommended by U.S. EPA Guidance and Appendix W. To determine background concentrations, two approaches were used. The first approach calculated a single background calculation; the second approach calculated seasonally-hourly varying background values. In both approaches, in order to account for unmodeled sources, the analysis focuses on a narrow band of wind directions between 25 degrees (north-northeast (NNE)) and 60 degrees (east-northeast (ENE)), which corresponds, approximately, to HPB located upwind of the Eagle Valley – High Street monitor. The most recent ambient monitoring data from 2015 – 2017 were used in the calculations.

The background concentrations determined reflect times when winds are blowing the emissions of IPL - Eagle Valley away from the monitor, so that the background values will not reflect any impact of the emission reductions at this source. Conversely, given the wind directions used in this analysis, emission reductions at HPB are expected to have a direct impact on background concentrations monitored at the Eagle Valley – High Street monitor. The most recent three years (2015 to 2017) reflect approximately two years before sorbent injection began and approximately one year after sorbent injection began. Using the methods described above, analysis of concentrations using the most recent three years yields a background value of 36.7 ppb or 96.0 $\mu\text{g}/\text{m}^3$. Continued operation of the sorbent injection control system will help assure that the impacts of unmodeled sources on monitored concentrations will remain well below the 1-hour SO₂ standard.

Using the methods described above, analysis of concentrations using this most recent three years, a single background value of 36.7 ppb, or 96.0 $\mu\text{g}/\text{m}^3$ was determined.

The second approach used the same data set of hours and associated concentrations when winds were from between 25 and 60 degrees as was used in determining a single background concentration. These data were sorted by season and by hour. Data were available for almost all hours for the first 23 hours of the day, with no data available for the last hour of the day. Therefore, a value for the 24th hour of the day was determined by averaging the value for the 23rd hour and the value for the 1st hour. The 96 bins (for four seasons and 24 hours) had an average of 33 observations each. For purposes of improving the robustness of this analysis, all three years were combined in a single bin; no year-by-year analysis was conducted. The second highest value in each bin was selected as the background concentration for the applicable season and hour. This method resulted in 96 individual seasonal-hourly values that were used as background in the modeling as shown in Table 5. These values range from 1.1 ppb to 43.7 ppb (2.8 to 114.5 $\mu\text{g}/\text{m}^3$), with an average of 16.1 ppb (42.2 $\mu\text{g}/\text{m}^3$).

Table 5: Seasonal-Hourly Specific Background Concentrations (ppb)

Hour	Winter	Spring	Summer	Fall
1	9.5	25	17	28.4
2	3.6	17.5	6	27.5
3	11	18.7	7.4	37.4
4	11	40.9	19	37.1
5	8.5	29.6	18.5	23
6	19	31	16.9	19.1
7	27.2	30	15.8	14.8
8	3.7	28.5	20.9	34.5
9	5	27.5	18.8	24.2
10	11	9.4	13	30
11	4.1	7	8.4	13.6
12	10	9.8	4	14
13	4	5.9	4.8	18.5
14	7	5.2	3.5	18.5
15	7	7.4	3.6	17.5
16	12.5	11	6	16
17	6	9.6	9.4	22.2
18	10	12.1	5.1	28.5
19	11	18.4	1.3	25
20	5	22.7	28	36
21	4.8	18.7	19.9	32.7
22	4	10	1.1	37.9
23	3.5	23	15.5	43.7
*24	6.5	24	16.25	36.05

2.2 Attainment Demonstration Modeling Results

IDEM has conducted modeling analyses to demonstrate the nonattainment area located in Morgan County will meet the 1-hour SO₂ NAAQS 75 ppb or 196.2 µg/m³.

As depicted in Table 6, a maximum impact from modeled sources of 7.69 µg/m³ was determined. Background values, determined by two methodologies, were then added to the maximum modeled impact to determine compliance with the 1-hour SO₂ standard.

Using the single background concentration value of 36.7ppb, or 96.0 µg/m³, results in a design value of 103.69 µg/m³. Using varying seasonal/hourly background concentrations yields a maximum design value of 117.33 µg/m³. In both cases, the modeled design values are below 196.2 µg/m³, which is used for modeling purposes and is comparable to the standard of 75 ppb. Therefore, the AERMOD modeling results demonstrate the nonattainment area located in Morgan County will meet the 1-hour SO₂ NAAQS.

Table 6: 1-Hour SO₂ Air Dispersion Modeling Analysis Results for the Morgan County, IN Nonattainment Area

Background Concentration		Maximum Impact from Modeled Source(s)	Modeled Design Value	Is the modeled concentration below 196.2 µg/m ³ ?
Single Value	96.0 µg/m ³	7.69 µg/m ³	103.69 µg/m ³	Yes
Varying	See Table 5	7.69 µg/m ³	117.33 µg/m ³	Yes

*196.2 µg/m³ is used for dispersion modeling and compares with the 1-Hour SO₂ NAAQS of 75 ppb.

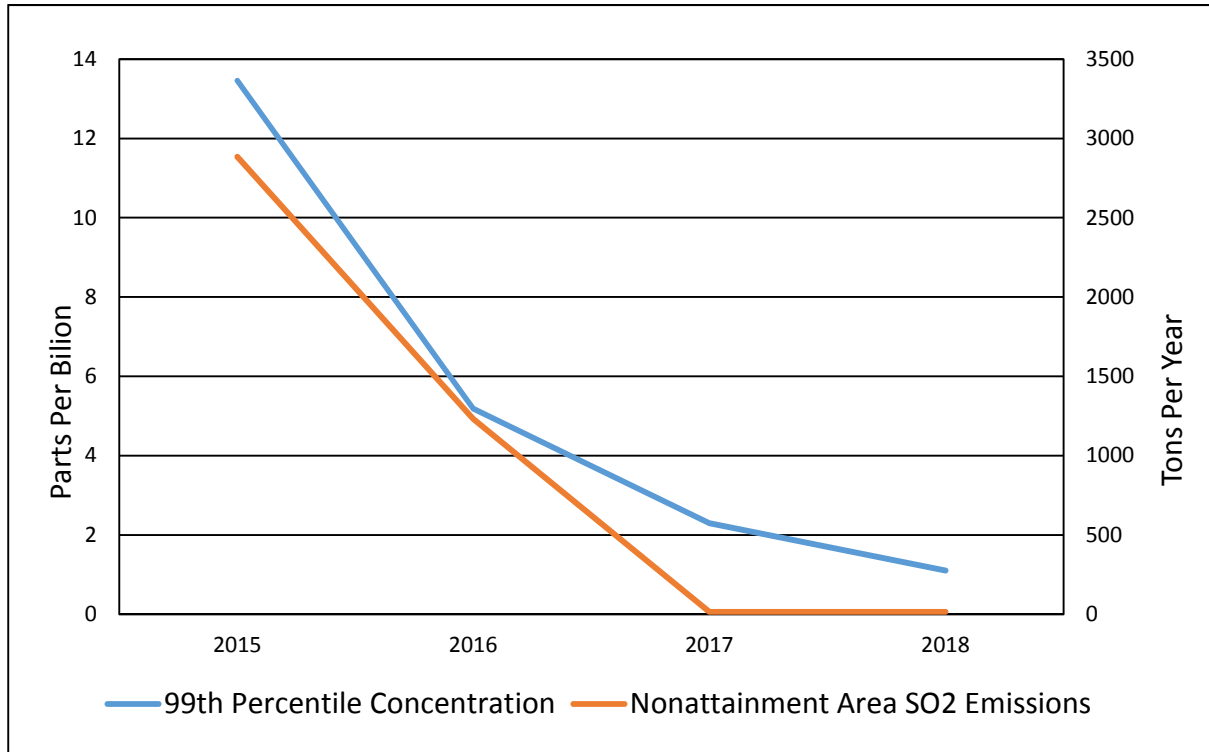
2.3 Additional Analysis

In order to demonstrate that the emission reductions realized in the Morgan County, IN nonattainment area have wide ranging benefits, an analysis was conducted to determine whether decreases of ambient concentrations of SO₂ occurred nearby. The closest SO₂ monitor outside of the Morgan County, IN nonattainment area is the Indianapolis - Harding St. monitor (ID 180970056) in Marion County, which is 31 km to the east-northeast. SO₂ concentrations at the Indianapolis - Harding St. monitor were evaluated when the winds were blowing from 200 to 240 degrees when the Morgan County, IN nonattainment area would be considered upwind.

As can be seen in Chart 2, a strong correlation is shown between emissions reductions that occurred within the Morgan County, IN nonattainment area and monitored SO₂ concentrations in Marion County. This illustrates that the emissions

reductions that occurred in the Morgan County, IN nonattainment area has had beneficial effects within the region and beyond.

Chart 2: Correlation of Monitored SO₂ Concentrations in Marion County with Upwind Emission Reductions in the Morgan County, IN Nonattainment Area



3.0 Conclusion

This document contains a thorough analysis of air quality trends, emissions trends and air dispersion modeling. Results are included that support the conclusion that Indiana's attainment plan for the Morgan County, IN nonattainment area will ensure compliance with the 1-hour SO₂ standard.

Since the Morgan County, IN area's nonattainment designation in 2013, permanent and enforceable emissions control measures have been established that have significantly reduced SO₂ emissions from the area. Compliance with these reduction strategies is reflected in the monitored SO₂ levels in Clay and Washington Townships in Morgan County and nearby downwind areas. Recent monitoring data shows concentrations well below the 1-hour SO₂ standard.

In conclusion, this supplement to Indiana's October 2, 2015 attainment plan submittal for the Morgan County, IN nonattainment area satisfies Indiana's obligation under Section 172(c) of the CAA to demonstrate how the area will attain, and maintain, the 2010 1-hour SO₂ standard.

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APPENDIX C

Public Participation Process Documentation

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LEGAL NOTICE OF PUBLIC HEARING

Draft Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, Indiana 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area

Clay and Washington Townships, Morgan County, Indiana

Note: Legal notices for public hearings are no longer published in newspapers, but can be found on the Indiana Department of Environmental Management's web site at:
<http://www.in.gov/idem/5474.htm>.

Notice is hereby given under 40 Code of Federal Regulations (CFR) 51.102 that the Indiana Department of Environmental Management (IDEM) is accepting written comment and providing an opportunity for a public hearing regarding the *Draft Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, Indiana 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area - Clay and Washington Townships, Morgan County, Indiana*. All interested persons are invited and will be given reasonable opportunity to express their views concerning this submittal.

On July 25, 2013, U.S. EPA designated Clay and Washington Townships in Morgan County, Indiana, nonattainment under Subpart 1 of Section 107(d)(1) of the CAA (78 FR 47191). These designations became effective on October 4, 2013.

SO₂ monitoring data for the most recent three (3) years, 2016-2018, demonstrates that the air quality meets the 2010 primary 1-hour SO₂ standard in the nonattainment area. This fact, accompanied by the permanent and enforceable decreases in emission levels discussed in Section 2.3, of the Draft Redesignation and Maintenance Plan, justifies a redesignation to attainment for Indiana's nonattainment area based on Section 107(d)(3)(E) of the CAA.

Copies of the Draft Redesignation Petition and Maintenance Plan will be available on or before September 4, 2019 to any person upon request at the following locations:

- Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, 100 North Senate Avenue, Room N1003, Indianapolis, Indiana
- Morgan County Public Library, Monrovia Branch, 145 South Chestnut Street, P.O. Box 218, Monrovia, Indiana 46157

The draft documents will also be available on the following web pages:

<https://www.in.gov/idem/airquality/2443.htm>
<https://www.in.gov/idem/airquality/2392.htm>.

Any person may submit written comments on the *Draft Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, Indiana 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area - Clay and Washington Townships, Morgan County, Indiana*. Written comments should be directed to: Ms. Leslie Ferguson, Indiana Department of Environmental Management, Office of Air Quality, Room 1003, 100 North Senate Avenue, Indianapolis, Indiana 46204. Comments can also be submitted via fax (317) 233-5967 or e-mail at lferguso@idem.IN.gov. Interested parties may also present oral or written comments at the public hearing, if held. Oral statements will be heard, but for the accuracy of the record, statements should be submitted in writing. Written statements may be submitted to the attendant designated to receive written comments at the public hearing.

A public hearing on the *Draft Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, Indiana 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area - Clay and Washington Townships, Morgan County, Indiana* will be held if a public hearing request is received by October 4, 2019. If a hearing is requested, the hearing will be held on October 10, 2019. The hearing will convene at 6:00 p.m. local time at Morgan County Public Library, 145 South Chestnut Street, P.O. Box 218, Monrovia, Indiana 46157. If a request for a public hearing is not received by October 4, 2019, the hearing will be cancelled. Interested parties can check the online IDEM calendar at <https://calendar.in.gov/site/idem/> or contact Ms. Leslie Ferguson at (317) 233-1179 or lferguso@idem.in.gov, after October 4, 2019, to see if the hearing has been cancelled or will convene.

If a hearing is held, afterward, a transcript of the hearing and all written submissions provided at the public hearing shall be open to public inspection at IDEM and copies may be made available to any person upon payment of reproduction costs. Any person heard or represented at the hearing or requesting notice shall be given written notice of actions resulting from the hearing.

For additional information contact Ms. Leslie Ferguson, at the Indiana Department of Environmental Management, Office of Air Quality, Room N1003, Indiana Government Center North, 100 North Senate Avenue, Indianapolis, IN 46204, or call (317) 233-1179 or (800) 451-6027 ext. 3-1179 (in Indiana).

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Speech and hearing impaired callers may contact the agency via the Indiana Relay Service at 1-800-743-3333. Individuals requiring reasonable accommodations for participation in this hearing should contact the IDEM Americans with Disabilities Act (ADA) coordinator at: Attn: ADA Coordinator, Indiana Department of Environmental Management – Mail Code 50-10, 100 North Senate Avenue, Indianapolis, IN 46204-2251, or call (317) 233-1785 (voice) or (317) 233-6565 (TDD). Please provide a minimum of 72 hours notification.



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

100 N. Senate Avenue • Indianapolis, IN 46204

(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

September 3, 2019

CERTIFICATE OF PUBLICATION

This is to certify that the Indiana Department of Environmental Management (IDEM) Notice of the opportunity for a Public Hearing regarding the following:

- Draft Request for Redesignation and Maintenance Plan for Attainment of the Partial Morgan County, IN 2010 Primary 1-Hour Sulfur Dioxide Nonattainment Area

was published on IDEM's web site on August 30, 2019. It is expected that it will remain posted on the site until at least October 4, 2019.

The notice in full was available online at the following web address, under "Central/Morgan County":

<http://www.in.gov/idem/5474.htm>

The draft document was also posted online August 30, 2019 at the following web address under "Morgan County":

<https://www.in.gov/idem/airquality/2443.htm>

Web publication of the notice was at the request of Scott Deloney, Branch Chief, Programs Branch, Office of Air Quality, IDEM.

By:

Mike Finklestein
IDEM Webmaster

Attachments:

Copy of web page as published.

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