



State Implementation Plans

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Gale Ferris

Senior Environmental Manger, Air Quality Standards and Implementation

Indiana Department of Environmental Management

Office of Air Quality - Air Programs Branch

Phone: 317/234-3653

Email: gferris@idem.IN.gov



Overview

- U.S. EPA sets National Ambient Air Quality Standards (NAAQS) to limit outdoor air concentrations of six criteria pollutants to protect public health and welfare.
- Nonattainment areas may be established when a new or revised NAAQS is issued.
- When U.S. EPA designates an area “nonattainment,” the state may be required to develop an attainment plan.
 - Attainment plans describe measures that a state is taking to improve air quality to ensure nonattainment areas achieve the NAAQS in a timely manner.



Requests for Redesignation

- States may submit a request for redesignation when the following, specific criteria have been met:
 - The area has monitored attainment of the NAAQS based on three consecutive years of ambient air quality monitoring data.
 - The area has a fully approved SIP under Section 110(k) of the Clean Air Act.
 - U.S. EPA has determined that the improvement in air quality is due to permanent and enforceable reductions in emissions.
 - Indiana has submitted, and U.S. EPA has approved, a maintenance plan for the area.
 - The area has met all other applicable federal CAA requirements.

Requests for Redesignation

- States may submit a request to redesignate an area to attainment when specific criteria have been met.
 - Demonstrates that the area has met the NAAQS.
- A maintenance plan is required to be submitted along with the redesignation petition.
 - Shows how the area will continue to attain the NAAQS.

Maintenance Plans

- Once an area is in maintenance status, the Clean Air Act requires states to implement a plan that includes strategies to ensure the area continues to attain the NAAQS. The maintenance plan includes:
 - A current, comprehensive inventory of emissions.
 - Enforceable measures to reduce emissions.
 - A demonstration that the measures will keep the area in attainment with the NAAQS for a period of 10 years after U.S. EPA has formally redesignated the area to attainment.
 - Contingency measures that may be applied if the area re-violates the NAAQS.



Example Designation/Redesignation

2010 Primary 1-Hour SO₂ NAAQS

- On June 2, 2010, U.S. EPA promulgated a new 1-hour primary NAAQS for sulfur dioxide (SO₂).
- On August 5, 2013, U.S. EPA designated Veale Township in Daviess County and Washington Township in Pike County in southwest Indiana; as a single nonattainment area (Southwest, IN), based on monitoring data violating the NAAQS.

Monitoring Data for the Southwest, IN 1-Hour SO₂ Area, 2009 – 2011

Site ID	County	Site Name	99th Percentile Values			3-Year Design Value
			2009	2010	2011	2009-2011
180270002	Daviess	AES/IPL - Petersburg	138	115	100	118
181250005	Pike	Petersburg - Arda Lane	194	211	119	175

SO₂ NAAQS = 75 ppb



Example Designation/Redesignation

2010 Primary 1-Hour SO₂ NAAQS

- These designations became effective on October 4, 2013, establishing an attainment date of October 4, 2018.
 - The time allowed for attainment varies by pollutant (i.e., five years for sulfur dioxide, carbon monoxide, nitrogen dioxide, and lead, six years for particulate matter, and somewhere between 3-20 years for ozone depending on the severity of the air quality problem in the area).



Southwest Indiana - 2010 Primary 1-Hour SO₂

Three-Year Design Values for the Southwest, IN 1-Hour SO₂ Area, 2011 – 2017

Site ID	County	Site Name	Three-Year Design Values (ppb)						
			2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017
180270002	Daviess	AES/IPL - Petersburg	118	98	109	112	117	74	44
181250005	Pike	Petersburg - Arda Lane	175	157	143	155	133	86	41

SO₂ NAAQS = 75 ppb



Southwest Indiana - 2010 Primary 1-Hour SO₂

- On October 24, 2018, IDEM submitted a request for redesignation and maintenance plan for attainment of the 2010 primary 1-hour SO₂ NAAQS as the area monitored attainment of the standard, based on three consecutive years of ambient air quality monitoring data.
- On March 2, 2021, U.S. EPA redesignated the area to attainment.



Southwest Indiana - 2010 Primary 1-Hour SO₂

Request for Redesignation

Indiana's request for redesignation demonstrated that:

- Three-year design values from 2011 through 2017 showed a progression from nonattainment to attainment.
- The area recorded three (3) years of complete, quality-assured ambient air quality monitoring data for the years 2015 through 2017 demonstrating attainment of the 1-hour standard.



Southwest Indiana - 2010 Primary 1-Hour SO₂

- Indiana performed extensive modeling of the Southwest, IN Area to determine the effect of local and national emission control strategies on SO₂ and to demonstrate attainment of the NAAQS.
- Indiana relied on the attainment plan to serve as the maintenance plan for the area since it relies on modeling based on maximum allowable limits.
- This modeling was based on never-to-exceed maximum-allowable rates to demonstrate attainment of the standard and to illustrate that the standard would be maintained for the requisite 10 years and beyond without regard to any changes in operation rate at the affected sources which involve increases in the maximum allowable limits.



Southwest Indiana - 2010 Primary 1-Hour SO₂

- Modeling results for Daviess and Pike counties showed total 1-hour SO₂ concentration values (i.e., maximum 1-hour SO₂ modeled concentration values added to background concentration values) were below the 1-hour standard of 75 parts per billion or 196.2 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Modeling Results for the Southwest, IN 1-Hour SO₂ Area

County	Daviess	Pike
Modeled Concentration ($\mu\text{g}/\text{m}^3$)	170.0	169.1
Background Concentration ($\mu\text{g}/\text{m}^3$)	22.5	25.9
Total Concentration 192.4 ($\mu\text{g}/\text{m}^3$)	192.4	194.8
1-Hour SO₂ NAAQS 192.4 ($\mu\text{g}/\text{m}^3$)	196.2	196.2
Models Below Standard?	Yes	Yes

Southwest Indiana - 2010 Primary 1-Hour SO₂

- Permanent and enforceable reductions were achieved at the primary sources of SO₂ emissions within the nonattainment area with the closing of the Hoosier Energy - Ratts Generating Station and addition of new control technology at the IPL - Petersburg Generating Station.
- As a result, SO₂ emissions from these sources declined by approximately 77% between the nonattainment-year (2011) and the attainment-year (2017) resulting in attainment of the 2010 primary 1-hour SO₂ standard.



Southwest Indiana - 2010 Primary 1-Hour SO₂

Actual SO₂ Emission Reductions from 2011 Nonattainment-Year to 2017
Attainment-Year for EGUs, Southwest, IN (tons per year)

Affected Source	Type of Reduction	Effective Date of Reduction	Actual 2011 Emissions (tpy)	Actual 2017 Emissions (tpy)	Change (tpy)
Hoosier Energy - Ratts Generating Station	Facility Closed	March 10, 2015	9,496	0	-9,496
IPL - Petersburg Generating Station	New Controls	January 1, 2017 (326 IAC 7-4-15)	25,232	7,967	-17,265
Total			34,728	7,967	-26,761



Southwest Indiana - 2010 Primary 1-Hour SO₂

IPL - Petersburg is prohibited from reducing or removing emissions controls (anti-backsliding) unless such a change is first approved by U.S. EPA. Permanent and enforceable SO₂ emission limits and operational requirements implemented at IPL - Petersburg are shown below.

1-Hour SO₂ Emission Rate Limits for IPL - Petersburg (326 IAC 7-4-15)

Modeled Source	Emission Unit	lbs/hr	lbs/MMBtu
IPL - Petersburg Generating Station	Unit 1	330.0	0.15
	Unit 2	621.6	0.15
	Unit 3	2,049.8	0.37
	Unit 4	1,924.5	0.35
	Diesel Generators PB-2, PB-3, PB-4	500 Calendar Year Operating Limit (each)	



Southwest Indiana - 2010 Primary 1-Hour SO₂

- Indiana met all SIP requirements under Sections 110 and Part D of the Clean Air Act by having an approved attainment demonstration and technical support document, infrastructure SIP, and updated Indiana SIP for SO₂.

Maintenance Plan

Indiana's maintenance plan demonstrated that:

Attainment Inventory:

The level of modeled SO₂ emissions in the area is sufficient to attain and maintain the NAAQS. This inventory is based on the allowable limits in Indiana's rules for the sources identified in the area's attainment plan submitted in October 2015. The Hoosier Energy-Ratts Generating Station subsequently closed and was permanently dismantled in late-2016.



Southwest Indiana - 2010 Primary 1-Hour SO₂

Allowable SO₂ Emissions for Identified Sources in Daviess and Pike Counties (tons per year)

Affected Sources	SO ₂ Emissions (tpy)
Hoosier Energy - Ratts Generating Station	512
IPL - Petersburg Generating Station	21,661
Total	22,173



Southwest Indiana - 2010 Primary 1-Hour SO₂

Demonstration of Maintenance

- Because there are not any large sources of SO₂ projected to enter the area, the area can be expected to demonstrate attainment of the NAAQS for the requisite 10 years and beyond.



Southwest Indiana - 2010 Primary 1-Hour SO₂

Projected SO₂ Emissions to 2030 Maintenance-Year for Sources in the Southwest, IN Nonattainment Area (tons per year)

Affected Source	2030 Projected Emissions (tpy)
Hoosier Energy - Ratts Generating Station	0
IPL - Petersburg Generating Station	21,661
TOTAL	21,661

Southwest Indiana - 2010 Primary 1-Hour SO₂

Continued Operation of a Monitoring Network

- Indiana commits to continue monitoring SO₂ in the area, consult with U.S. EPA Region V staff prior to making changes to the existing monitoring network should changes become necessary in the future, quality-assure the monitoring data, and enter all data into AQS in a timely manner.

Verification of Continued Attainment

- Indiana maintains the legal authority, necessary resources, and structural components to implement and enforce measures necessary to maintain the NAAQS.

Southwest Indiana - 2010 Primary 1-Hour SO₂

Contingency Plan

- Indiana will submit an additional revision of the SIP that contains Indiana's plan for maintaining the NAAQS for an additional 10 years beyond the first 10-year maintenance plan period after redesignation (i.e., 2040). This maintenance plan revision is due no later than April 30, 2029.
- Indiana will adopt and expeditiously implement necessary corrective actions in response to exceeding specific levels or in the event of future violations of the NAAQS occur.

Air Quality and You

- U.S. EPA has published detailed guidance as to what requirements must be met by nonattainment areas prior to consideration for redesignation to attainment:

[Procedures for Processing Requests to Redesignate Areas to Attainment](#)

- To learn more about Indiana's State Implementation Plan, visit:

[About Indiana's SIP](#)