



Indiana Department of Environmental Management

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Michael R. Pence
Governor

Carol S. Comer
Commissioner

August 19, 2016

Mr. Robert Kaplan
Acting Regional Administrator
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3950

Re: Revised Request for Redesignation and
Maintenance Plan for Indiana's Portion
(Lawrenceburg Township, Dearborn County) of
the Cincinnati-Hamilton, OH-KY-IN, 1997
Annual PM_{2.5} Nonattainment Area

Dear Mr. Kaplan:

The Indiana Department of Environmental Management (IDEM) submits a Revised Redesignation Petition and Maintenance Plan for Indiana's portion (Lawrenceburg Township, Dearborn County) of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana (OH-KY-IN), Nonattainment Area in reference to the 1997 annual fine particle (PM_{2.5}) National Ambient Air Quality Standard (NAAQS), attached hereto. IDEM provided opportunity for a public hearing concerning this Redesignation Petition and Maintenance Plan on August 10, 2016. There were not any requests for a hearing to be held, therefore it was canceled. The public comment period began on June 29, 2016, and concluded on August 15, 2016.

This submittal documents the public review process, including a detailed summary of and response to substantive comments.

The attached document consists of the following:

Redesignation Petition and Maintenance Plan

- A formal request that Indiana's portion of the Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area for the 1997 Annual PM_{2.5} 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 (CAA) and in United States Environmental Protection Agency's (U.S. EPA's) Redesignation Guidance.
- Monitoring values through 2015.

- A projected-year of 2020 is established for ammonia (NH₃) and volatile organic compounds (VOCs) projections. It is representative of the previous nitrogen oxides (NO_x), sulfur dioxides (SO₂), and direct PM_{2.5} projected year of 2021 and is reasonably applicable out to 2026.
- The appendices of the document contain historical air quality trend data for NO_x, SO₂, and direct PM_{2.5} from Indiana's January 25, 2011 redesignation petition and maintenance plan submittal (Appendix B, C, and D) as well as a Regulatory Impact Analysis (RIA) projected emissions inventory for NH₃ and VOCs (Appendix E).

IDEM submitted a final Redesignation Petition and Maintenance Plan for Lawrenceburg Township, Dearborn County, Indiana, to U.S. EPA for review and approval on January 25, 2011, and was classified as maintenance under the 1997 annual fine particle standard on December 23, 2011 (76 FR 80253). On March 18, 2015, the federal Sixth Circuit Court of Appeals' vacated U.S. EPA's conclusion that the Cincinnati-Hamilton metropolitan area had attained the 1997 annual PM_{2.5} standard.

On February 11, 2016, in response to the court's decision, IDEM submitted supporting information, pursuant to Section 172(c)(1) of the Clean Air Act (CAA), regarding reasonably available control measures (RACMs) and reasonably available control technology (RACT) in Indiana's portion of the nonattainment area. Section 172(c)(1) of the CAA requires a demonstration that the State has adopted all reasonable and available control measures to demonstrate attainment as expeditiously as practicable. IDEM determined that there are not any additional reasonably available measures that will, or would have, advanced the attainment date.

The American Electric Power (AEP) – Tanners Creek Generating Station was the primary source of PM_{2.5} precursor emissions within Indiana's portion of the nonattainment area. As the result of a settlement with U.S. EPA to resolve violations of the CAA's new source review (NSR) requirements, AEP permanently retired its Tanners Creek Generating Station located in Lawrenceburg Township, Dearborn County (i.e. all four coal-fired electric generating units) on June 1, 2015. As a result of the closure of this facility, direct PM_{2.5} and fine particle precursor emissions in Dearborn County, Indiana, have decreased significantly further improving air quality in the Cincinnati-Hamilton, OH-KY-IN, nonattainment area, above and beyond what Indiana demonstrated as necessary to support ongoing attainment of the area.

The revised redesignation petition and maintenance plan supports Indiana's February 11, 2016, request for U.S. EPA to act on the RACM/RACT portion of the Annual PM_{2.5} Attainment Demonstration and Technical Support Document for the Indiana Portion of the Cincinnati-Hamilton, OH-KY-IN, Fine Particle Nonattainment Area, Dearborn County (Lawrenceburg Township), Indiana submitted to U.S. EPA on July 3, 2008.

Mr. Robert Kaplan

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IDEM believes that this revised Redesignation Petition and Maintenance Plan for Indiana's Portion (Lawrenceburg Township, Dearborn County) of the Cincinnati-Hamilton OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area, the RACM/RACT Determination submitted to U.S. EPA on February 11, 2016, the Redesignation Petition and Maintenance Plan for Lawrenceburg Township submitted to U.S. EPA on January 25, 2011, and the Attainment Demonstration and Technical Support Document submitted to U.S. EPA on July 3, 2008, meet the requirements for redesignation under Section 107(d)(3) of the CAA and U.S. EPA guidance.

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 Doug Aburano, Chief of U.S. EPA Region 5's Attainment Planning and Maintenance Section and Chris Panos of U.S. EPA Region 5.

IDEM requests that U.S. EPA proceed with review and approval of this submittal contingent upon approval of the February 11, 2016, RACM/RACT determination for Lawrenceburg Township, Dearborn County, Indiana. If you have any questions or need additional information, please contact Brian Callahan, Section Chief, Air Quality Standards and Implementation, Office of Air Quality, IDEM, at (317) 232-8244 or bcallaha@idem.IN.gov.

Sincerely,



Keith Baugues
Assistant Commissioner
Office of Air Quality
Indiana Department of Environmental
Management

KB/sd/bc/gf/lf

Enclosure: Revised Redesignation Petition and Maintenance Plan for Indiana's Portion (Lawrenceburg Township, Dearborn County) of the Cincinnati-Hamilton OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area

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REVISED REQUEST FOR
REDESIGNATION AND
MAINTENANCE PLAN FOR THE
INDIANA PORTION OF THE
CINCINNATI-HAMILTON, OHIO,
KENTUCKY, INDIANA (OH-KY-IN),
1997 ANNUAL FINE PARTICLES
NONATTAINMENT AREA

**Lawrenceburg Township, Dearborn County,
Indiana**

Developed By:
The Indiana Department of Environmental Management

January 2011
Revised August 2016

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ATTACHMENT 1: AQS Report for the Cincinnati-Hamilton, OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area from 2005-2015 [PDF]
- B Historical Nitrogen Oxides (NO_x), Sulfur Dioxides (SO₂) and Direct Fine Particulate Matter (PM_{2.5}) Point Source Emissions (2005 and 2008) in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area
- C Historical Nitrogen Oxides (NO_x), Sulfur Dioxides (SO₂) and Direct Fine Particulate Matter (PM_{2.5}) (2005 and 2008) Emission Trends for All Emission Categories in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area
- D Historical Nitrogen Oxides (NO_x) and Sulfur Dioxide (SO₂) Emissions from Electric Generating Units in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area
- E Regulatory Impact Analysis (RIA) PM_{2.5} Precursor Emissions Inventory (provided by U.S. EPA, Region 5), 2007 Base-Year and 2020 Projected-Year for Ammonia (NH₃) and Volatile Organic Compounds (VOCs) in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area
- F Public Participation Process Documents

ACRONYMS/ABBREVIATIONS LIST

AEP	American Electric Power
AQS	Air Quality System
CO	carbon monoxide
CAA	Clean Air Act
CAIR	Clean Air Interstate Rule
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CMAQ	Community Multi-scale Air Quality
CTG	Control Technology Guidelines
CSAPR	Cross-State Air Pollution Rule
EGUs	electric generating units
FR	Federal Register
IAC	Indiana Administrative Code
IDEM	Indiana Department of Environmental Management
IN	Indiana
IPM	Integrated Planning Model
KDEP	Kentucky Department for Environmental Protection
km	kilometer
KY	Kentucky
LADCO	Lake Michigan Air Director's Consortium
MATS	Mercury and Air Toxics Standards
MACT	Maximum Achievable Control Technology
MOVES	Motor Vehicle Emission Simulator
MVEB	Motor Vehicle Emission Budget
MWe	megawatt electrical
NAAQS	National Ambient Air Quality Standard
NH ₃	Ammonia
NEI	National Emissions Inventory
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSR	New Source Review
OAQ	Office of Air Quality
OH	Ohio
Ohio EPA	Ohio Environmental Protection Agency
PM	Particulate Matter
PM _{2.5}	particulate matter less than or equal to 2.5 µg/m ³ or fine particles
ppm	parts per million
PSD	Prevention of Significant Deterioration
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RIA	Regulatory Impact Analysis
RICE	Reciprocating Internal Combustion Engines
RRF	Relative Response Factor
SIP	State Implementation Plan

SNCR	Selective Non-Catalytic Reduction
SO ₂	sulfur dioxide
SUV	sport utility vehicle
tpy	tons per year
µg/m ³	micrograms per cubic meter
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compound

**REVISED REQUEST FOR REDESIGNATION AND MAINTENANCE PLAN FOR
ATTAINMENT IN THE INDIANA PORTION OF THE CINCINNATI-
HAMILTON, OH-KY-IN, 1997 ANNUAL FINE PARTICLES
NONATTAINMENT AREA**

LAWRENCEBURG TOWNSHIP, DEARBORN COUNTY, INDIANA

1.0 INTRODUCTION

This document supports Indiana's request that the Indiana portion (Lawrenceburg Township in Dearborn County, Indiana) of the Cincinnati-Hamilton, Ohio (OH)-Kentucky (KY)-Indiana (IN), nonattainment area be redesignated from nonattainment to attainment for the 1997 annual fine-particles (PM_{2.5}) standard. In addition, the state of Ohio intends to submit a request for their portion of the Cincinnati-Hamilton, OH-KY-IN, nonattainment area to be redesignated from nonattainment to attainment of the 1997 annual fine particles standard. The Cincinnati-Hamilton, OH-KY-IN, nonattainment area has recorded three (3) years of complete, quality-assured ambient air quality monitoring data for the years 2013 – 2015, demonstrating attainment of the 1997 annual standard for PM_{2.5}.

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 (or a portion thereof) has attained the national ambient air quality standard (NAAQS).
- (b) A state implementation plan (SIP) for the area under Section 110(k) 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 that is fully approved.
- (e) A determination that all Section 110 and Part D requirements have been met.

This document addresses each of these requirements and provides additional information to support continued compliance with the 1997 annual PM_{2.5} standard.

1.1 Geographical Description

The Cincinnati-Hamilton, OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area consists of Lawrenceburg Township, located in Dearborn County in southeast Indiana; Boone, Campbell, and Kenton counties located in north central Kentucky; and Butler, Clermont, Hamilton, and Warren counties located in southwestern Ohio. These counties are part of the Cincinnati, OH-KY-IN Core Based Statistical Area (CBSA). The Ohio River flows along the borders of Indiana, Kentucky, and Ohio and the area lies within the Ohio River Valley. The Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area (also called the Cincinnati nonattainment area) is depicted in Figure 3.1.

Indiana Department of Environmental Management (IDEM), on behalf of the State of Indiana, is requesting the redesignation of Lawrenceburg Township, Dearborn County, Indiana to attainment of the 1997 annual PM_{2.5} standard. The Kentucky Department for Environmental Protection (KDEP) is responsible for Boone, Campbell, and Kenton counties Kentucky. The Ohio Environmental Protection Agency (Ohio EPA) is responsible for Butler, Clermont, Hamilton, and Warren counties Ohio. Kentucky's portion has already been redesignated to attainment and Ohio EPA is requesting redesignation of its portion from United States Environmental Protection Agency (U.S. EPA) Region 5 concurrently. As such, this submittal only covers Lawrenceburg Township, Dearborn County, Indiana.

1.2 National Ambient Air Quality Standards Designations

The CAA requires states with areas designated nonattainment of the applicable NAAQS for PM_{2.5} to develop SIPs to expeditiously attain and maintain the standard. In 1997, U.S. EPA set daily and annual air quality standards for PM_{2.5}, as shown in Table 1.1. The standards were legally challenged and upheld by U.S. Supreme Court in February of 2001. In 1999, Indiana began monitoring for PM_{2.5} concentrations. U.S. EPA designated areas in Indiana under the fine particle standards on December 17, 2004, as attainment, nonattainment, or unclassifiable, with an effective date of April 5, 2005.

Table 1.1: National Ambient Air Quality Standards for Fine Particles

	Annual	24-Hour
1997 Fine Particles Standard (PM _{2.5})	15 µg/m³ Annual arithmetic mean, averaged over three years	65 µg/m³ 24-hour average, 98 th percentile, averaged over three years
2006 Fine Particles Standard (PM _{2.5})	15 µg/m³ Annual arithmetic mean, averaged over three years	35 µg/m³ 24-hour average, 98 th percentile, averaged over three years
2012 Fine Particles Standard (PM _{2.5})	12 µg/m³ Annual arithmetic mean, averaged over three years	35 µg/m³ 24-hour average, 98 th percentile, averaged over three years

Note: The Cincinnati area is solely designated nonattainment under the 1997 annual standard for fine particles therefore; this document only addresses this standard.

On December 17, 2004, based on 2001 through 2003 monitoring data, U.S. EPA designated the Cincinnati-Hamilton, OH-KY-IN, area (Cincinnati area) as nonattainment for the 1997 annual standard for PM_{2.5}, and subject to CAA, Part D, Title 1, Section 172 of Subpart 1 requirements. These requirements include the development of a plan to reduce nitrogen oxides (NO_x), sulfur dioxide (SO₂), and direct PM_{2.5} emissions as well as a demonstration that the area will meet the 1997 annual standard for PM_{2.5} by April 5, 2010. In order to satisfy these requirements, Indiana submitted an attainment demonstration to U.S. EPA on July 3, 2008. This demonstration illustrated that with the combination of clean air measures and the implementation of local and federally required control measures, air quality in the nonattainment area would meet the annual NAAQS for PM_{2.5} by April 5, 2010, and provide for an ample margin of safety.

IDEM, KDEP, and the Ohio EPA submitted redesignation petitions and maintenance plans for their portions of the Cincinnati nonattainment area on January 25, 2011, January 27, 2011, and December 9, 2010, respectively. Kentucky's portion was redesignated to attainment and classified as maintenance on October 21, 2011. The Indiana and Ohio portions were redesignated to attainment and classified as maintenance under the 1997 annual PM_{2.5} standard on December 23, 2011. On March 18, 2015, a federal circuit court of appeals vacated U.S. EPA's conclusion that the Cincinnati-Hamilton metropolitan area had attained the 1997 annual PM_{2.5} standard.¹

The Sierra Club challenged U.S. EPA's determination because, among other reasons, they believed Ohio and Indiana had declined to develop rules imposing "Reasonably Available Control Measures" (RACM) and "Reasonably Available Control Technology" (RACT) for PM_{2.5} on sources within the area. The court agreed with this argument and held that Ohio and Indiana's failure to impose RACM/RACT invalidated U.S. EPA's conclusion that the states' portion of the Cincinnati nonattainment area was in attainment of the standard. The court's decision did not implicate Kentucky's portion of the nonattainment area for procedural reasons. The Cincinnati nonattainment area, as defined in Section 1.1, has not previously been subject to nonattainment area rulemakings for any other PM_{2.5} NAAQS. Therefore, this document pertains only to the 1997 annual standard for PM_{2.5}.

The Cincinnati area, with the addition of Clinton County, Ohio, has been subject to nonattainment rulemakings under the 2008 8-hour ozone standard. The redesignation petition, maintenance plan, and emissions inventory for Indiana's portion of the aforementioned 2008 8-hour ozone standard nonattainment area was submitted on February 23, 2016. KDEP submitted theirs on May 13, 2016, and Ohio EPA submitted on April 12, 2016.

For the 1997 8-hour ozone standard, the Indiana and Ohio portions of the Cincinnati area were redesignated to attainment and classified as maintenance on May 11, 2010. Kentucky's portion of the 1997 8-hour ozone nonattainment area was redesignated to attainment and classified as maintenance on August 5, 2010. The Cincinnati area, with the exceptions of Lawrenceburg Township, Dearborn County, Indiana, and Clinton County, Ohio, had also been subject to nonattainment area rulemakings under the 1-hour ozone standard. The 1-hour ozone standard was revoked on June 15, 2005.

¹ <http://www.ca6.uscourts.gov/opinions.pdf/15a0047p-06.pdf>

1.3 Background

On February 11, 2016, Indiana submitted a supplemental letter regarding the development and implementation of RACMs/RACTs in Indiana's portion of the Cincinnati area.² Air quality improvements in the area are due to permanent and enforceable measures that have achieved significant emission reductions. These measures will ensure continued compliance (maintenance) with the standard and provides an increasing margin of safety over time.

There are not any further control measures necessary to advance the attainment date, as the Cincinnati area has attained and continues to attain the 1997 annual fine particle standard. The American Electric Power (AEP)-Tanners Creek Generating Station was the primary source of PM_{2.5} precursor emissions within Indiana's portion of the nonattainment area. All four coal-fired electric generating units (EGUs) located at this source were permanently retired on June 1, 2015. As a result of this closure, direct PM_{2.5} and fine particle precursor emissions have decreased significantly. This improvement in air quality in the Cincinnati nonattainment area is above and beyond what Indiana demonstrated as necessary to support ongoing attainment.

This SIP supports Indiana's request on February 11, 2016, for U.S. EPA to act on the RACM/RACT portion of Indiana's attainment plan for Lawrenceburg Township that was submitted on July 3, 2008. In regard to the attainment plan, Indiana has satisfied its obligation under Section 172 (c)(1) of the CAA for a RACT/RACM program. This SIP has also been updated with monitoring values through 2015 and includes an emissions inventory for the PM_{2.5} precursors of volatile organic chemicals (VOCs) and ammonia (NH₃).

Particulate matter (PM) is a complex mixture of particles, including dust, dirt, soot, smoke, and liquid droplets that are found in the air in sizes small enough to be inhaled deeply into the lungs. Fine particles that are 2.5 micrometers or smaller in diameter are referred to as PM_{2.5}. PM_{2.5} can have severe adverse effects on respiratory functions in sensitive populations. It can also reduce visibility in ambient air and create haze.

PM comes from residential combustion activities such as furnaces, air conditioners, wood fireplaces, and outdoor hydronic heaters. PM is also created from industrial combustion activities such as large boilers, process heaters and incinerators, and vehicle exhaust. The composition of particles varies widely year-round. Some particles are emitted directly into the air from cars, trucks, buses, homes, factories, construction sites, unpaved roads, stone crushing, and wood burning. Other particles are formed in the air as sunlight and water vapor chemically react with gases emitted from fuel combustion.

PM_{2.5} 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 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.

² http://www.in.gov/idem/airquality/files/attainment_pm_dearborn_determination_20160211.pdf

1.4 Status of Air Quality

Design values in the Cincinnati nonattainment area have attained and continue to attain the 1997 annual PM_{2.5} standard of 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) as of the 2007-2009 set of years. In fact, design values have been in attainment, and remain in attainment, of the 2012 annual standard ($12 \mu\text{g}/\text{m}^3$) as of the 2012-2014 set of design-value years. There has not been any monitors in the Cincinnati nonattainment area that have violated the 1997 24-hour standard, the 2006 24-hour standard, or the 2012 24-hour standard.

The tables of monitoring site's design values in the Cincinnati nonattainment area can be found in Section 3.0 of this document. PM_{2.5} monitoring data for the most recent three (3) years, 2013-2015, still demonstrates that the air quality meets the 1997 annual PM_{2.5} standard in the Cincinnati area. This fact, accompanied by the permanent and enforceable decreases in emission levels discussed in Section 4.0, justifies a redesignation to attainment for Indiana's portion of the nonattainment area based on Section 107(d)(3)(E) of the CAA.

2.0 REQUIREMENTS FOR REDESIGNATION

2.1 General

Section 110, as well as Part D, of the CAA lists a number of requirements that must be met by nonattainment areas prior to consideration for redesignation to attainment. In addition, U.S. EPA has published detailed guidance in a document entitled "Procedures for Processing Requests to Redesignate Areas to Attainment," issued September 4, 1992, to Regional Air Directors. This document is hereafter referred to as "Redesignation Guidance." This Request for Redesignation and Maintenance Plan is based on the Redesignation Guidance, supplemented with additional guidance received from U.S. EPA Region V staff. The specific requirements for redesignation are listed below.

2.2 PM_{2.5} Monitoring

- 1) A demonstration that the 1997 annual NAAQS for PM_{2.5}, as published in 40 Code of Federal Regulations (CFR) 50.15, has been attained. PM_{2.5} monitoring data must show that violations of the ambient standard are no longer occurring.
- 2) Ambient monitoring data quality assured in accordance with 40 CFR 58.15, have been recorded in the U.S. EPA Air Quality System (AQS) database and made available for public view.
- 3) A showing that the three-year average of annual values, based on data from all monitoring sites in the area or its affected downwind environs, do not exceed 15.0 ($\mu\text{g}/\text{m}^3$). This showing must rely on three complete, consecutive calendar years of quality assured data.
- 4) A commitment that, once redesignated, the state will continue to operate an appropriate monitoring network to verify the maintenance of the attainment status.

2.3 Emission Inventory

- 1) A comprehensive emissions inventory of direct PM_{2.5} and the precursors of PM_{2.5} completed for the base year.
- 2) A projection of the emissions inventory to a year at least ten years after redesignation.
- 3) A demonstration that the projected level of emissions is sufficient to maintain the PM_{2.5} standard.
- 4) A demonstration that improvement in air quality between the years that violations occurred and attainment was achieved is based on permanent and enforceable emission reductions and not on temporary adverse economic conditions or unusually favorable meteorology.
- 5) Provisions for future annual updates of the inventory to enable tracking of the emission levels, including an annual emission statement from major sources.

U.S. EPA previously approved Indiana's maintenance plan (codified at 40 CFR 52.776 (v)(3)) and its 2005 emissions inventory for NO_x, SO₂, and direct PM_{2.5} (codified at 40 CFR 52.776 (w)(3)) on December 23, 2011. The approval of these two items was not vacated in the March 18, 2015, court ruling that vacated U.S. EPA's conclusion that the Cincinnati area had attained the 1997 annual PM_{2.5} standard. In order to officially redesignate the Cincinnati nonattainment area, U.S. EPA has requested fulfillment of Subpart 4 requirements under Section 189 (e) of the CAA. The emissions inventory in Section 4.0 of this document has been supplemented with U.S. EPA's 2012 Regulatory Impact Analysis (RIA) emissions data for VOCs and NH₃ to address these requirements. This data was provided by U.S. EPA Region 5 and can be referenced in Appendix E.

2.4 Modeling Demonstration

While no modeling is required for redesignating PM_{2.5} nonattainment areas, IDEM has incorporated a summary of U.S. EPA's 2012 RIA³ in Section 7.0 of this document to further support its request that Indiana's portion of the nonattainment area be redesignated to attainment.

2.5 Controls and Regulations

- 1) A U.S. EPA-approved SIP control strategy that includes Reasonably Available Control Technology (RACT) requirements for existing stationary sources covered by Control Technology Guidelines (CTG) and non-CTG RACT for all major sources.
- 2) Evidence that control measures required in past PM_{2.5} SIP revisions have been fully implemented.

³ https://www3.epa.gov/ttn/naaqs/standards/pm/s_pm_2007_ria.html

- 3) Acceptable provisions to provide for New Source Review (NSR).
- 4) Assurances that existing controls will remain in effect after redesignation, unless the state demonstrates through photochemical modeling that the standard can be maintained without one or more controls.
- 5) If appropriate, a commitment to adopt a requirement that all transportation plans conform with and are consistent with the SIP.

2.6 Corrective Actions for Potential Future Violations of the Standard

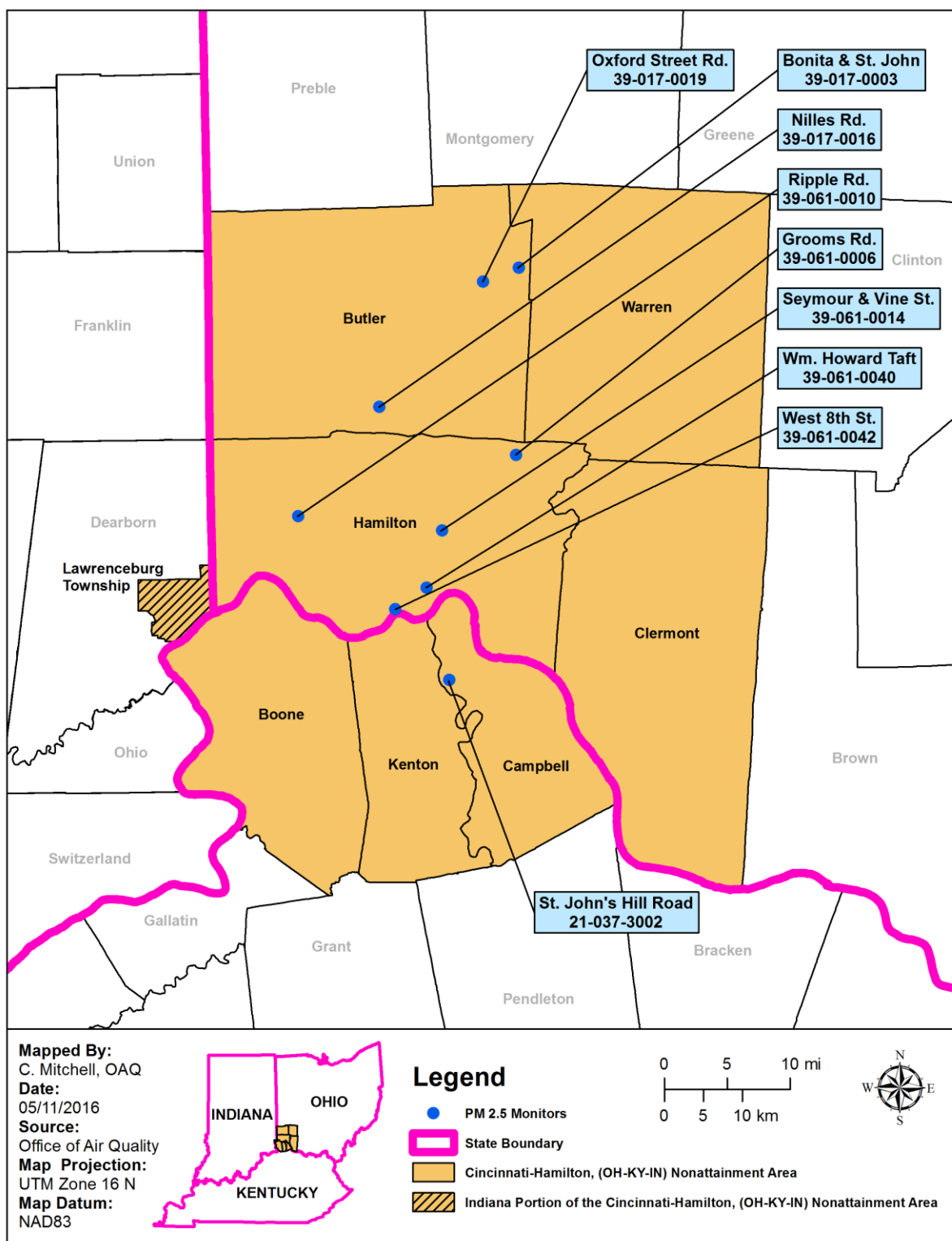
- 1) A commitment to submit a revised plan eight (8) years after redesignation.
- 2) A commitment to expeditiously enact and implement additional contingency control measures in response to exceeding specified predetermined levels (triggers) or in the event that future violations of the ambient standards occur.
- 3) A list of potential contingency measures that would be implemented in such an event.
- 4) A list of NO_x, SO₂, VOC, NH₃, and direct PM_{2.5} sources potentially subject to future controls.

3.0 FINE PARTICLES MONITORING

3.1 PM_{2.5} Monitoring Network

There are currently nine (9) monitors measuring PM_{2.5} concentrations in the Cincinnati-Hamilton, OH-KY-IN, nonattainment area. One (1) monitor is located in Kentucky and eight (8) monitors are located in Ohio. Indiana does not have any fine particle monitors located in Lawrenceburg Township in Dearborn County. The locations of the monitoring sites for this nonattainment area are shown in Figure 3.1.

Figure 3.1: Map of the Cincinnati-Hamilton, OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area



3.2 Ambient PM_{2.5} Monitoring Data

To demonstrate attainment, three complete years of PM_{2.5} monitoring data is required at each ambient air quality monitoring site. The 1997 annual PM_{2.5} standard is met when the three-year average (also called the design value) of each monitor's annual mean (calculated from quarterly averages) concentration is less than or equal to 15.0 µg/m³. When this occurs the site is deemed to be in attainment. To discern attainment, the final design value that is compared to the standard is rounded to the nearest 0.1 µg/m³. Decimals 0.05 or greater are rounded up, and those at 0.49 or less are rounded down. These data handling procedures are applied on an individual basis at each monitor in the area. The air quality design value for the area is the highest design value among all sites in the area.

In Table 3.1, a listing of all monitor sites from 2005-2015 and their annual mean values are presented. In this timeframe there has been three (3) monitoring sites (one [1] active and two [2] discontinued) in Kentucky's portion of the nonattainment area and seventeen (17) monitoring sites (eight [8] active and nine [9] discontinued) within Ohio's portion of the nonattainment area. Graph 3.1 illustrates the downward trend of PM_{2.5} between 2005 and 2015. This data was retrieved from U.S. EPA's AQS database and can be referenced in Appendix A.

Table 3.1: PM_{2.5} Monitoring Sites and Annual Means – Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005-2015

Site ID	State	County	Site Name	PM _{2.5} Annual Means µg/m ³										
				2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
21-037-0003	Kentucky	Campbell	Alexandria Pk.	14.8										
21-037-3002	Kentucky	Campbell	John's Hill Rd.			14.4	11.8	11.3	11.8	10.3	9.7	9.6	9.7	9.4
21-117-0007	Kentucky	Kenton	Univ. College	15.9	13.3	14.0	12.0	11.0	12.1					
39-017-0003	Ohio	Butler	Bonita & St.	19.0	14.0	15.4	13.8	12.8	13.6	12.7	11.2	11.1	11.3	10.3
39-017-0016	Ohio	Butler	Nilles Rd.	17.9	14.0	14.9	13.8	13.1	13.5	12.4	10.8	10.7	10.7	9.5
39-017-0017	Ohio	Butler	Wilwood	17.2										
39-017-0019	Ohio	Butler	Oxford St. Road								11.4	11.0	11.2	10.2
39-017-1004	Ohio	Butler	Hook Field	16.9	13.4	14.6								
39-025-0022	Ohio	Clermont	Clermont Dr.	15.7	12.7	14.0	11.7	11.0	12.0	11.0				
39-061-0006	Ohio	Hamilton	Grooms Rd.	16.6	13.3	14.6	12.5	12.1	12.7	11.7	10.3	10.1	10.3	9.3
39-061-0010	Ohio	Hamilton	Ripple Road									10.5	10.4	9.2
39-061-0014	Ohio	Hamilton	Seymour & Vine	19.8	15.5	16.6	15.1	13.4	14.8	13.2	12.1	11.6	11.3	10.7
39-061-0040	Ohio	Hamilton	Howard Taft	17.5	13.6	15.1	12.6	12.7	13.3	12.1	10.5	10.6	10.4	9.2
39-061-0041	Ohio	Hamilton	Winneste Ave.	15.8										
39-061-0042	Ohio	Hamilton	W. 8th St	19.1	14.9	15.9	14.4	13.7	14.5	13.3	11.7	11.5	11.2	10.1
39-061-0043	Ohio	Hamilton	Kemper Rd.	16.9	14.5	14.8	13.3							
39-061-0048	Ohio	Hamilton	Colerain Ave.										12.9	
39-061-7001	Ohio	Hamilton	Sherman Ave.	18.4	14.4	15.1	13.7	13.0	14.1					
39-061-8001	Ohio	Hamilton	Murray Rd.	20.0	15.9	16.1	14.4	13.4						
39-165-0007	Ohio	Warren	Southeast St.			14.0	11.9	11.7	11.9	11.0				
Active Monitor														

Graph 3.1: PM_{2.5} Annual Mean Trends – Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005-2015

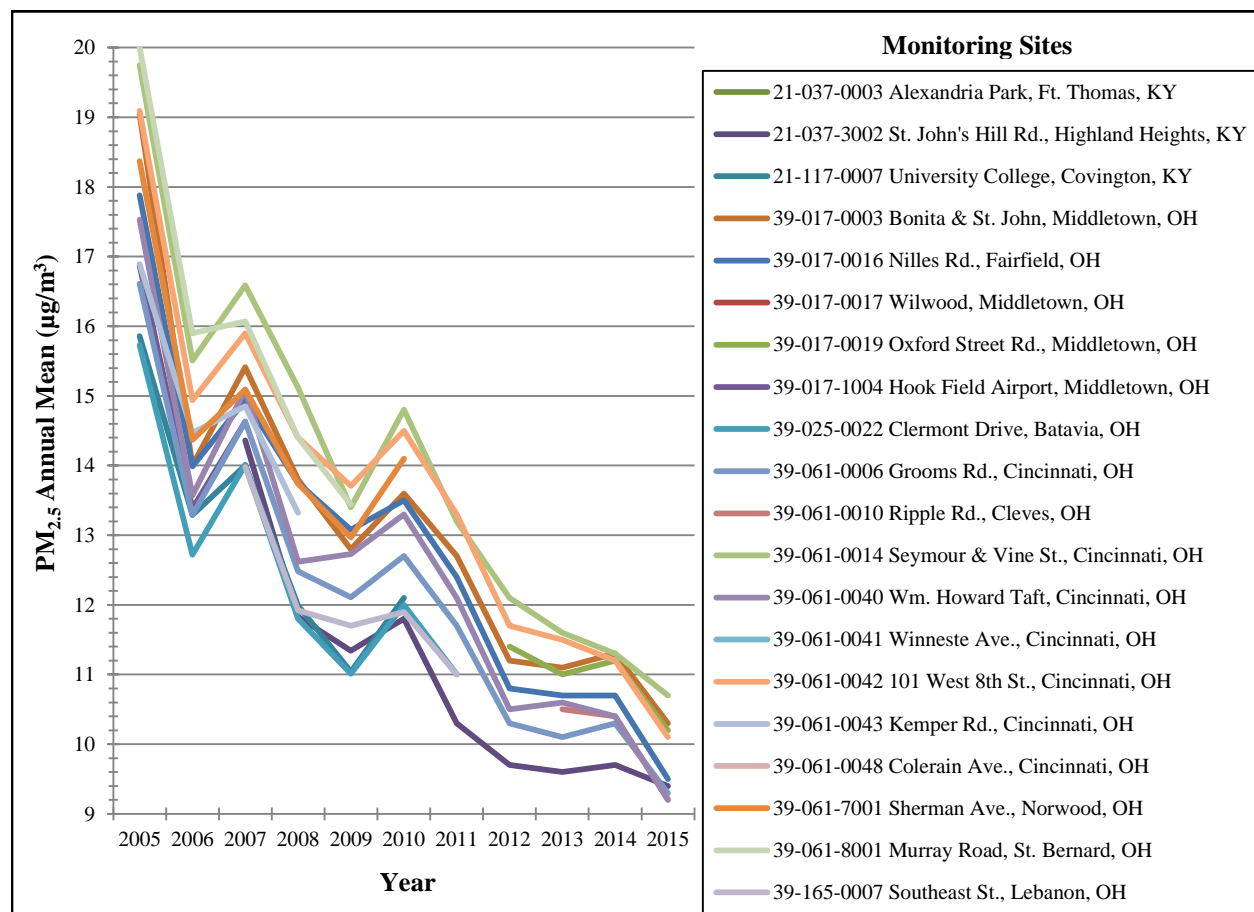


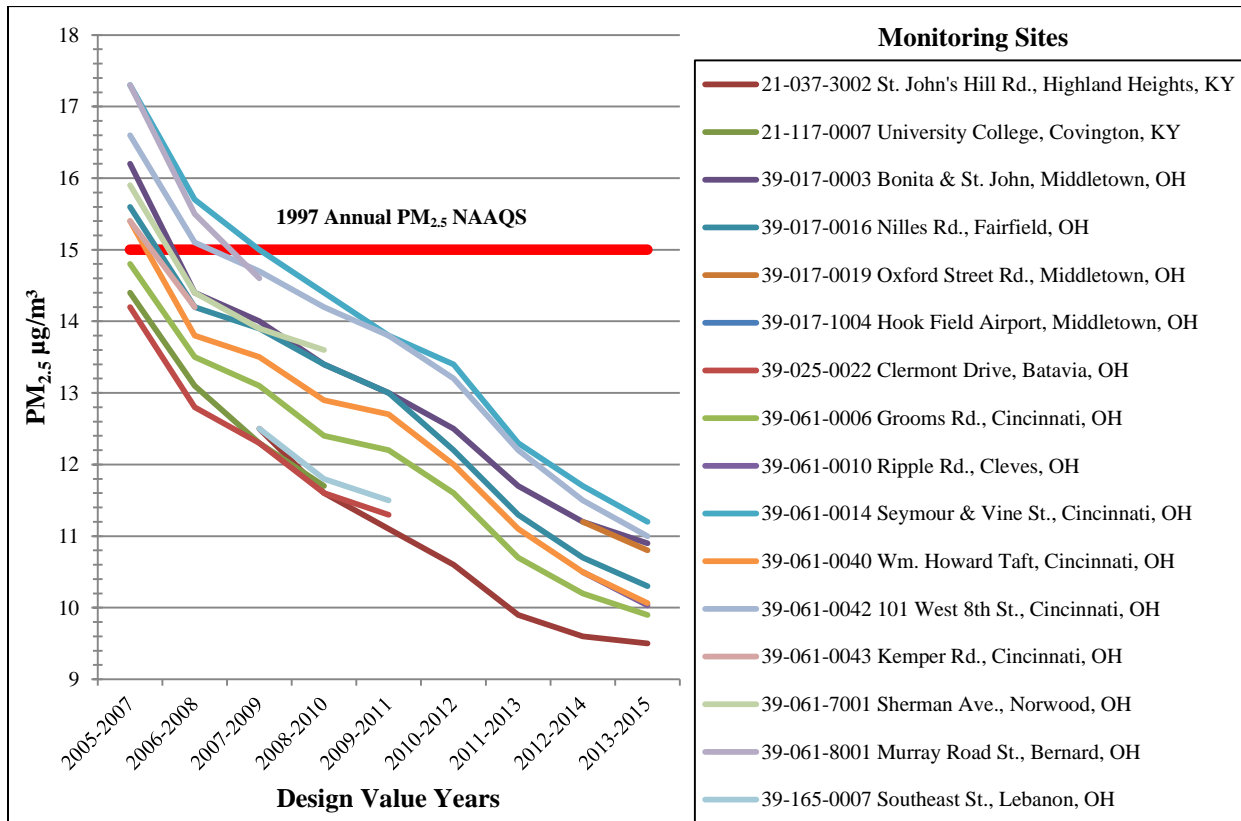
Table 3.2 shows the sixteen (16) monitors that had valid design values and were active for periods during 2005-2015. Graph 3.2 illustrates the downward trend in design values from the nine (9) active monitors during 2005-2015 that recorded at least three-years of data to compile a valid design value. This data was retrieved from U.S. EPA's AQS database and can be referenced in Appendix A.

There have not been any exceedances of the 1997 annual PM_{2.5} standard in the Cincinnati area for the mean since 2008 or since the design value of 2006-2008. The 2012 annual PM_{2.5} standard, 12.0 µg/m³, has not been exceeded since the design value of 2011-2013.

Table 3.2: PM_{2.5} Design Values – Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005-2015

Site ID	State	County	Site Name	PM _{2.5} Design Values $\mu\text{g}/\text{m}^3$								
				05-07	06-08	07-09	08-10	09-11	10-12	11-13	12-14	13-15
21-037-3002	Kentucky	Campbell	John's Hill Rd.			12.5	11.6	11.1	10.6	9.9	9.6	9.5
21-117-0007	Kentucky	Kenton	Univ. College	14.4	13.1	12.3	11.7					
39-017-0003	Ohio	Butler	Bonita & St.	16.2	14.4	14.0	13.4	13.0	12.5	11.7	11.2	10.9
39-017-0016	Ohio	Butler	Nilles Rd.	15.6	14.2	13.9	13.4	13.0	12.2	11.3	10.7	10.3
39-017-0019	Ohio	Butler	Oxford St. Road								11.2	10.8
39-017-1004	Ohio	Butler	Hook Field	15.0								
39-025-0022	Ohio	Clermont	Clermont Dr.	14.2	12.8	12.3	11.6	11.3				
39-061-0006	Ohio	Hamilton	Grooms Rd.	14.8	13.5	13.1	12.4	12.2	11.6	10.7	10.2	9.9
39-061-0010	Ohio	Hamilton	Ripple Road								10.5	10.0
39-061-0014	Ohio	Hamilton	Seymour & Vine	17.3	15.7	15.0	14.4	13.8	13.4	12.3	11.7	11.2
39-061-0040	Ohio	Hamilton	Howard Taft	15.4	13.8	13.5	12.9	12.7	12.0	11.1	10.5	10.1
39-061-0042	Ohio	Hamilton	W. 8th St	16.6	15.1	14.7	14.2	13.8	13.2	12.2	11.5	11.0
39-061-0043	Ohio	Hamilton	Kemper Rd.	15.4	14.2							
39-061-7001	Ohio	Hamilton	Sherman Ave.	15.9	14.4	13.9	13.6					
39-061-8001	Ohio	Hamilton	Murray Rd.	17.3	15.5	14.6						
39-165-0007	Ohio	Warren	Southeast St.			12.5	11.8	11.5				
Active Monitor				Value above the 1997 annual PM _{2.5} standard 15.0 $\mu\text{g}/\text{m}^3$								

Graph 3.2: PM_{2.5} Design Value Trends – Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005 – 2015



The area's three-year design values have continued to trend downward as emissions have declined, due to such programs as the Acid Rain program and cleaner automobiles and fuels both

regionally and locally. U.S. EPA's rule to control NO_x from specific source categories (40 CFR Parts 51, 72, 75, and 96, published on October 17, 1998, and referred to as the "NO_x SIP Call") has significantly reduced emissions from large electric generating units (EGUs), industrial boilers, and cement kilns. Indiana's NO_x SIP Call Rule was approved on June 6, 2001, (326 Indiana Administrative Code (IAC) 10-3.

3.3 Quality Assurance

Ohio and Kentucky have quality assured all data shown in Appendix A in accordance with 40 CFR 58.15 and the Quality Assurance Manual. Both states have recorded the data in the AQS database and the data is available to the public.

3.4 Continued Monitoring

Ohio and Kentucky commit to continue monitoring PM_{2.5} levels at the active monitoring sites indicated in Table 3.2. IDEM will consult with Ohio, Kentucky, and U.S. EPA Regions IV and V staff prior to making changes to the existing monitoring network should changes become necessary in the future.

4.0 EMISSION INVENTORY

U.S. EPA's Redesignation Guidance and The Implementation Rule for the PM_{2.5} NAAQS require the submittal of a comprehensive inventory of precursor emissions for PM_{2.5} (NO_x, SO₂, and direct PM_{2.5}) representative of the year when the area achieves attainment of the annual NAAQS for PM_{2.5} (base-year). States must also demonstrate that the improvement in air quality between the year that violations occurred and the year that attainment was achieved is based on permanent and enforceable emission reductions. Other requirements related to the emissions inventory include: a projection of the emission inventory to a year at least ten years following redesignation; a demonstration that the projected level of emissions is sufficient to maintain the 1997 annual standard for PM_{2.5}; and a commitment to provide future updates of the inventory to enable tracking of emission levels during the ten year maintenance period. The following subsections address each of these requirements.

U.S. EPA and Indiana did not previously recognize ammonia or VOCs as significant contributors to PM_{2.5} formation in the State of Indiana. Ammonia and VOCs are not required to be addressed unless the State or U.S. EPA make a technical demonstration that emissions of these PM_{2.5} precursors from sources in the State significantly contribute to PM_{2.5} concentrations in the given nonattainment area. As of March 18, 2015, when U.S. EPA's ruling of attainment in Indiana and Kentucky's portions of the Cincinnati PM_{2.5} nonattainment area for the 1997 annual standard was vacated, Subpart 4 requirements under Section 189 (e) of the CAA were invoked. This policy is outlined in the 2007 *Clean Air Fine Particle Implementation Rule* (40 CFR 51) that further explains the requirements of Title I, Part D, Subpart 4 of the CAA.⁴

To address Subpart 4 requirements, U.S. EPA provided an RIA inventory of NH₃ and VOC

⁴ <https://www.gpo.gov/fdsys/pkg/FR-2007-04-25/pdf/E7-6347.pdf>

emissions with regard to the 2012 PM_{2.5} standard. It has been examined in Section 4.3 *RIA Base-Year Inventory and Projections* of this document to illustrate NH₃ and VOCs emission trends in the Cincinnati nonattainment area for both annual PM_{2.5} standards. The methodology can be found in the *Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter* (Appendix F).

4.1 Emission Trends

The primary source for PM_{2.5} precursor emissions within Indiana's portion of the nonattainment area was the Tanners Creek Generating Station. The location of this power plant, combined with the volume of precursor emissions was the primary rationale for U.S. EPA's inclusion of Lawrenceburg Township within the nonattainment area.

As the result of a settlement with U.S. EPA to resolve violations of the CAA's new source review (NSR) requirements, AEP permanently retired its Tanners Creek Generating Station located in Lawrenceburg Township, Dearborn County (i.e. all four coal-fired electric generating units) on June 1, 2015. This will ensure that the facility does not restart without proper permitting under the CAA. As a result of the closure of this facility, direct PM_{2.5} and fine particle precursor emissions in Dearborn County, Indiana, have decreased significantly. This has improved air quality in the Cincinnati nonattainment area, above and beyond what Indiana demonstrated as necessary to support ongoing attainment of the area.

The Clean Air Interstate Rule (CAIR) is the critical permanent and enforceable control measure that aided in the attainment of the 1997 annual PM_{2.5} standard in Lawrenceburg Township, Dearborn County, IN, while Tanners Creek Generating Station was still in operation. The implementation of this rule demonstrated significant emission reductions from Tanners Creek Generating Station. IDEM has and will continue to enforce Indiana's applicable PM_{2.5} precursor emission limitation rules for NO_x and SO₂. These include CAIR and any transitions to Cross State Air Pollution Rule (CSAPR).

CSAPR became effective on January 1, 2015, for SO₂ and annual NO_x, and May 1, 2015 for ozone season NO_x. When combined with other final state and U.S. EPA actions, CSAPR will reduce power plant SO₂ emissions by 73% and NO_x emissions by 54% from 2005 levels in the CSAPR region, which includes the states of Indiana, Kentucky, and Ohio. The November 16, 2015, proposed CSAPR Update Rule that pertains to ozone included NO_x emission reduction budgets for EGUs.⁵ Since Tanners Creek was the only EGU in Lawrenceburg Township, Dearborn County, Indiana, and it is no longer in operation, the proposed budgets for Indiana do not have any implications in Lawrenceburg Township. For the Cincinnati nonattainment area, when this rule is finalized, it will establish permanent and enforceable reductions through revised NO_x budgets for Ohio. The revised NO_x ozone season budget for Ohio is proposed to be 16,660 tons.

On March 17, 2016, U.S. EPA released a memorandum: *Information on the Interstate Transport "Good Neighbor" Provision for the 2012 Fine Particulate Matter National Ambient Air Quality*

⁵ <https://www.gpo.gov/fdsys/pkg/FR-2015-12-03/pdf/2015-29796.pdf>

*Standards under Clean Air Act Section 110(A)(2)(D)(i)(I), Attachment 1, and Attachment 2.*⁶ This memo provided projected design values and future-year modeling for 2017 and 2025. Dearborn County, Indiana was not flagged to have any projected design values above the 2012 PM_{2.5} standard.

This conclusion supports Indiana's codified demonstration of attainment with motor vehicle emission budgets. Indiana's previously submitted (December 9, 2010) maintenance budgets were not remanded by the Sixth Circuit's court decision on March 18, 2015, to vacate U.S. EPA's conclusion of attainment in the 1997 annual PM_{2.5} Cincinnati nonattainment area. These include approved 2015 and 2021 motor vehicle emission budgets for primary PM_{2.5} and NO_x codified at 40 CFR 52.776 (v)(3). These current budgets are in-line with U.S. EPA's March 17, 2016, PM_{2.5} predictions and estimations that show continued future attainment and maintenance of the more stringent 2012 PM_{2.5} NAAQS.

4.2 Codified Base-Year Inventory

The inventory described in this section was included in Lawrenceburg Township, Dearborn County, IN's 2011 request for redesignation under the 1997 annual PM_{2.5} standard. This 2005 inventory was codified at 40 CFR 52, Subpart P (52.776)(w)(3) and was not affected by the Sixth Circuit Court's decision to vacate U.S. EPA's attainment designation of Indiana and Ohio's portions of the Cincinnati 1997 annual PM_{2.5} nonattainment area.

IDEM prepared this comprehensive inventory for the Cincinnati area, including area, mobile, non-road, and point sources for direct PM_{2.5} and precursors of PM_{2.5} (NO_x and SO₂) for 2005 (the year that had the most complete emissions inventory available at the time of preparation for the previous redesignation submittal in 2011). The 2008 data was grown from the 2005 emission inventory to represent a base year for maintenance purposes. This inventory can be referenced in Appendices B and C. Indiana's 2008 base year inventory was determined by the following:

- Area sources were grown from the Indiana 2005 periodic inventory submitted to U.S. EPA.
- Mobile source emissions were calculated from U.S. EPA's Motor Vehicle Emission Simulator (MOVES) model produced emission factors and data extracted from the region's travel-demand model. These emissions were then interpolated as needed to determine 2008 base year values.
- Point source information was compiled from IDEM's annual emissions statement database and U.S. EPA's Clean Air Markets acid rain database.
- Biogenic emissions are not included in these summaries.
- Non-road emissions were grown from the 2002 National Emissions Inventory (NEI). To address concerns about the accuracy of some of the categories in U.S. EPA's non-road emissions model, the Lake Michigan Air Directors' Consortium (LADCO) (Midwest Regional Planning Organization), contracted with two companies to review the base data and make recommendations. One of the contractors also estimated emissions for two non-road categories not included in U.S. EPA's non-road model. Emissions were

⁶ <https://www3.epa.gov/pm/implement.html>

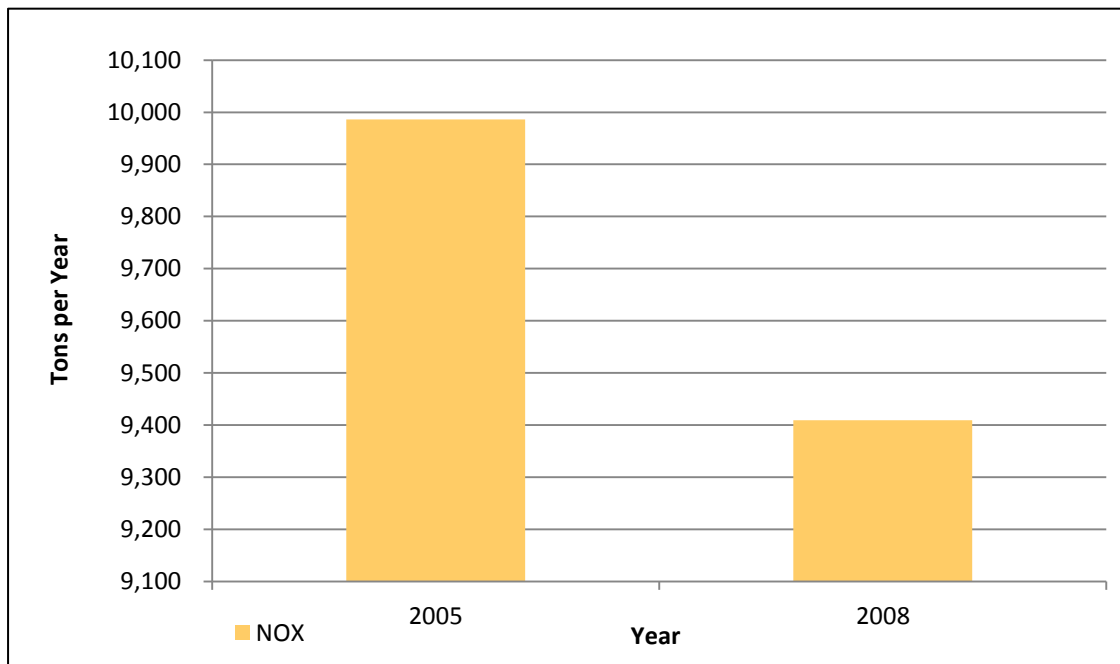
estimated for commercial marine vessels and railroads. Recreational motorboat population and spatial surrogates (used to assign emissions to each) were significantly updated. The populations for the construction equipment category were reviewed and updated based upon surveys completed in the Midwest and the temporal allocation for agricultural sources was also updated. A new non-road estimation model was provided by U.S. EPA for the 2002 analysis.

- The emissions data referenced for Kentucky's portion of the nonattainment area (entire nonattainment area) were pulled from LADCO's emissions inventory files. This inventory was prepared using similar methodologies. The 2008 data was grown from the 2005 emission inventory to represent a base-year for maintenance purposes.

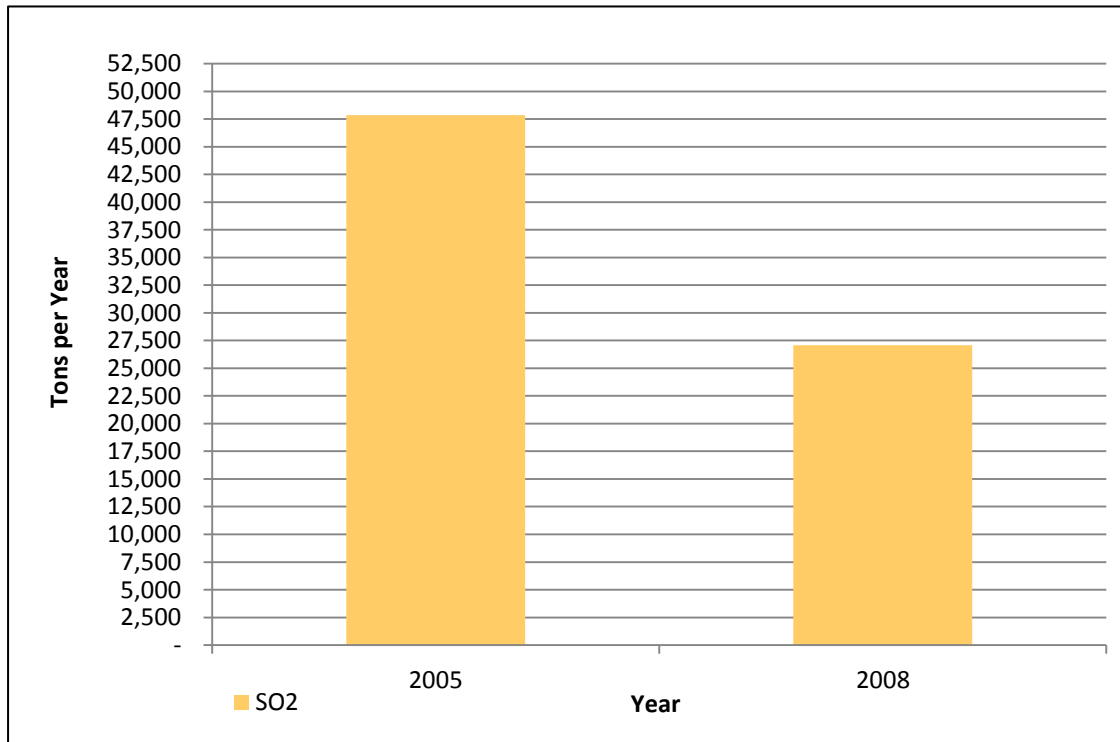
4.2.1 Point Sources

Graphs 4.1, 4.2, and 4.3 show the trend in point source emissions of NO_x, SO₂, and direct PM_{2.5} respectively for Dearborn County, Indiana and generally corresponds to the years of monitored values used in this report. The point source data are taken from Indiana's annual emissions reporting program. It should be noted that the increase in direct PM_{2.5} from 2005 to 2008 is due to previously unreported emissions from companies that did not submit their direct PM_{2.5} emissions data in 2005, but did submit direct PM_{2.5} data into the 2008 emissions inventory. Graphs 4.4, 4.5, and 4.6 show the trend in point source emissions for the entire Cincinnati nonattainment area. The entire Cincinnati area had a 14.6% reduction in NO_x point source emissions, a 52.1% reduction in SO₂ point source emissions, and a 9.5% reduction in direct PM_{2.5} point source emissions. Point source data for the entire Cincinnati area is the combination of data from Indiana, Kentucky, and Ohio's annual emissions reporting program. Graphs and data tables of emissions for the point source category can be found in Appendix B.

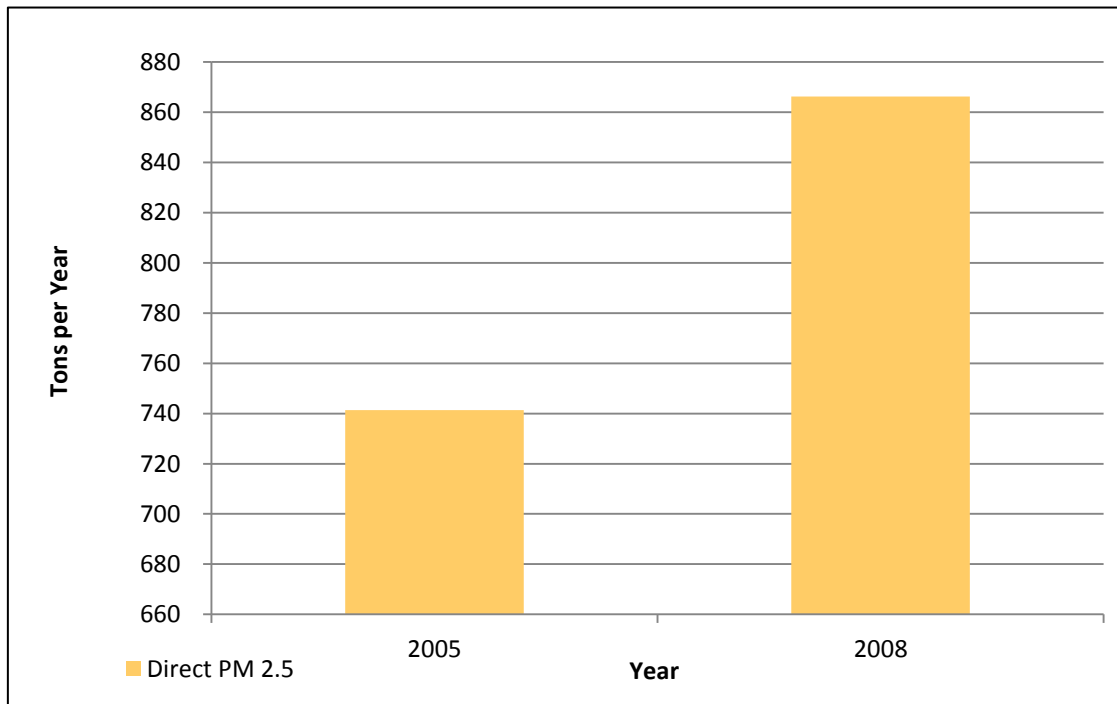
Graph 4.1: Dearborn County, IN, NO_x Point Source Emission Trends, 2005 and 2008



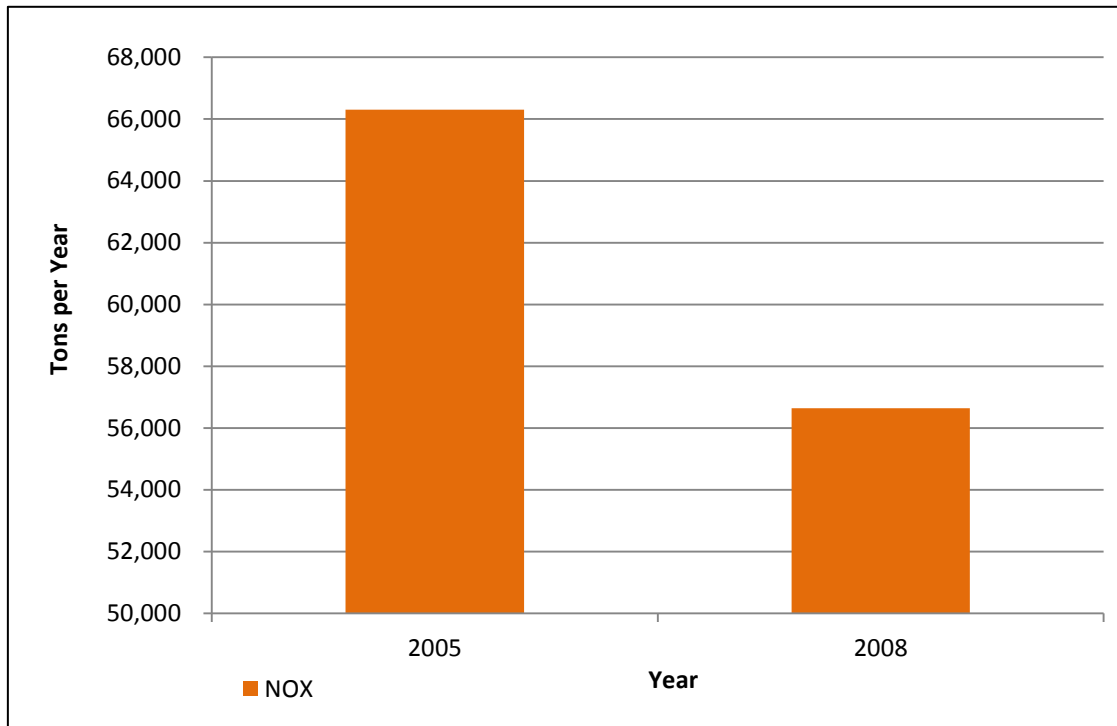
Graph 4.2: Dearborn County, IN, SO₂ Point Source Emission Trends, 2005 and 2008



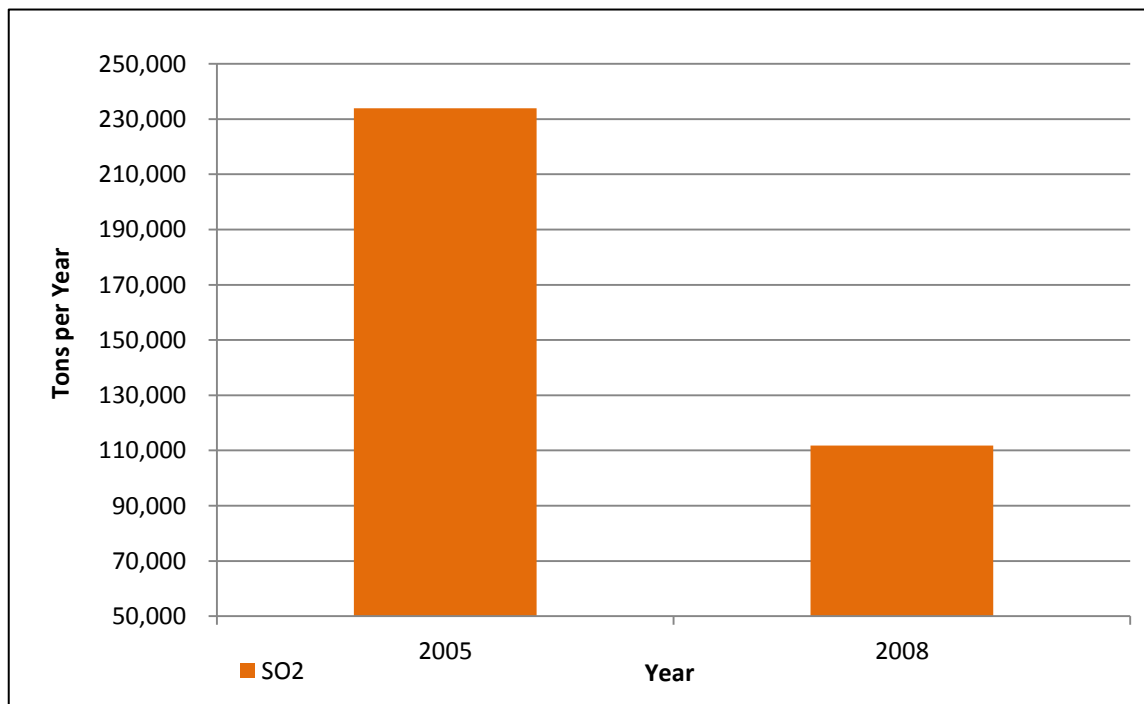
Graph 4.3: Dearborn County, IN, Direct PM_{2.5} Point Source Emission Trends, 2005 and 2008



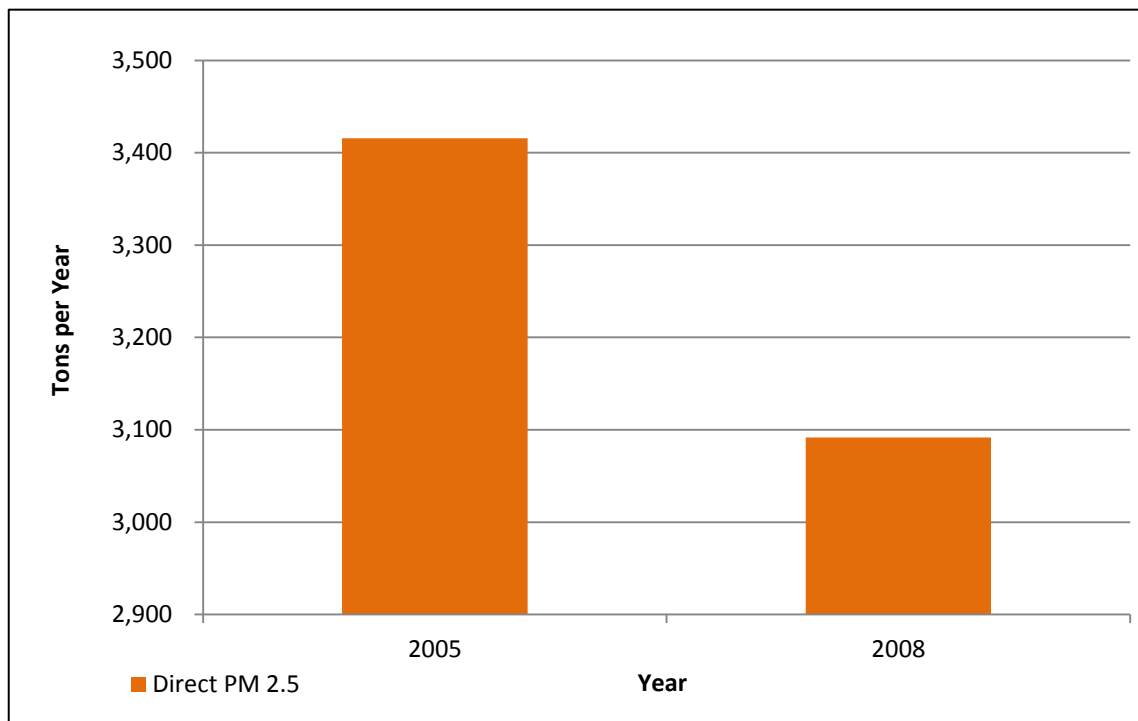
Graph 4.4: Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area NO_x Point Source Emission Trends, 2005 and 2008



Graph 4.5: Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area SO₂ Point Source Emission Trends, 2005 and 2008



Graph 4.6: Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area Direct PM_{2.5} Point Source Emission Trends, 2005 and 2008



4.2.2 All Anthropogenic Sources

Periodic inventories, which include emissions from all sectors (mobile, area, non-road, and point sources), were prepared for 2005 and 2008. The 2008 data was extrapolated from the 2005 emission inventory.

Graphs 4.7, 4.8, and 4.9 show the trends for total NO_x, SO₂, and direct PM_{2.5} emissions for all anthropogenic source categories in Dearborn County, Indiana during 2005 and 2008. The increase in direct PM_{2.5} anthropogenic source emissions for Dearborn County, Indiana from 2005 to 2008 is due to previously unreported emissions from companies that did not submit their direct PM_{2.5} emissions data in 2005, but did submit direct PM_{2.5} data in the 2008 emissions inventory.

Graphs 4.10, 4.11, and 4.12 show the trends for total NO_x, SO₂, and direct PM_{2.5} emissions from all anthropogenic source categories in the entire Cincinnati nonattainment area during 2005 and 2008. These emissions trends roughly follow the years of monitored trends discussed in Section 3.0. There is a downward trend in NO_x and SO₂ emissions from 2005 to 2008. The decrease in NO_x can be largely attributed to the impact of the NO_x SIP Call. As can be seen by Graph 4.12, overall the direct PM_{2.5} anthropogenic source emissions for the entire Cincinnati nonattainment area have substantially decreased. Graphs and data tables of emissions from each source category are available in Appendix C.

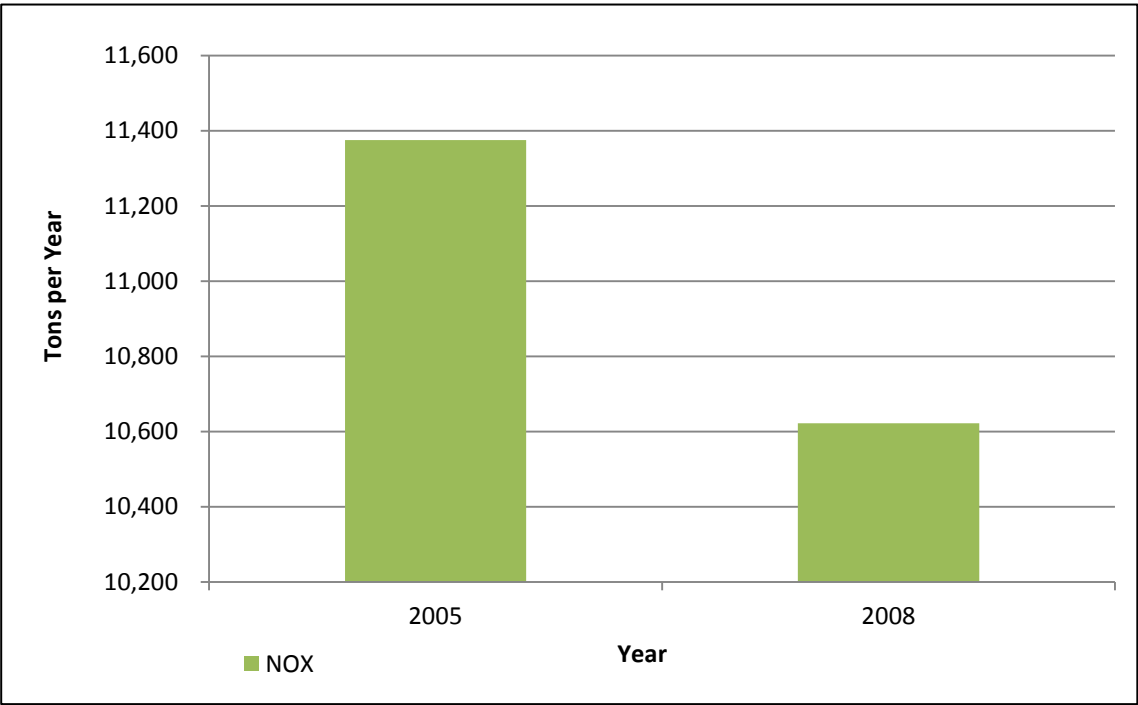
Mobile emissions inventories for all counties were prepared by the Ohio, Kentucky, and Indiana

Council of Governments. All 2005 data for the entire Cincinnati nonattainment area is from the 2005 periodic inventory which has been identified as one of the preferred databases for SIP development. For the 2008 attainment year, emissions were grown from the 2005 LADCO modeling inventory, using LADCO's growth factors, for all sections except point sources (electrical generating units and non-electrical generating units). Point source emissions for 2008 were compiled from Indiana, Kentucky, and Ohio's annual emissions inventory databases.

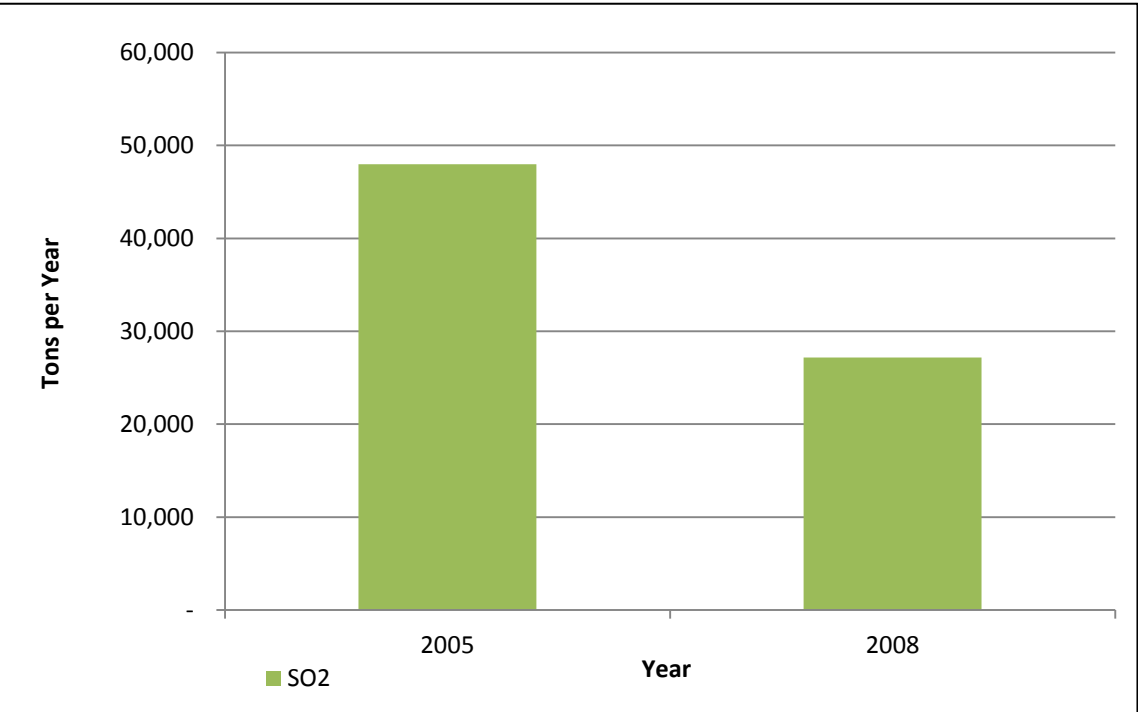
The emissions inventory development discussion below for this section (4.0) of the document identifies procedures used by Ohio EPA LADCO that differ from procedures used by Kentucky and Indiana. Indiana and Kentucky emissions data were obtained through the LADCO emission inventory which was prepared using similar methodologies.

For Ohio, the 2005 and 2008 actual PM_{2.5} emissions data below generally contains particulate fraction emissions only and not condensable fractions. Ohio EPA did not have a consistent reporting requirement in those years. U.S. EPA's integrated planning model (IPM) was used to generate future year EGU emissions with the CAIR program. The IPM modeling added additional PM_{2.5} condensable emissions into future years. Therefore, comparing base and attainment year emissions with the future year predictions is not accurate in the IPM CAIR modeling. This step leads to a false perception of a significant increase in PM_{2.5} emissions. Modeling performed by LADCO, without CAIR, did not incorporate added condensable fraction emissions. Ohio EPA has stated that it is most appropriate to evaluate future year emissions that include the CAIR program but, due to the aforementioned flaw, it will be more accurate and appropriate for the purposes of PM_{2.5} demonstration to evaluate future year emissions without the CAIR program. Therefore, all PM_{2.5} numbers for Ohio in this section (4.2) were without CAIR while all numbers for NO_x and SO₂ in Ohio were with CAIR. Indiana and Kentucky have both used with CAIR numbers for NO_x, SO₂, and PM_{2.5}. Emissions tables and charts in this document are labeled accordingly and can also be found in Appendix C.

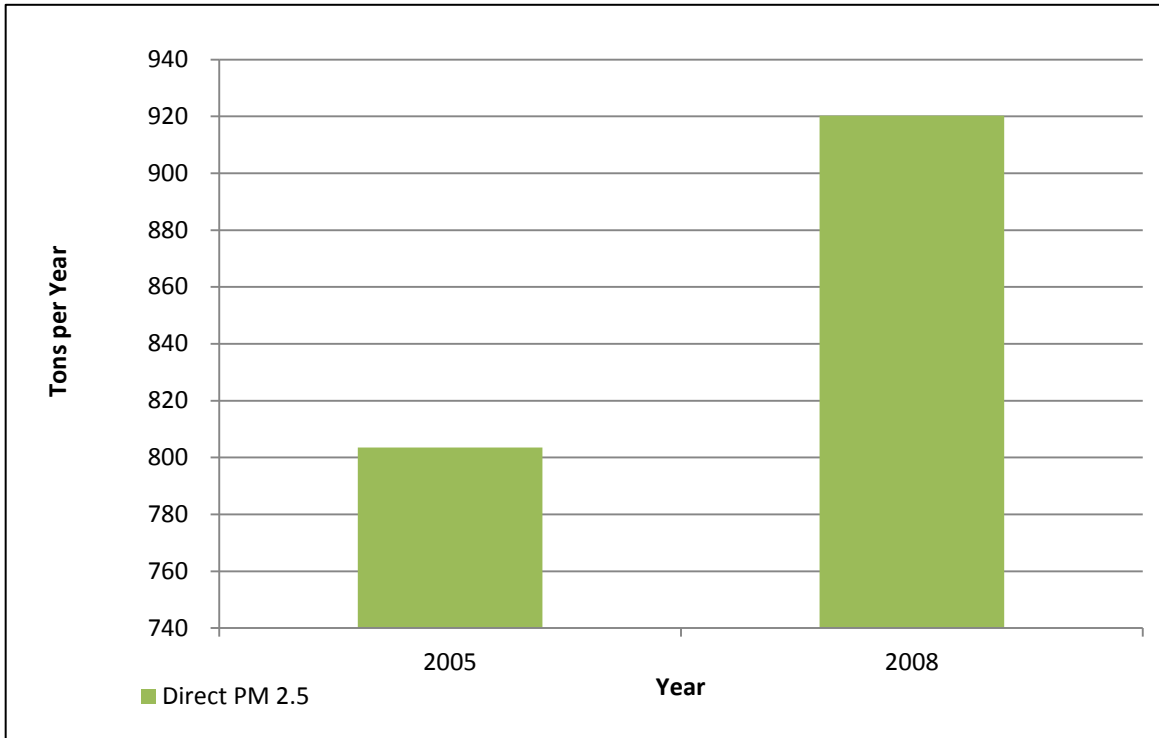
Graph 4.7: NO_x Emission Trends, All Sources in Dearborn County, IN, 2005 and 2008 - With CAIR



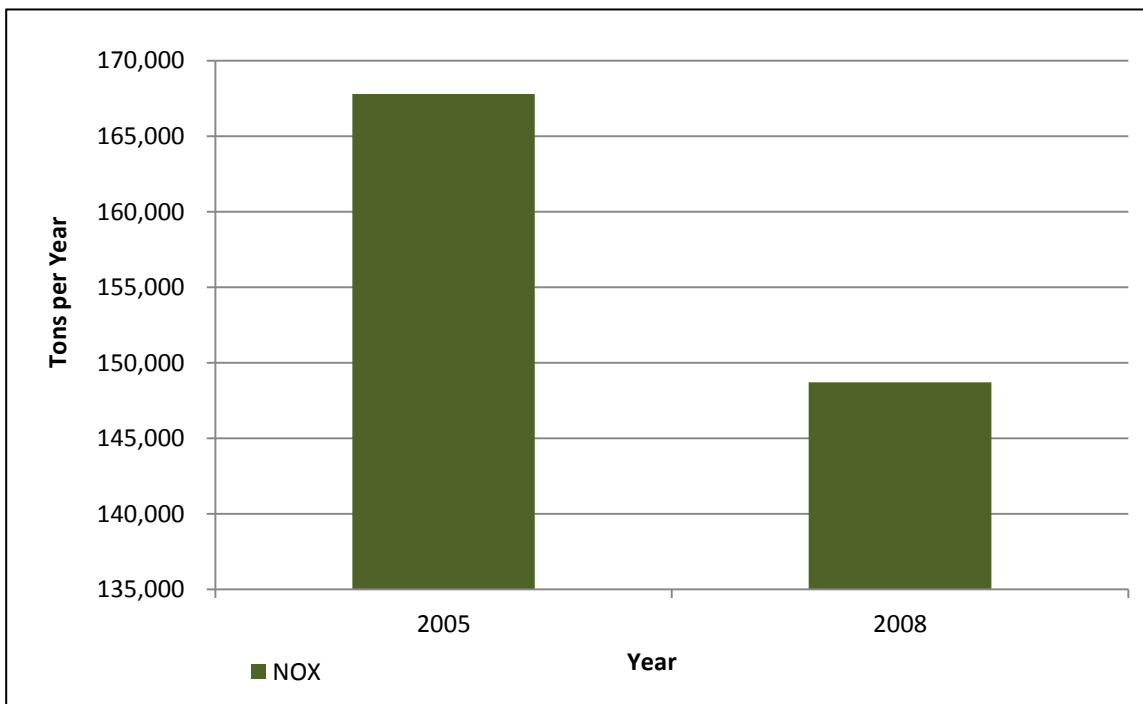
Graph 4.8: SO₂ Emission Trends, All Sources in Dearborn County, IN, 2005 and 2008 - With CAIR



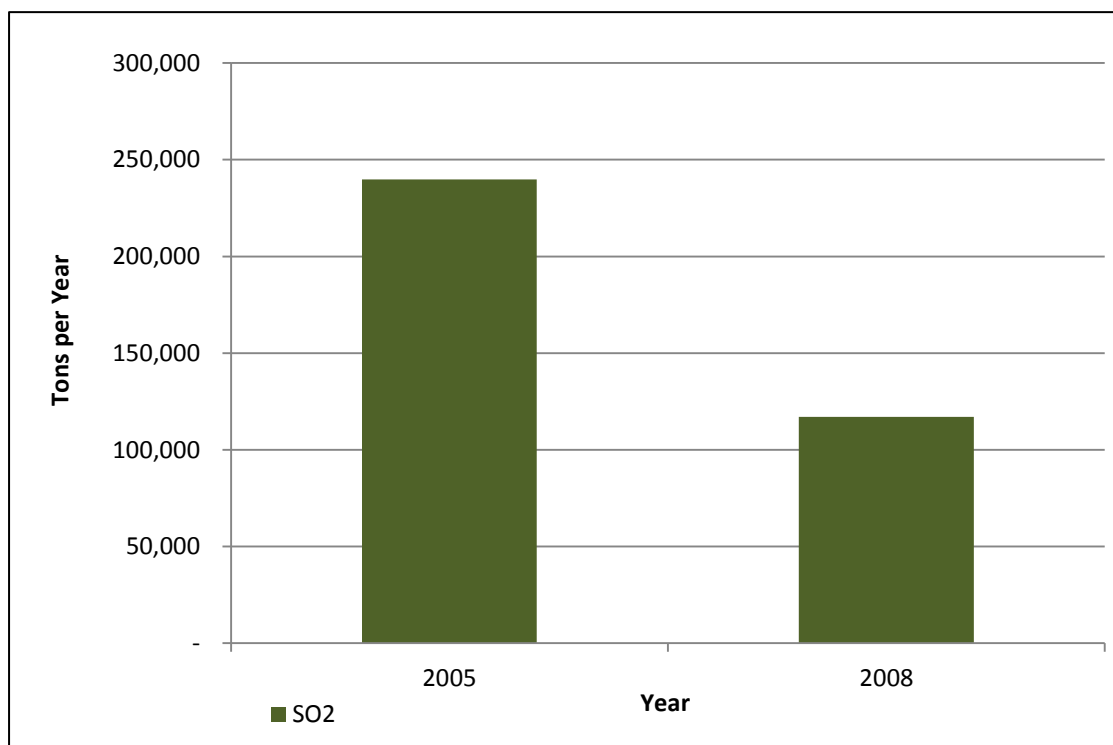
Graph 4.9: Direct PM_{2.5} Emission Trends, All Sources in Dearborn County, IN, 2005 and 2008 - With CAIR



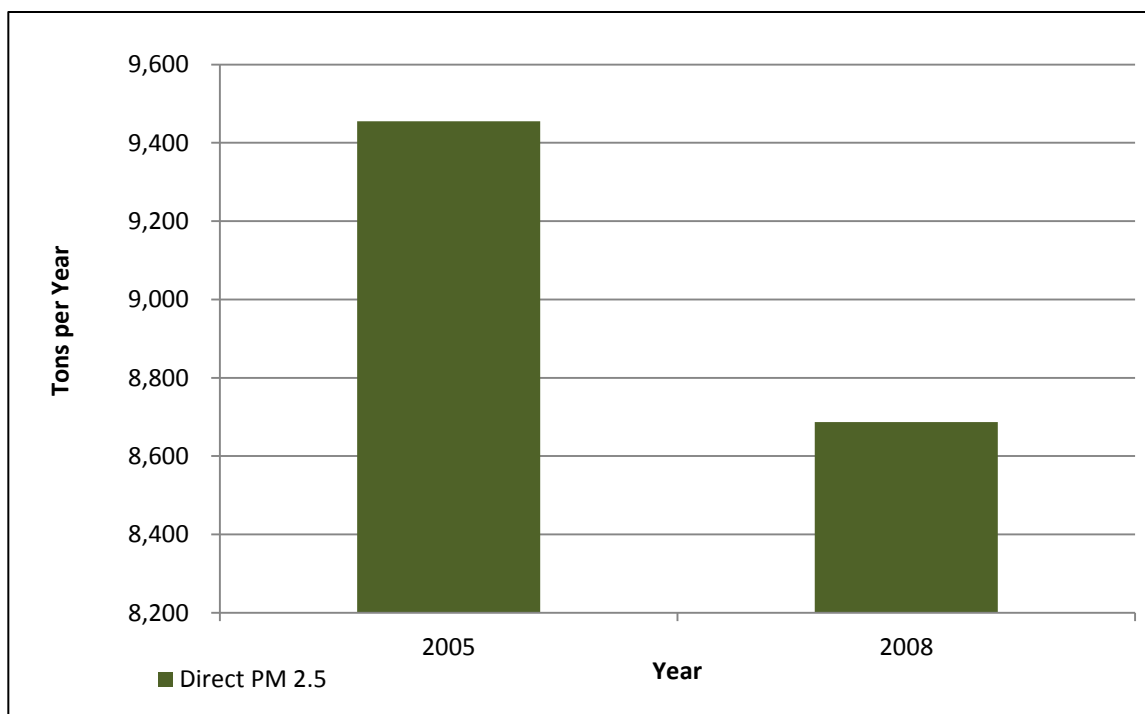
Graph 4.10: NO_x Emission Trends, All Sources in Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005 and 2008 - With CAIR



Graph 4.11: SO₂ Emission Trends, All Sources in Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005 and 2008 - With CAIR



Graph 4.12: Direct PM_{2.5} Emission Trends, All Sources in Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area, 2005 and 2008 - Without CAIR



4.2.3 *EGU Sources*

As stated above, there are not any operating EGUs in Lawrenceburg Township, Dearborn County, Indiana as of June 1, 2015. This section addresses previous emissions that occurred while Tanners Creek Generating Station was still in operation.

Both NO_x and SO₂ emissions have decreased substantially in response to national programs affecting all EGUs such as the Acid Rain program and the NO_x SIP Call. Other sectors of the inventory also impact the formation of PM_{2.5}, but large regional sources such as EGUs have a substantial impact on the formation of PM_{2.5}.

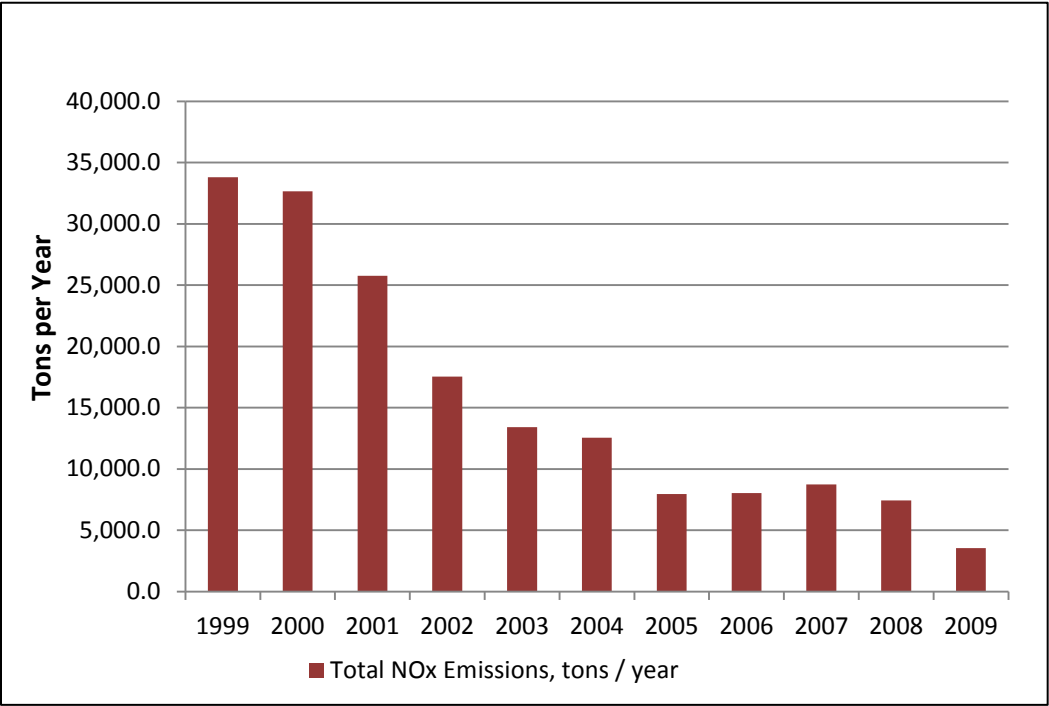
EGU data was taken from U.S. EPA's Clean Air Markets database⁷. Data are available sooner for these units than other point sources in the inventory because of the NO_x SIP Call budget and trading requirements. States were required to adopt into their rules a budget for all large EGUs. Indiana's budget is referenced in 326 IAC 10-4. The budget represents a statewide cap on NO_x emissions. Although each unit is allocated emissions based upon historic heat input, utilities can meet this budget by over-controlling certain units or purchasing credits from the market to account for overages at other units. Information from 2003 is significant because some EGUs started operation of their NO_x SIP Call controls in order to generate Early Reduction Credits for their future year NO_x budgets. The first season of the NO_x SIP Call budget period began May 31, 2004. To summarize, NO_x emissions have dramatically decreased over the years represented on the below graphs.

Tanners Creek entered into a Consent Decree with U.S. EPA on October 9, 2007. For NO_x, the Consent Decree called for low-NO_x burners and overfire air. Further, AEP constructed Selective Non-Catalytic Reduction (SNCRs) on Units 1, 2, and 3 in 2008 to meet CAIR requirements. As a general rule, low NO_x burners are around 40% control and SNCRs are an additional 30%. Tanners Creek Generating Station's permit did not require operation of these controls, but they were operated in order to meet CAIR allowances. For SO₂, the Consent Decree and their permit stated that Tanners Creek had to burn coal not exceeding 1.2% sulfur. With the Consent Decree in place, these controls were therefore considered permanent and enforceable and can be associated with the downward trend in NO_x and SO₂ emissions from Tanners Creek Generating Station.

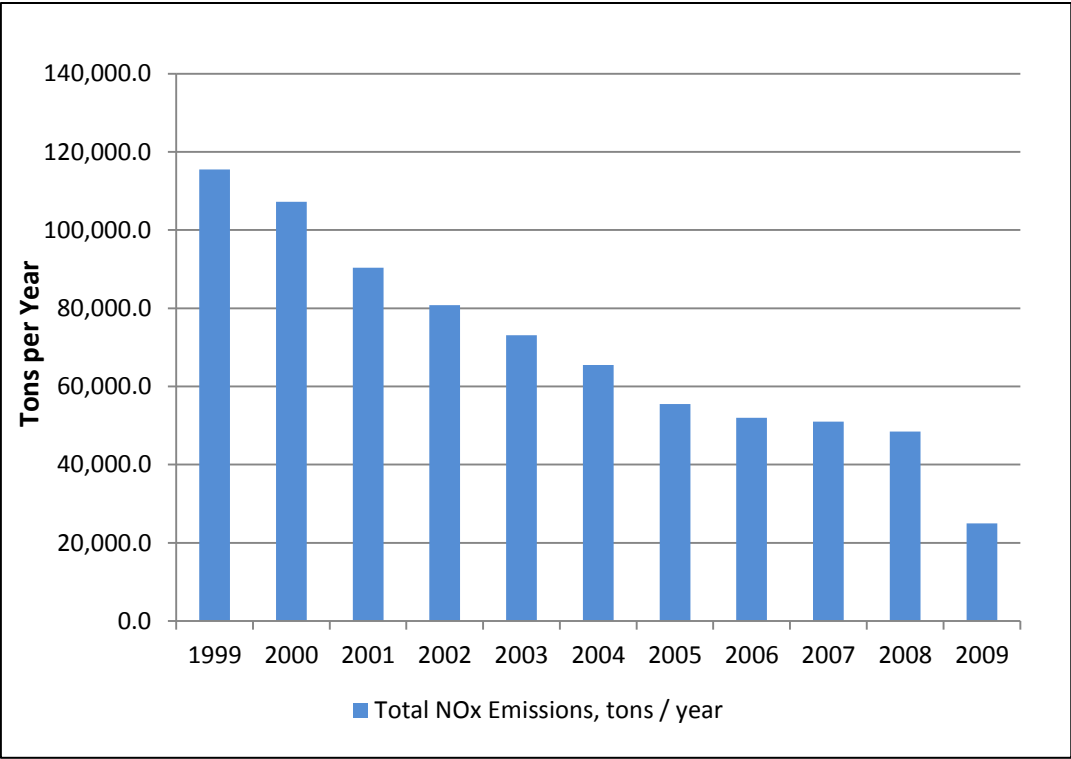
Graphs 4.13 and 4.15 depict the trends in NO_x and SO₂ emissions from Tanners Creek that previously operated in Lawrenceburg Township, Dearborn County, Indiana for the years 1999 to 2009. Graphs 4.14 and 4.16 depict the trends in NO_x and SO₂ emissions from the entire Cincinnati nonattainment area for the years 1999 to 2009. Graphs and data tables of emissions from the EGU source category can be found in Appendix D.

⁷ <http://www.epa.gov/airmarkets>

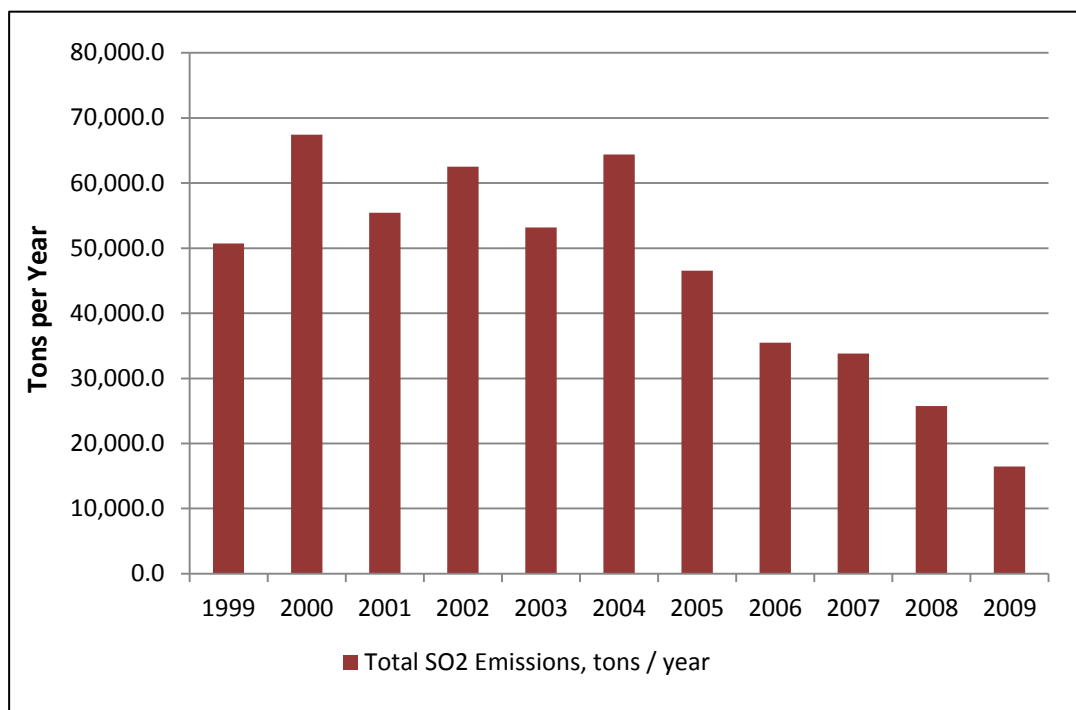
Graph 4.13: Lawrenceburg Township, Dearborn County, Indiana, NO_x Emissions from EGUs, 1999-2009



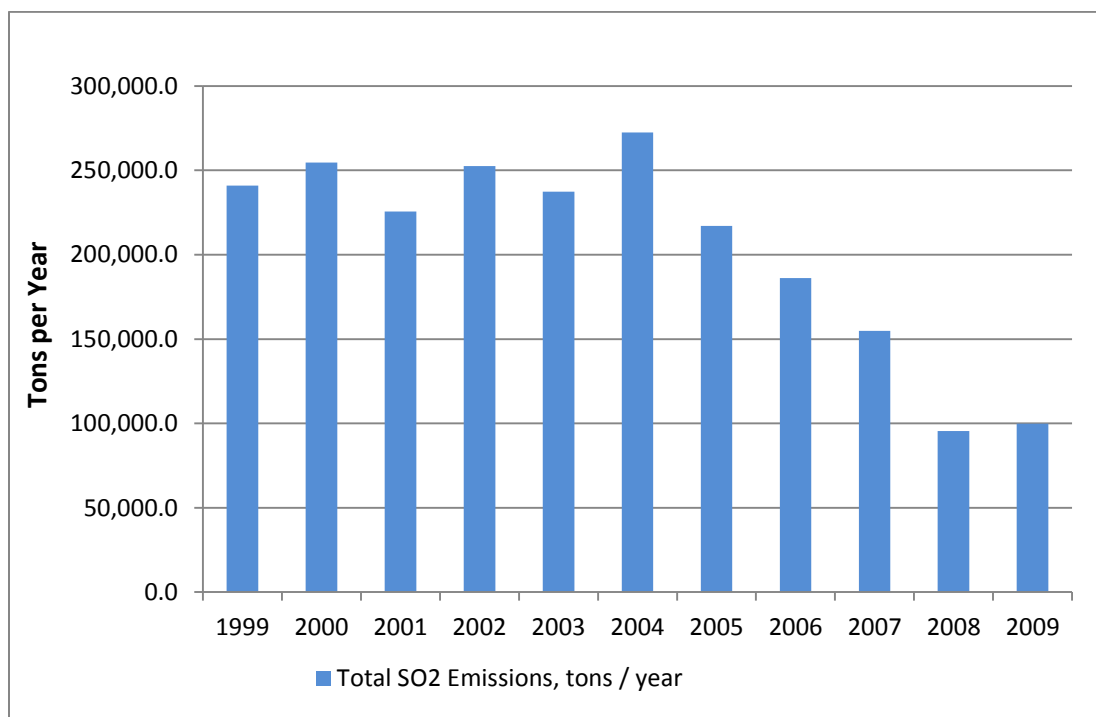
Graph 4.14: Entire Cincinnati-Hamilton OH-KY-IN, Nonattainment Area, NO_x Emissions from EGUs, 1999-2009



Graph 4.15: Lawrenceburg Township, Dearborn County, Indiana, SO₂ Emissions from EGUs, 1999-2009



Graph 4.16: Entire Cincinnati-Hamilton OH-KY-IN, Nonattainment Area SO₂ Emissions from EGUs, 1999-2009



4.3 RIA Base-Year Inventory and Projections

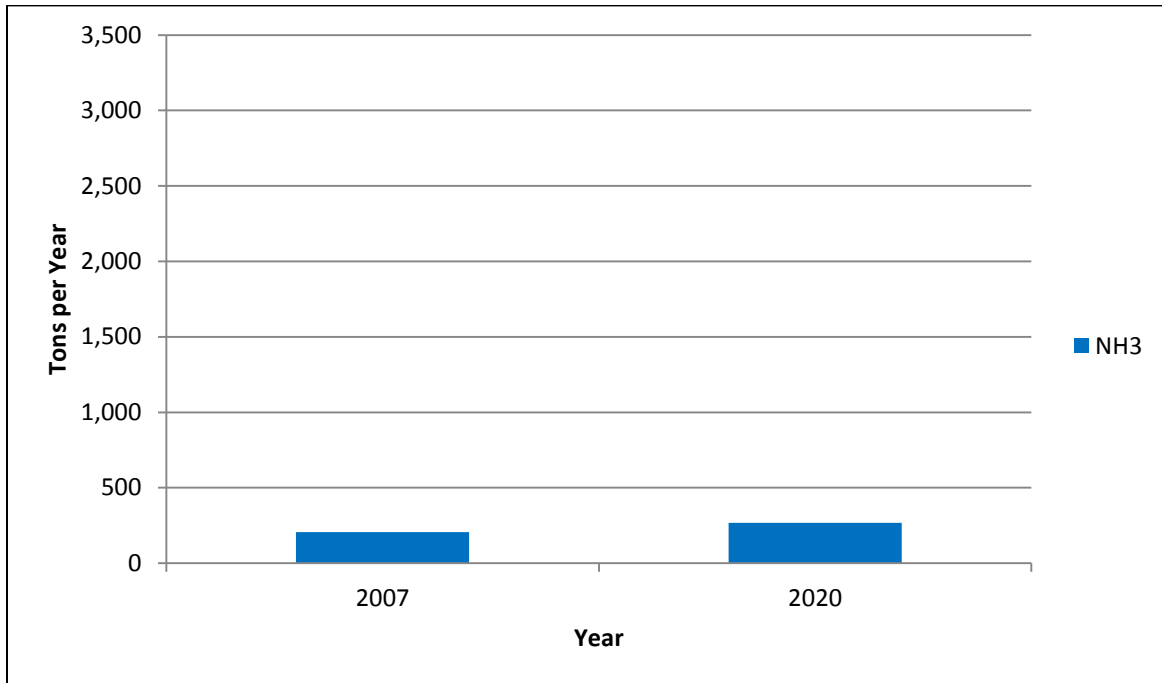
The base-year for the supplemental NH₃ and VOCs RIA inventory is 2007. This is representative of the 2008 base-year referenced above for the original NO_x, SO₂, and direct PM_{2.5} inventory. U.S. EPA grew the 2007 base-year inventory out to the year 2020 to project maintenance potentials. U.S. EPA Region 5 prepared emission projections for Dearborn County, Indiana, as well as for the entire nonattainment area. The detailed 2007 base-year and 2020 projected-emissions RIA inventory for NH₃ and VOCs in the entire Cincinnati nonattainment area can be found in Appendix E.

Emission trends are an important gauge for continued compliance with the 1997 annual standard for PM_{2.5}. Therefore, IDEM performed a comparison of the base-year (2007) and the projected-year (2020) of the NH₃ and VOCs RIA-estimated emissions in Dearborn County, Indiana and the entire Cincinnati nonattainment area.

Graphs 4.17, 4.18, 4.19, and 4.20 compare NH₃ estimated-emissions for the 2007 base-year with the 2020 projected-year and by source category in Dearborn County, Indiana and the entire Cincinnati nonattainment area. Graphs 4.21, 4.22, 4.23, and 4.24 compare VOC estimated-emissions for the 2007 base-year with the 2020 projected-year and by source category in Dearborn County, Indiana and the entire Cincinnati nonattainment area.

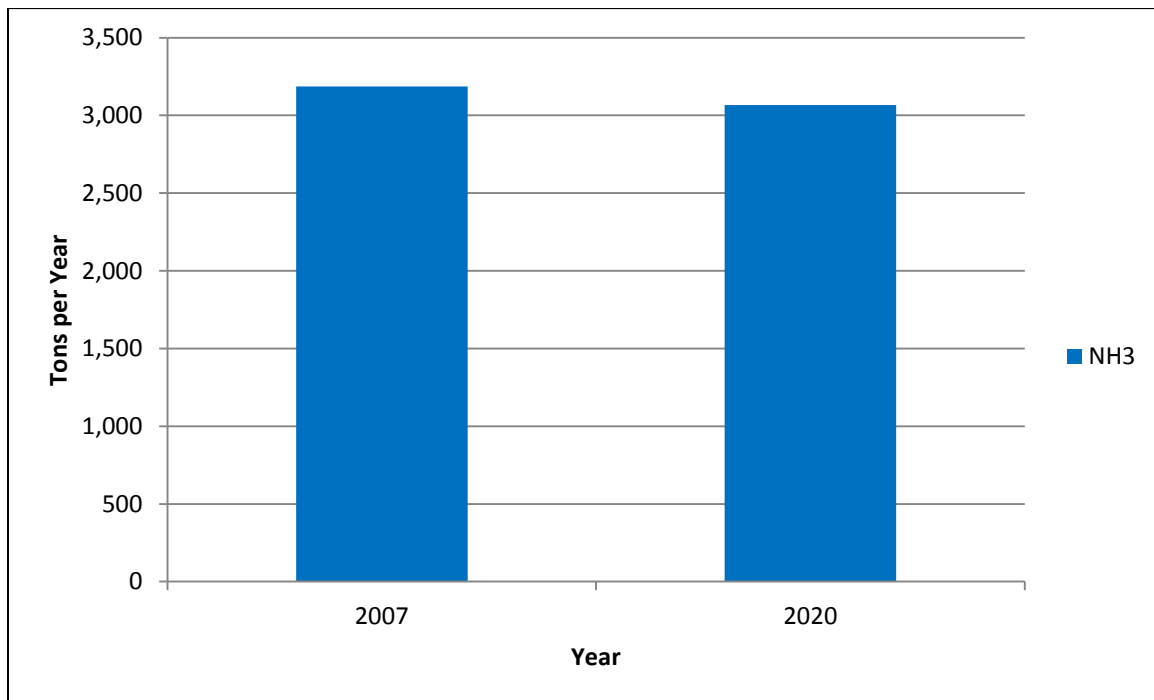
While an increase can be seen in the NH₃ projected-emissions for Dearborn County, Indiana, VOCs are projected to decrease. This significant NH₃ increase is due to the implementation of SNCR controls at Tanners Creek Generating Station in 2008 as mentioned in the above section (*EGU Sources*). The trade-off result for using SNCR controls for NO_x emission reductions is an increase in NH₃ emissions (the catalyst in the NO_x reducing chemical reaction). This would explain the significant increase in the RIA inventory for NH₃ emissions for Dearborn County in 2020 - if the Tanners Creek Generating Station were still in operation. Overall emissions in the entire Cincinnati nonattainment are also projected to decrease substantially for both NH₃ and VOCs as can be seen in Graphs 4.18, 4.20, 4.22, and 4.24.

Graph 4.17: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions - Dearborn County, Indiana



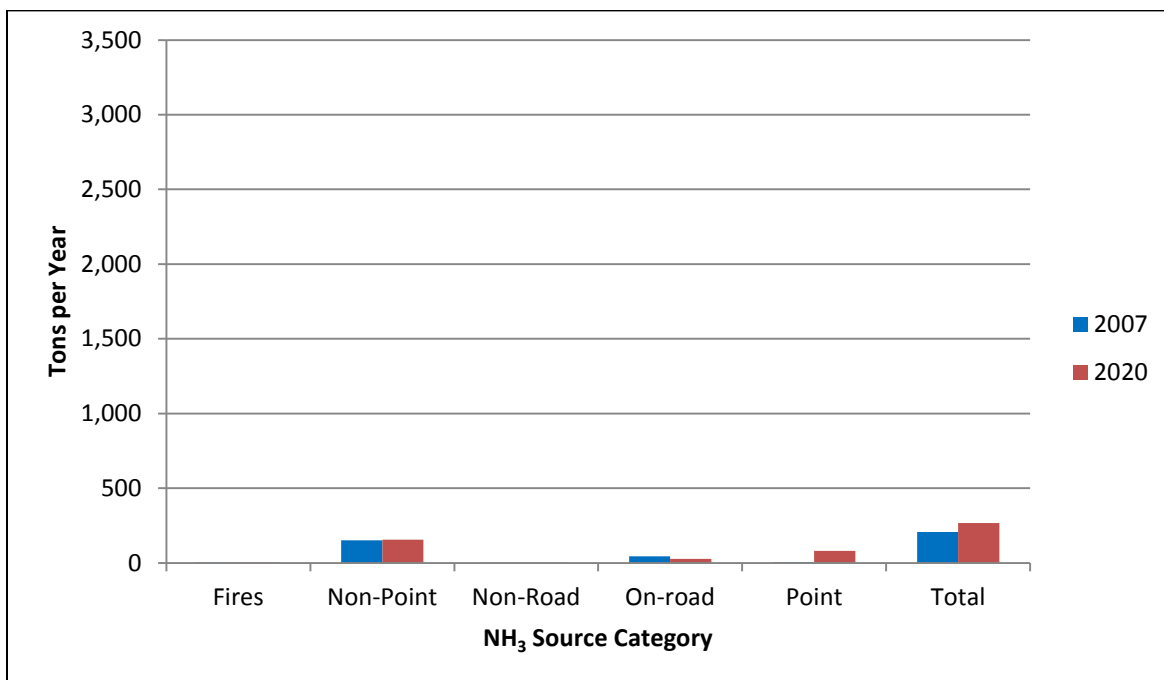
**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.18: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



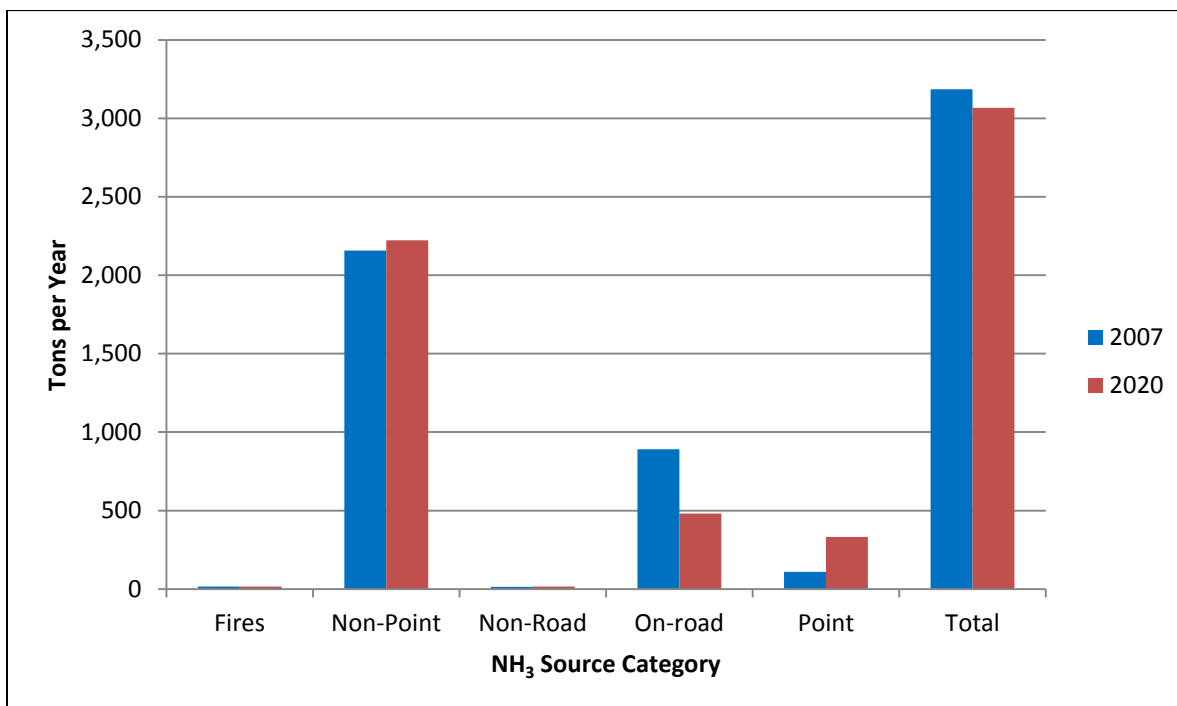
**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.19: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions by Source Category - Dearborn County, Indiana



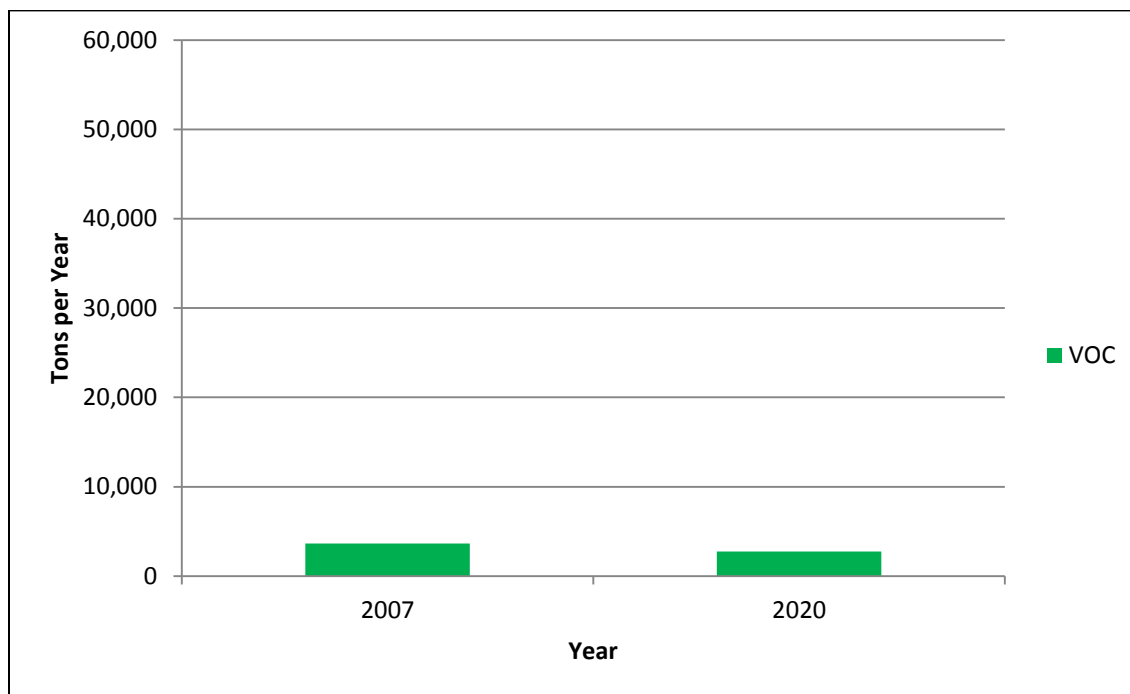
**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.20: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions by Source Category - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



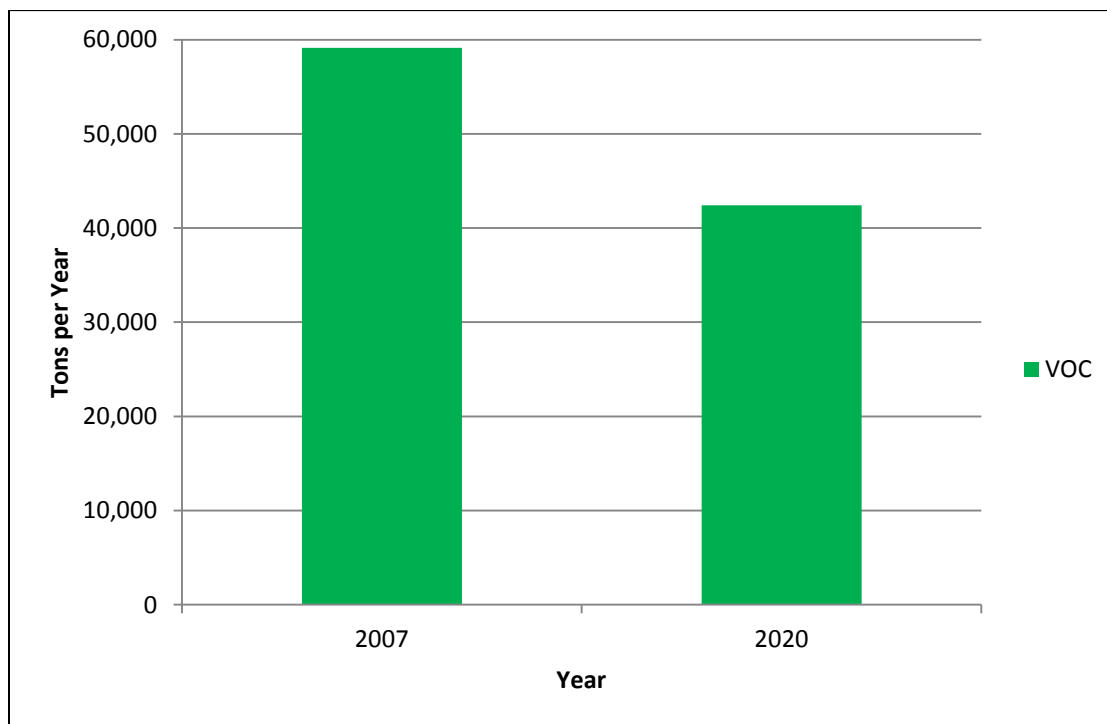
**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.21: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions - Dearborn County, Indiana



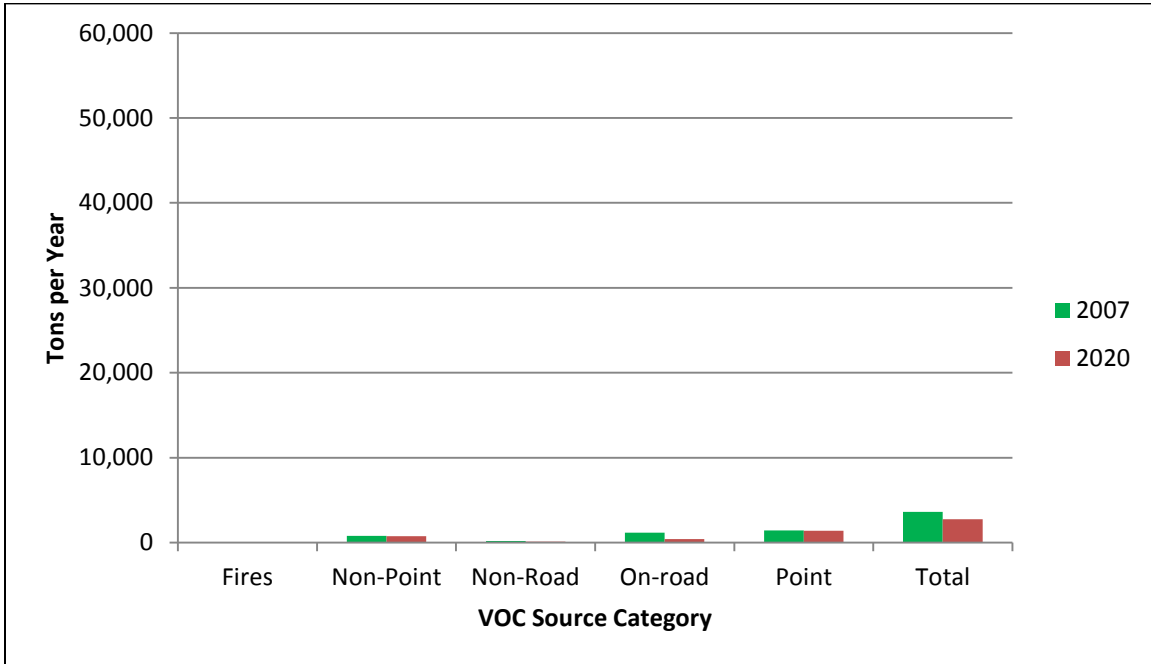
**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.22: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



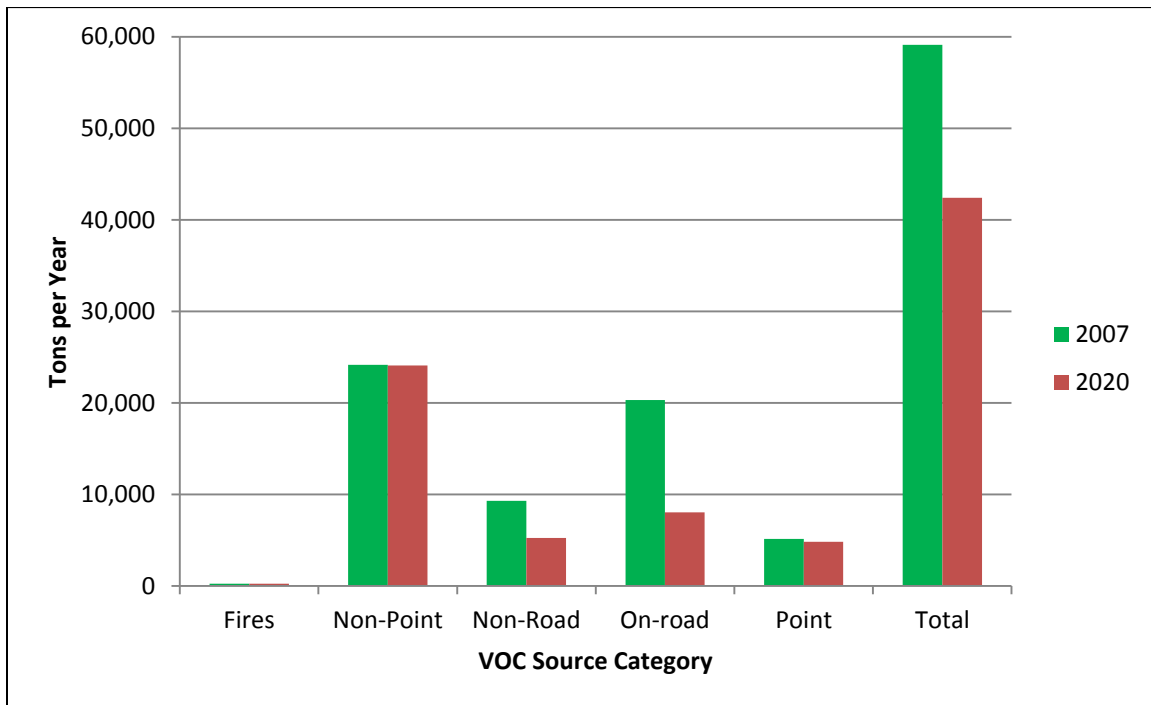
**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.23: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions by Source Category - Dearborn County, Indiana



**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Graph 4.24: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions by Source Category - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Table 4.1: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ and VOC Emission Estimates - Dearborn County, Indiana

Tons per year	2007	2020	Change	% Change
NH ₃	205.87	266.81	+60.94	+29.60%
VOC	3,643.54	2,751.51	-892.03	-24.48%

**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Table 4.2: Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ and VOC Emission Estimates - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area

Tons per year	2007	2020	Change	% Change
NH ₃	3,185.82	3,066.89	-118.93	-3.73%
VOC	59,120.69	42,404.28	-16,716.41	-28.28%

**Projected 2020 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

4.4 Demonstration of Maintenance

A maintenance plan provides for the continued attainment of the air quality standard by an area for a period of ten years after U.S. EPA has formally redesignated the area to attainment. The plan also provides assurances that even if there is a subsequent exceedance of the air quality standard, measures in the maintenance plan will prevent any future occurrences through contingency measures that would be triggered. U.S. EPA's Redesignation Guidance (Page 9) states, "A state may generally demonstrate maintenance of the NAAQS 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."

U.S. EPA previously approved Indiana's maintenance plan (codified at 40 CFR 52.776 (v)(3)) and its 2005 NO_x, SO₂, and PM_{2.5} emissions inventory (codified at 40 CFR 52.776 (w)(3)) on December 23, 2011. The approval of these two items was not vacated in the March 18, 2015, court ruling that vacated U.S. EPA's conclusion that the Cincinnati area had attained the 1997 annual PM_{2.5} standard.

Quality assured ambient air quality monitoring data from all monitoring sites within the entire nonattainment area indicate that air quality met the 1997 annual NAAQS for PM_{2.5} during the three-year design value from 2007-2009. The same is true during the 2009-2011 three-year design value through the latest three-year design value ending in 2015.

The inventory in Section 4.2 *Codified Base-Year Inventory* of this document illustrates that NO_x, SO₂, and PM_{2.5} emissions in the Cincinnati nonattainment area continued to decline leading to local reductions between 2008 (base year-grown from the 2005 emission inventory) and 2021 (maintenance plan horizon). These emissions reductions are further sustained with the closing of Tanners Creek Generating Station in Lawrenceburg Township, Dearborn County, Indiana, on June 1, 2015.

Emission projections in Section 4.3 *RIA Base-Year Inventory Projections* of this document also show that NH₃ and VOCs will continue to decline between the 2007 base-year and the 2020 projected maintenance-year in the Cincinnati nonattainment area even if Tanners Creek Generating Station had remained in operation. Section 7.0 of this document discusses U.S. EPA's 2012 RIA modeling as supporting weight of evidence in the maintenance of attainment.

In Indiana, major point sources in all counties are required to submit air emissions information once every three years, or annually, if the NO_x or SO₂ potential to emit is greater than 2,500 tons per year in accordance with the Emission Reporting Rule, 326 IAC 2-6. IDEM prepares a new periodic inventory for all precursor emission sectors every three years. These precursor emission inventories will be prepared for 2017, 2020, 2023, and 2025 as necessary to comply with the inventory reporting requirements established in the CAA. Emissions data for NO_x, SO₂, and PM_{2.5} will be compared to the 2008 base-year inventory and the 2021 projected maintenance-year inventory to assess emission trends as necessary to assure continued compliance with the annual PM_{2.5} standard. Emissions data for NH₃ and VOCs will be compared to the 2007 RIA inventory base-year and the 2020 EPA-projected maintenance year inventory to also assess emission trends as necessary to assure continued compliance with the 1997 annual PM_{2.5} standard.

From Indiana's previous 1997 annual PM_{2.5} redesignation and maintenance plan submittal in 2011, the NO_x, SO₂, and direct PM_{2.5} rates of decline between 2008 - 2021 are shown in the two tables below (4.3 and 4.4). NO_x emissions within the entire Cincinnati-Hamilton, OH-KY-IN, nonattainment area are projected to decline by 46.9% between 2008 and 2021. Emission reduction benefits from U.S.EPA rules covering the NO_x SIP Call, Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements, Highway Heavy-Duty Engine Rule, and Non-road Diesel Engine Rule were factored into the changes. Additionally, due to implementation of the NO_x SIP Call across the eastern United States, NO_x and fine particle levels entering the Cincinnati area will continue to decrease. SO₂ emissions within the Cincinnati area are projected to decline by 24.3% between 2008 and 2021. Direct PM_{2.5} emissions from 2008 to 2021 are also projected to decline by 5.6% within the Cincinnati area.

Table 4.3: Comparison of 2008 (Base-Year) Estimated and 2021 (Projected-Year) NO_x, SO₂, and Direct PM_{2.5} Emission Estimates - Dearborn County, Indiana

tons per year (tpy)	2008	2021	Change	% Change
NO_x	10,621.35	13,767.56	3,146.21	29.6%
SO₂	27,164.52	38,261.63	11,097.11	40.9%
Direct PM_{2.5}	920.29	1,011.29	91.00	9.9%

**Projected 2021 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

Table 4.4: Comparison of 2008 (Base-Year) Estimated and 2021 (Projected-Year) NO_x, SO₂, and Direct PM_{2.5} Emission Estimates - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area

tons per year (tpy)	2008	2021	Change	% Change
NO_x	148,706.15	78,819.18	-69,886.97	-46.9%
SO₂	116,966.42	88,540.12	-28,426.30	-24.3%
Direct PM_{2.5}	8,687.22	8,202.63	-484.59	-5.6%

**Projected 2021 point-source emissions, and resulting totals, do not represent the closing of Tanner's Creek Generating Station on June 1, 2015.*

All of the above values were calculated given emission levels present in 2007 (NH₃ and VOCs) and 2008 (direct PM_{2.5}, NO_x, and SO₂) base-years. The projected values also factored in the continuing operation of Tanners Creek Generating Station. Since Indiana's projections show that direct PM_{2.5}, NO_x, and SO₂ emissions are projected to decline through 2021, it is reasonable to believe that NH₃ and VOCs will also follow this trend through 2021 and beyond. As a result, overall PM_{2.5} levels will decline.

IDEM is requesting that U.S. EPA approve the final 2021 projected-emissions inventory for direct PM_{2.5}, NO_x, and SO₂. In Indiana's portion of the Cincinnati nonattainment area, there are not any controls that are being removed. In the entire Cincinnati nonattainment area each of the pollutants has a consistent rate of decline as can be referenced in Table 4.4 for NO_x, SO₂, and direct PM_{2.5} as well as NH₃ and VOCs in Table 4.2. Therefore, the emissions inventory for the projected-year of 2021 is applicable to the current 10-year out future-year of 2026. Emissions in Dearborn County in 2026 will be at or below the predicted estimates for 2021.

4.5 Permanent and Enforceable Emission Reductions

Permanent and enforceable reductions of direct PM_{2.5}, NO_x, SO₂, NH₃, and VOCs have contributed to the attainment of the annual standard for PM_{2.5}. Some of these reductions were due to the implementation of the NO_x SIP Call and some were due to the application of tighter federal standards on motor vehicles and fuels. Section 6.0 identifies the emission control measures specific to Dearborn County, Indiana, as well as the implementation status of each measure.

4.6 Provisions for Future Updates

As required by Section 175A(b) of the CAA, Indiana commits to submit to the Administrator, eight years after redesignation, an additional revision of this SIP. The revision will contain Indiana's plan for maintaining the national primary PM_{2.5} air quality standard for ten years beyond the first ten-year period after redesignation.

5.0 TRANSPORTATION CONFORMITY BUDGETS

U.S. EPA previously approved Indiana's maintenance plan (codified at 40 CFR 52.776 (v)(3)) on December 23, 2011, which includes 2015 motor vehicle emissions budgets (MVEBs) for the Indiana and Ohio portions of the 1997 annual PM_{2.5} Cincinnati nonattainment area. The

approval of this maintenance plan and the MVEBs was not vacated in the March 18, 2015, court ruling that vacated U.S. EPA's conclusion that the Cincinnati area had attained the 1997 annual PM_{2.5} standard. The 2015 codified MVEBs are 1,678.60 tons per year (tpy) for primary PM_{2.5} and 35,723.83 tpy for NO_x. The 2021 codified MVEBs are 1,241.19 tpy for primary PM_{2.5} and 21,747.71 tpy for NO_x. Due to the rate of decline of all PM_{2.5} precursor emissions in the Cincinnati nonattainment area, as shown in section 4.0, it is also reasonable that this 2021 approved budget would be applicable at the same levels for a current 10-year out future-year of 2026.

As stated in section 4.0 of this document, the conformity rule, 40 CFR 51, does not require states to set up budgets for NH₃ and VOCs. After the Sierra Club's claims and the court's decision to vacate U.S. EPA's attainment designation, Indiana felt it important to show potential NH₃ and VOC levels as a part of this revision to January 2011's redesignation request. This is part of the Title I, Part D, Subpart 4 requirements. Indiana's analysis of these precursor pollutants indicates that they are not significant in the Cincinnati nonattainment area. This finding for VOCs is also supported by a study in the Journal of Environmental Management in 2009 by Odman et al. "Quantifying the sources of ozone, fine particulate matter, and regional haze in the Southeastern United States".⁸ The study found that SO₂ and direct PM_{2.5} emissions contribute more to the formation of ambient PM_{2.5} than NO_x or VOC emissions in parts of the Cincinnati nonattainment area. A portion of the projected decline of ambient NH₃ in the Cincinnati nonattainment area can be evidenced in Ohio's analysis of mobile NH₃ emissions.⁹ Their analysis shows NH₃ projections in 2020 to comprise only 15.7% of the total NH₃ emissions in the entire Cincinnati nonattainment area.

6.0 CONTROL MEASURES AND REGULATIONS

This section provides specific information on the control measures that have been or will be implemented in Dearborn County, Indiana, including CAA requirements and additional state or local measures implemented beyond CAA requirements.

6.1 Reasonably Available Control Technology (RACT) and other State Volatile Organic Compound (VOC) Rules

As required by Section 172 of the CAA, Indiana has promulgated several rules requiring RACT for emissions of VOCs since the mid 1990's. In addition, other statewide rules for controlling VOCs have also been promulgated. The Indiana VOC rules are found in 326 IAC 8. The following is a listing of statewide rules that assist with the reduction of VOCs in the state:

326 IAC 8-1-6	New facilities; general reduction requirements (Best Available Control Technology for Non-Specific Sources)
326 IAC 8-2	Surface Coating Emission Limitations
326 IAC 8-3	Organic Solvent Degreasing Operations
326 IAC 8-4	Petroleum Sources
326 IAC 8-5	Miscellaneous Operation

⁸ Journal of Environmental Management 90 (2009) 3155-3168

⁹ http://www.epa.state.oh.us/portals/27/SIP/Cincinnati_PM25_annual_redesignation_2016-DRAFT.pdf

326 IAC 8-6	Organic Solvent Emission Limitations
326 IAC 8-10	Automobile Refinishing
326 IAC 8-14	Architectural and Industrial Maintenance Coatings
326 IAC 8-15	Standards for Consumer and Commercial Products

6.2 Implementation of Past SIP Revisions

The Cincinnati area attained the standard well in advance of its attainment deadline of 2010. As a result, Indiana was not required to develop and submit an Attainment SIP or RACT SIP for this area under the annual PM_{2.5} NAAQS.

6.3 Nitrogen Oxides (NO_x) Rule¹⁰

On October 27, 1998, U.S. EPA established the NO_x SIP Call, which required 22 states to adopt rules that would result in significant emission reductions from large EGUs, industrial boilers, and cement kilns in the eastern United States. Indiana adopted this rule in 2001. Beginning in 2004, this rule accounts for a reduction of approximately thirty-one percent (31%) of all NO_x emissions statewide, compared to the previous uncontrolled years.

These rules were also adopted by 21 other states, which have resulted in significant reductions occurring within Indiana and regionally due to the number of affected units within the region. The historical trend charts show that air quality has improved due to the decreased emissions resulting from this program. The EGU portion of the NO_x SIP Call was replaced by the CAIR and has since been replaced by the CSAPR which continues to result in NO_x controls for EGUs. On April 21, 2004, U.S. EPA published Phase II of the NO_x SIP Call that established a budget for large (emissions of greater than one ton per day) stationary internal combustion engines. In Indiana the rule decreased NO_x emissions statewide from natural gas compressor stations by 4,263 tons during May through September. The Indiana Phase II NO_x SIP Call rule became effective in 2006 and implementation began in 2007 (326 IAC 10-5).

6.4 Measures Beyond Clean Air Act (CAA) Requirements

Reductions in fine particle precursor emissions have occurred, and are anticipated to occur, as a result of state and federal control programs. These additional control measures are summarized below.

6.4.1 Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards¹¹

In February 2000, U.S. EPA finalized a federal rule to significantly reduce emissions from cars and light duty trucks, including sport utility vehicles (SUVs). This rule required automakers to produce cleaner cars and refineries to make cleaner, lower sulfur gasoline. This rule was phased in between 2004 and 2009 and resulted in a 77% decrease in NO_x emissions from passenger cars, an 86% decrease from smaller SUVs, light duty trucks, and minivans, and a 65% decrease from larger SUVs, vans, and heavier duty trucks. This rule also resulted in a 12% decrease in VOC

¹⁰ <http://www.gpo.gov/fdsys/pkg/FR-1998-10-27/pdf/98-26773.pdf>

¹¹ <http://www.gpo.gov/fdsys/pkg/FR-2000-02-10/pdf/00-19.pdf>

emissions from passenger cars, an 18% decrease from smaller SUVs, light duty trucks, and minivans, and a 15% decrease from larger SUVs, vans, and heavier duty trucks.

6.4.2 Tier III Emission Standards for Vehicles and Gasoline Sulfur Standards¹²

In March 2014, U.S. EPA finalized a federal rule to further strengthen Tier II vehicle emission and fuel standards. This rule will require automakers to produce cleaner vehicles and refineries to make cleaner, lower sulfur gasoline. This rule will be phased in between 2017 and 2025. Tier III requires all passenger vehicles to meet an average standard of 0.03 gram/mile of NO_x. Compared to Tier II, the Tier III tailpipe standards for light-duty vehicles are expected to reduce NO_x and VOC emissions by approximately 80%. Tier III vehicle standards also include evaporative standards using onboard diagnostics that will result in a 50% reduction in VOC emissions compared to Tier II reductions. The rule reduces the sulfur content of gasoline to 10 parts per million (ppm), beginning in January 2017.

6.4.3 Heavy-Duty Diesel Engines¹³

In July 2000, U.S. EPA issued a final rule for Highway Heavy-Duty Engines, a program that includes low-sulfur diesel fuel standards. This rule applies to heavy-duty gasoline and diesel trucks and buses. This rule was phased in from 2004 - 2007 and resulted in a 40% decrease in NO_x emissions from diesel trucks and buses.

6.4.4 Clean Air Non-road Diesel Rule¹⁴

In May 2004, U.S. EPA issued the Clean Air Non-road Diesel Rule. This rule applies to diesel engines used in industries such as construction, agriculture, and mining. It also contains a cleaner fuel standard similar to the highway diesel program. The engine standards for non-road engines took effect in 2008 and resulted in a 90% decrease in SO₂ emissions from non-road diesel engines. Sulfur levels were also reduced in non-road diesel fuel by 99.5% from approximately 3,000 ppm to 15 ppm.

6.4.5 Non-road Spark-Ignition Engines and Recreational Engine Standards¹⁵

Effective in January 2003, this standard regulates NO_x, VOCs, and carbon monoxide (CO) for groups of previously unregulated non-road engines. This standard applies to all new engines sold in the United States and imported after the standards went into effect. The standard applies to large spark-ignition engines (forklifts and airport ground service equipment), recreational vehicles (off-highway motorcycles and all-terrain vehicles), and recreational marine diesel engines. When all of the non-road spark-ignition engines and recreational engine standards are fully implemented, an overall 80% reduction in NO_x, 72% reduction in VOC, and 56% reduction in CO emissions are expected by 2020.

¹² <http://www.gpo.gov/fdsys/pkg/FR-2014-04-28/pdf/2014-06954.pdf>

¹³ <http://www.gpo.gov/fdsys/pkg/FR-2001-01-18/pdf/01-2.pdf>

¹⁴ <http://www.gpo.gov/fdsys/pkg/FR-2004-06-29/pdf/04-11293.pdf>

¹⁵ <http://www.gpo.gov/fdsys/pkg/FR-2002-11-08/pdf/02-23801.pdf>

6.4.6 Reciprocating Internal Combustion Engine Standards¹⁶

This standard, effective in May 2010, regulates emissions of air toxics from existing diesel-powered stationary reciprocating internal combustion engines that meet specific site rating, age, and size criteria. These engines are typically used at industrial facilities (e.g. power, chemical, and manufacturing plants) to generate electricity for compressors and pumps and to produce electricity to pump water for flood and fire control during emergencies.

The standard applies to stationary diesel engines: (1) that are located at a major source of air toxics emissions and that were installed prior to June 12, 2006; (2) used at major sources of air toxics, having a site rating of less than or equal to 500 horsepower and were constructed or reconstructed before June 12, 2006; and (3) used at major sources of air toxics for non-emergency purposes, having a site rating of greater than 500 horsepower and were constructed or reconstructed before December 19, 2002.

Operators of existing engines were required to: (1) install emission control equipment that would limit air toxics up to 70% for stationary non-emergency engines with a site rating greater than 300 horsepower; (2) perform emission tests to demonstrate engine performance and compliance with rule requirements; and (3) burn ultra-low sulfur fuel in stationary non-emergency engines with a site rating greater than 300 horsepower.

The engine standards took effect in 2013. According to U.S. EPA estimates, this rule has resulted in emission reductions from existing diesel-powered stationary reciprocating internal combustion engines of approximately 1,000, 2,800, and 27,000 tpy of air toxics, PM_{2.5}, and CO, respectively.

6.4.7 Category 3 Marine Diesel Engine Standards¹⁷

This standard was effective in June 2010, and promulgated more stringent exhaust emission standards for new large marine diesel engines with per-cylinder displacement at or above 30 liters (commonly referred to as Category 3 compression-ignition marine engines) as part of a coordinated strategy to address emissions from all ships that affect U.S. air quality. These emission standards are equivalent to those adopted in the amendments to Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL Annex VI). The emission standards apply in two stages: near-term standards, for newly built engines, which took effect in 2011 and long-term standards requiring an 80% reduction in NO_x emissions that began in 2016.

U.S. EPA is adopting changes to the diesel fuel program to allow for the production and sale of diesel fuel with up to 1,000 ppm sulfur for use in Category 3 marine vessels. The regulations generally forbid production and sale of fuels with more than 1,000 ppm sulfur for use in most U.S. waters unless operators achieve equivalent emission reductions in other ways.

U.S. EPA is also adopting provisions to apply some emission and fuel standards to foreign-

¹⁶ <http://www.gpo.gov/fdsys/pkg/FR-2010-03-03/pdf/2010-3508.pdf>

¹⁷ <http://www.gpo.gov/fdsys/pkg/FR-2010-04-30/pdf/2010-2534.pdf>

flagged and in-use vessels that are covered by MARPOL Annex VI. When this strategy is fully implemented in 2030, U.S. EPA estimates that NO_x and PM_{2.5} emissions in the U.S. will be reduced by approximately 1.2 million tpy and 143,000 tpy, respectively.

6.4.8 Clean Air Interstate Rule (CAIR)/Cross State Air Pollution Rule (CSAPR)¹⁸

On May 12, 2005, U.S. EPA published the following regulation: “Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (CAIR); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call; Final Rule.” This rule established the requirement for states to adopt rules limiting the emissions of NO_x and SO₂ and provided a model rule for the states to use in developing their rules in order to meet federal requirements. The purpose of CAIR was to reduce interstate transport of PM_{2.5}, SO₂, and ozone precursors (NO_x).

CAIR applied to any stationary, fossil fuel-fired boiler or stationary, fossil fuel-fired combustion turbine, or a generator with a nameplate capacity of more than 25 megawatt electrical (MWe) producing electricity for sale. This rule provided annual state caps for NO_x and SO₂ in two phases, with Phase I caps for NO_x and SO₂ taking effect in 2009 and 2010, respectively. Phase II caps were to become effective in 2015. U.S. EPA allowed limits to be met through a cap and trade program if a state chose to participate in the program.

SO₂ emissions from power plants in the 28 eastern states, as well as Washington D.C., subject to CAIR were to be cut by 4.3 million tons from 2003 levels by 2010 and 5.4 million tons from 2003 levels by 2015. NO_x emissions were to be cut by 1.7 million tons by 2009 and reduced by an additional 1.3 million tons by 2015. In response to U.S. EPA’s rulemaking, Indiana adopted a state rule in 2006 based on the model federal rule (326 IAC 24-1, 326 IAC 24-2, and 326 IAC 24-3). Indiana’s rule included annual and seasonal NO_x trading programs, an annual SO₂ trading program, and emission budgets. This rule required compliance effective January 1, 2009.

In July 2008, the D.C. Circuit court vacated CAIR and issued a subsequent remand without vacatur of CAIR in December 2008. The court then directed U.S. EPA to revise or replace CAIR in order to address the deficiencies identified by the court. On July 6, 2011, U.S. EPA finalized CSAPR as a replacement for CAIR. On August 21, 2012, the U.S. Court of Appeals for the D.C. Circuit vacated CSAPR and directed U.S. EPA to continue administering CAIR “pending the promulgation of a valid replacement.” In a subsequent decision on the merits, the Court vacated CSAPR based on a subset of petitioners’ claims, but on April 29, 2014, the U.S. Supreme Court reversed that decision and remanded the case to the D.C. Circuit court for further proceedings. Throughout the initial round of D.C. Circuit proceedings and the ensuing U.S. Supreme Court proceedings, the stay remained in place and U.S. EPA has continued to implement CAIR.

In order to allow CSAPR to replace CAIR in an equitable and orderly manner while further D.C. Circuit Court proceedings were held to resolve petitioner’s remaining claims, U.S. EPA filed a motion asking the D.C. Circuit Court to lift the stay. U.S. EPA also asked the court to toll all CSAPR compliance deadlines that had not passed as of the date of the stay order by three years. On October 23, 2014, the Court granted the U.S. EPA’s motion. CSAPR became effective on

¹⁸ <http://www.epa.gov/crossstaterule/actions.html>

January 1, 2015, for SO₂ and annual NO_x, and May 1, 2015 for ozone season NO_x. When combined with other final state and U.S. EPA actions, CSAPR will reduce power plant SO₂ emissions by 73% and NO_x emissions by 54% from 2005 levels in the CSAPR region, which includes the states of Indiana, Kentucky, and Ohio.

IDEM has and will continue to enforce Indiana's applicable PM_{2.5} precursor emission limitation rules for NO_x and SO₂. These include CAIR and any transitions to CSAPR.

6.4.9 Oil and Natural Gas Industry Standards¹⁹

This standard, issued on April 17, 2012, regulates VOC and air toxic emissions from hydraulically fractured natural gas wells and also includes requirements for several other sources of pollution in the oil and natural gas industry that were previously unregulated in the United States. U.S. EPA estimates that these standards apply to approximately 11,400 new natural gas wells hydraulically fractured each year and an additional 1,400 existing natural gas wells refractured annually. The standard took effect in 2015. According to U.S. EPA estimates, this rule has resulted in emission reductions of approximately 190,000 to 290,000 tpy of VOCs and 12,000 to 20,000 tpy of air toxics, respectively.

6.4.10 Mercury and Air Toxic Standards^{20 21}

This standard, effective in April 2012, regulates emissions of mercury, acid gases, and non-mercury metallic toxic pollutants from new and existing coal and oil-fired EGUs. U.S. EPA estimates that this rule will apply to approximately 1,100 coal-fired and 300 oil-fired EGUs at 600 power plants in the U.S. According to U.S. EPA, most facilities will comply with these standards through a range of strategies, including the use of existing emission controls, upgrades to existing emission controls, installation of new pollution controls, and fuel switching.

Following promulgation of the rule, U.S. EPA received petitions for reconsideration of various provisions of the rule, including requests to reconsider the work practice standards applicable during startup periods and shutdown periods. U.S. EPA granted reconsideration of the startup and shutdown provisions as no opportunity to comment was provided to the public regarding the work practice requirements contained in the final rule. On November 30, 2012, U.S. EPA published a proposed rule reconsidering certain new source standards and startup and shutdown provisions in the Mercury and Air Toxics Standards (MATS). U.S. EPA proposed certain minor changes to the startup and shutdown provisions contained in the 2012 final rule based on information obtained in the petitions for reconsideration. On April 24, 2013, U.S. EPA took final action on the new source standards that were reconsidered and also the technical corrections contained in the November 30, 2012, proposed action. U.S. EPA did not take final action on the startup and shutdown provisions and, on June 25, 2013, added new information and analysis to the docket and reopened the public comment period for the proposed revisions. U.S. EPA took final action on the remaining topics open for reconsideration on November 19, 2014. The compliance date for existing sources was April 16, 2015, while the compliance date for new

¹⁹ <http://www.gpo.gov/fdsys/pkg/FR-2012-08-16/pdf/2012-16806.pdf>

²⁰ <http://www.gpo.gov/fdsys/pkg/FR-2012-02-16/pdf/2012-806.pdf>,

²¹ <https://www.epa.gov/mats/regulatory-actions-final-mercury-and-air-toxics-standards-mats-power-plants>

sources was April 16, 2012.

On November 25, 2014, the U.S. Supreme Court accepted several challenges to the rules brought by the utility industry and a coalition of nearly two dozen states. On June 29, 2015, the U.S. Supreme Court ruled that U.S. EPA did not properly account for compliance costs when crafting the MATS rule and remanded the decision to the D.C. Circuit Court for reconsideration. As a response, on November 20, 2015, U.S. EPA proposed to find that regulating emissions of toxic air pollution from power plants is applicable and that considering the possible associated costs of compliance does not change that conclusion.

On March 17, 2016, U.S. EPA confirmed that it is appropriate and necessary to regulate air toxics, including mercury, from power plants after including a consideration of costs.

6.4.11 Controls Specific to Lawrenceburg Township, Dearborn County, Indiana

As the result of a settlement with U.S. EPA to resolve violations of the CAA's NSR requirements, AEP permanently retired its entire Tanners Creek Generating Station located in Lawrenceburg Township, Dearborn County (i.e. all four coal-fired electric generating units) on June 1, 2015. As a result of the closure of this facility, direct PM_{2.5} and fine particle precursor emissions in Dearborn County, Indiana, will decrease significantly, helping to further improve air quality in the Cincinnati nonattainment area.

6.5 Controls to Remain in Effect

Indiana commits to maintain the control measures listed above after redesignation or submit to U.S. EPA, as a SIP revision, any changes to its rules or emission limits applicable to NH₃, NO_x, SO₂, VOC, or direct PM_{2.5} sources, as required for maintenance of the 1997 annual PM_{2.5} standard in Lawrenceburg Township, Dearborn County, Indiana. Indiana, through IDEM's Office of Air Quality (OAQ) and its Compliance and Enforcement Branch, has the legal authority and necessary resources to actively enforce any violations of its rules or permit provisions. After redesignation, IDEM intends to continue enforcing all rules that relate to the emission of PM_{2.5} and its precursors in Lawrenceburg Township, Dearborn County, Indiana.

6.6 New Source Review (NSR) Provisions²²

Indiana has a long standing and fully implemented NSR program that is outlined in 326 IAC 2. The rule includes provisions for the Prevention of Significant Deterioration (PSD) permitting program in 326 IAC 2-2 and the Emission Offset Permitting Program in 326 IAC 2-3. Indiana's PSD program was conditionally approved in the March 3, 2003, *Federal Register* (FR) published at 68 FR 9892 and received final approval on May 20, 2004 (69 FR 29071) by U.S. EPA as part of the SIP.

Any facility that is not listed in the 2005 emission inventory, or for which emission reduction credit through the shutdown or curtailment was taken in demonstrating attainment, will not be

²² <https://www.federalregister.gov/articles/2004/05/20/04-11337/approval-and-promulgation-of-implementation-plans-indiana>

allowed to construct, reopen, modify, or reconstruct without meeting all applicable permit rule requirements. The review process will be identical to that used for new sources. Once the area is redesignated, OAQ will implement NSR for major sources through the PSD program, which requires an air quality analysis to evaluate whether the new source will threaten the NAAQS.

7.0 MODELING ANALYSIS

Although U.S. EPA Redesignation Guidance does not require modeling for nonattainment areas seeking redesignation, extensive modeling has been performed covering the Cincinnati, Ohio region to determine the effects of national emission control strategies on fine particle levels. These modeling analyses determined that the Cincinnati area, including Dearborn County in southeastern Indiana, is significantly impacted by regional transport of fine particles and its precursors. Regional SO₂ and NO_x emission reductions will provide assurance that air quality in this area will continue to meet the standard into the future. Indiana reviewed photochemical modeling that was conducted as part of the Regulatory Impact Analysis (RIA) for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter²³. Future year (2020) modeled annual PM_{2.5} concentrations are expected to be reduced from 2007 monitored values by a range of 4.41-5.45 µg/m³ in the Cincinnati-Hamilton, OH-KY-IN, nonattainment area.

The photochemical modeling conducted for the RIA was performed with the Community Multi-scale Air Quality (CMAQ) modeling system version 4.7.1. CMAQ is a three-dimensional grid-based Eulerian air quality model designed to estimate the formation and fate of oxidant precursors, primary and secondary particulate matter concentrations and deposition over regional and urban spatial scales. The modeling used 2007 as a base-year and 2020 as the projected future-year. The modeling domain included the lower 48 states, southern Canada and northern Mexico. The domain contained 24 vertical levels up to 50 millibars and a 12 kilometer (km) horizontal resolution. Meteorological inputs were derived from the Weather Research Forecasting Model Version 3.1 for the base year 2007. Boundary and initial concentrations were obtained from GEOS-CHEM global atmospheric chemistry model, Version 8-02-03.

The base-year 2007 emission inventory was obtained from the 2008 NEI Version 2. This inventory was then projected to 2020 to estimate the future-year emissions, to fulfill current and future federal and state emission rules. The EGU emissions in 2020 are based on demand growth, fuel resource availability, generating technology cost and performance, and other power sector economic factors. Major environmental rules and regulations that were considered for this modeling exercise include the MATS rule and the 2011 CSAPR. The predicted EGU emissions also considered consent decrees and settlements, plant closures, updated control technologies, and forecasted unit construction through 2020. It is important to note that the closure of the Tanners Creek Electric Generating Station, completed in mid-2015, was not considered in this modeling analysis. Tanners Creek emitted large amounts of NO_x, SO₂, and PM_{2.5} in the Cincinnati area. The closure of this EGU will provide further reductions of PM_{2.5} concentrations in the Cincinnati area than what is reported in this section of the document.

²³ <https://www3.epa.gov/ttnecas1/regdata/RIAs/finalria.pdf>

Non-EGU emission rules that were included in this modeling analysis were the Reciprocating Internal Combustion Engines (RICE) National Emissions Standards for Hazardous Air Pollutants (NESHAP), the cement manufacturing NESHAP, and the Boiler Maximum Achievable Control Technology (MACT) program. The 2020 on-road emissions include the following national rules: the Light-Duty Vehicle Tier 2 Rule, the Heavy Duty Diesel Rule, the Mobile Source Air Toxics Rule, the Renewable Fuel Standard, the Light Duty Green-house Gas/Corporate Average Fuel Efficiency standards for 2012-2016, and the Heavy-Duty Vehicle Greenhouse Gas Rule. The Tier III Vehicle Emission and Fuel Standards Program is also not included this modeling. The Tier III standards, when implemented in 2017, will also provide further reductions of PM_{2.5} concentrations in the Cincinnati area than what is reported in this section of this document.

The photochemical modeling was conducted on a relative change rather than an absolute change. Modeling was conducted for the 2007 base-year and 2020 future-year. A ratio of the 2020 to 2007 modeling results for each PM_{2.5} monitor was obtained. This ratio is referred to as the relative response factor (RRF). Each monitor's RRF is multiplied by its ambient data (2005-2009) annual design value to provide an estimate of the monitor's 2020 base case annual design value.

Table 7.1 provides the results of this modeling for the Cincinnati area. Relative to the base-year, all monitors in the Cincinnati nonattainment area show significant reductions of PM_{2.5} concentrations in 2020. These concentrations were all well below the annual PM_{2.5} standard of 12.0 µg/m³. This modeling shows that permanent and enforceable emission control measures will ensure the Cincinnati area continues to maintain compliance with the 1997 annual PM_{2.5} standard and provide for an increasing margin of safety over time.

Table 7.1: PM_{2.5} Regulatory Impact Analysis Photochemical Modeling Results for the Cincinnati Area (µg/m³)

Site ID	State	County	Ambient Data Annual Design Value (2005 – 2009)	Adjusted 2020 Base Case Annual Design Value	PM _{2.5} Reduction
21-117-0007	Kentucky	Kenton	13.27	8.20	5.07
39-017-0003	Ohio	Butler	14.20	9.59	4.61
39-017-0016	Ohio	Butler	14.58	9.41	5.17
39-017-1004	Ohio	Butler	14.96	9.92	5.04
39-025-0022	Ohio	Clermont	13.07	8.22	4.85
39-061-0006	Ohio	Hamilton	13.79	8.78	5.01
39-061-0014	Ohio	Hamilton	16.00	10.55	5.45
39-061-0040	Ohio	Hamilton	14.21	8.91	5.30
39-061-0042	Ohio	Hamilton	15.46	10.07	5.39
39-061-0043	Ohio	Hamilton	14.80	9.53	5.27
39-061-7001	Ohio	Hamilton	14.75	9.45	5.30
39-061-8001	Ohio	Hamilton	15.80	10.36	5.44
39-165-0007	Ohio	Warren	12.53	8.12	4.41

8.0 CORRECTIVE ACTIONS

8.1 Commitment to Revise Plan

As noted in Section 4.6, Indiana commits to review its Maintenance Plan eight (8) years after redesignation, as required by Section 175(A) of the CAA.

8.2 Commitment for Contingency Measures

Indiana will monitor fine particle concentrations to determine whether trends indicate higher values or whether emissions appear to be increasing. If it is determined that fine particle levels and emissions are increasing and action is necessary to reverse that trend, Indiana will take the appropriate action to reverse the noted trend expeditiously.

Indiana commits to adopt and expeditiously implement necessary corrective action in the following circumstance:

Action Level Response

An Action Level Response shall be prompted whenever a violation of the standard (three year average annual arithmetic mean value of $15.1 \mu\text{g}/\text{m}^3$ or greater) occurs. In the event that the Action Level is triggered and is not found to be due to an atypical unfavorable meteorological condition, exceptional event, malfunction or noncompliance with a permit condition or rule requirement, IDEM will determine additional control measures needed to assure future attainment of the 1997 annual NAAQS for $\text{PM}_{2.5}$. In this case, measures that can be implemented in a short time will be selected in order to be in place within eighteen months from the close of the $\text{PM}_{2.5}$ season that prompted the Action Level. Should it be determined that any of the above action is necessary the following procedures for control selection and implementation shall be followed.

Control Measure Selection and Implementation

Adoption of any additional control measures is subject to the necessary administrative and legal processes. This process will include publication of notices, an opportunity for public hearing and other measures required by Indiana law for rulemaking by state environmental boards.

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 the proposed measures are adequate to return the area to attainment.

8.3 Contingency Measures

In general, contingency measures, and Indiana's commitment to carry-out the procedures listed above are already codified as part of the maintenance plan in 40 CFR 52.776(v)(3) from the previous request for redesignation of Indiana's portion of the 1997 annual PM_{2.5} Cincinnati nonattainment area on December 9, 2010.

Contingency measures to be considered will be selected 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 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 fine particle precursor emissions. It is not possible at this time to determine what control measure will be appropriate at an unspecified time in the future. Therefore, the list of contingency measures outlined below is not comprehensive. Indiana anticipates that if contingency measures should ever be necessary, it is unlikely that a significant number (i.e., all those listed below) will be required.

- 1) Enhanced vehicle inspection and maintenance program.
- 2) Alternative fuel and diesel retrofit programs for fleet vehicle operations.
- 3) Require NO_x or SO₂ emission offsets for new and modified major sources.
- 4) Require NO_x or SO₂ emission offsets for new and modified minor sources.
- 5) Increase the ratio of emission offsets required for new sources.
- 6) Require NO_x or SO₂ controls on new minor sources (less than 100 tons).
- 7) Wood stove change-out program
- 8) Require increased recovery efficiency at sulfur recovery plants
- 9) Various emissions reduction measures or dust suppressant for unpaved roads and/or parking lots
- 10) Idling Restrictions
- 11) Broader geographic applicability of existing measures.
- 12) One or more transportation control measures sufficient to achieve at least a half a percent (0.5%) reduction in actual area-wide precursor emissions. Transportation measures will be selected from the following, based upon the factors listed above, after consultation with affected local governments:
 - a) Trip reduction programs, including, but not limited to, employer-based transportation management plans, area wide rideshare programs, work schedule changes and telecommuting.
 - b) Transit improvements.
 - c) Traffic flow improvements.
 - d) Other new or innovative transportation measures not yet in widespread use that affects state and local governments deemed appropriate.

There will not be any contingency measure implemented without providing the opportunity for full public participation. The public participation period will occur when individual measures are being considered so that their relative costs and benefits can be fully evaluated.

9.0 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 June 29, 2016, at <http://www.in.gov/idem/6394.htm>. It remained posted on the site until at least August 15, 2016.

During the public comment period IDEM did not receive any public comments. The deadline during the public comment period to request a hearing was July 29, 2016. 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 and certification of publication can be found in Appendix F.

10.0 CONCLUSIONS

Lawrenceburg Township, Dearborn County, Indiana, has attained the 1997 annual NAAQS for PM_{2.5} and does not significantly contribute to violations outside its portion of the Cincinnati-Hamilton OH-KY-IN nonattainment area. This petition demonstrates that Lawrenceburg Township, Dearborn County, Indiana, has complied with the applicable provisions of the CAA regarding redesignation of nonattainment areas for PM_{2.5}. IDEM has prepared a State Implementation and Maintenance Plan that meets the requirement of Section 110(a)(1) of the CAA.

Indiana has performed analyses that show that air quality improvements are due to permanent and enforceable measures. Additional significant regional PM_{2.5} and precursor reductions, following implementation of the Phase II NO_x SIP Cal, CAIR, CSAPR, and/or its replacement rule or program, will ensure continued compliance (maintenance) with the standard. Projections indicate that precursor emissions will continue to decline, thus ensuring that the area continues to maintain compliance with the standard and provide for an increasing margin of safety.

As the result of a settlement with U.S. EPA to resolve violations of the CAA's new NSR requirements, AEP permanently retired its Tanners Creek Generating Station located in Lawrenceburg Township, Dearborn County (i.e. all four coal-fired electric generating units) on June 1, 2015. This will ensure that the facility does not restart without proper permitting under the CAA. Consequently, direct PM_{2.5} and its precursor emissions in Dearborn County, Indiana, have decreased significantly further improving air quality in the Cincinnati-Hamilton, OH-KY-IN, nonattainment area, above and beyond what Indiana demonstrated as necessary to support ongoing attainment of the area.

Based on this demonstration, Lawrenceburg Township, Dearborn County, Indiana, meets the requirements for redesignation under the CAA (Section 107(d)(3)) and U.S. EPA guidance for

PM_{2.5}. Consistent with the authority granted to the U.S. EPA, the State of Indiana requests that Lawrenceburg Township, Dearborn County, Indiana, be redesignated to attainment for the 1997 annual PM_{2.5} standard simultaneously with U.S. EPA approval of the Indiana State Implementation provisions contained herein.

APPENDIX A

Air Quality System (AQS) Report and Indiana Department of Environmental Management's (IDEM) Monitoring Tables and Graphs for the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area (2005-2015)

ATTACHMENT 1

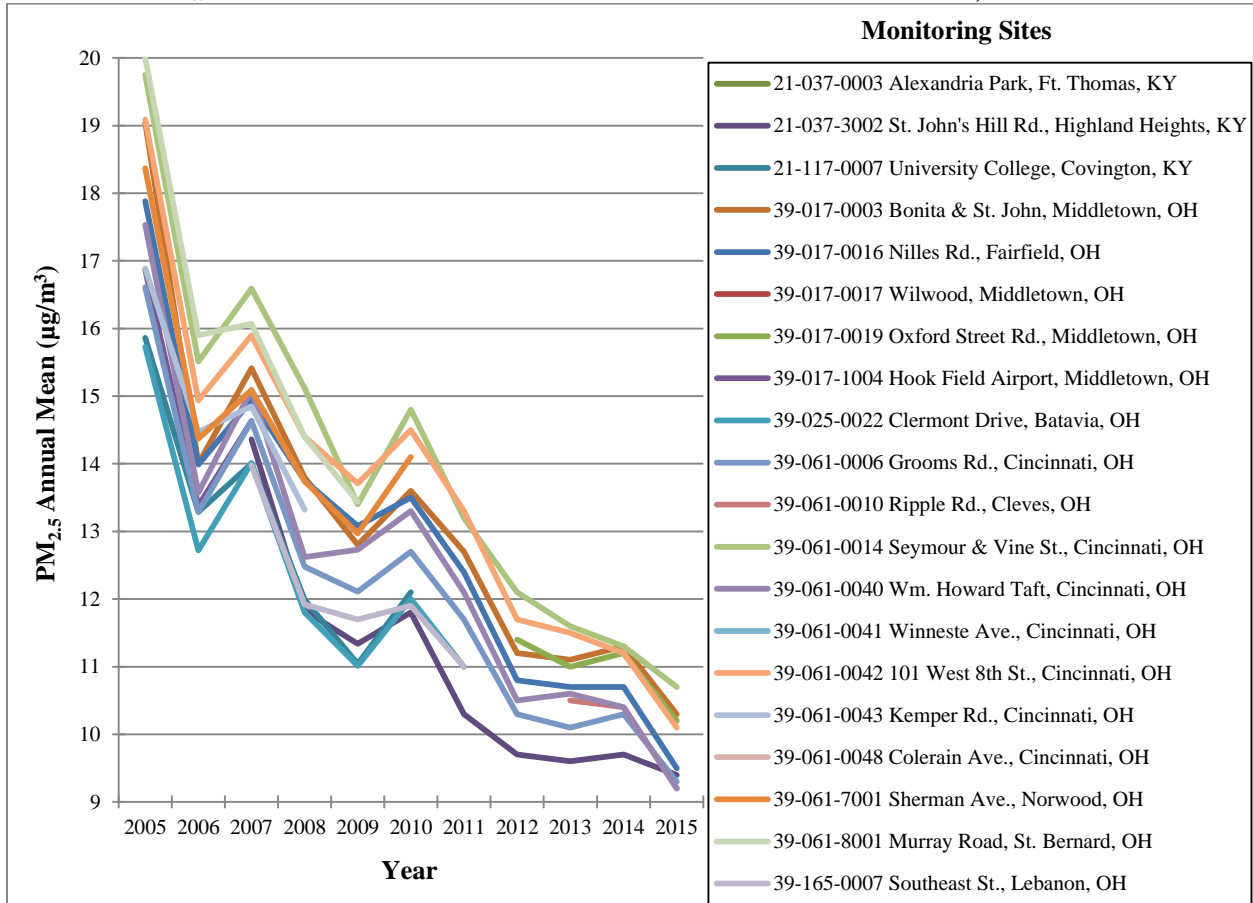
AQS Report for the Cincinnati-Hamilton, OH-KY-IN, 1997
Annual PM_{2.5} Nonattainment Area from 2005-2015 [PDF]

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PM_{2.5} Monitoring Sites and Annual Means - Cincinnati Nonattainment Area, 2005-2015

Site ID	State	County	Site Name	PM _{2.5} Annual Means $\mu\text{g}/\text{m}^3$										
				2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
21-037-0003	Kentucky	Campbell	Alexandria Pk.	14.8										
21-037-3002	Kentucky	Campbell	John's Hill Rd.			14.4	11.8	11.3	11.8	10.3	9.7	9.6	9.7	9.4
21-117-0007	Kentucky	Kenton	Univ. College	15.9	13.3	14.0	12.0	11.0	12.1					
39-017-0003	Ohio	Butler	Bonita & St.	19.0	14.0	15.4	13.8	12.8	13.6	12.7	11.2	11.1	11.3	10.3
39-017-0016	Ohio	Butler	Nilles Rd.	17.9	14.0	14.9	13.8	13.1	13.5	12.4	10.8	10.7	10.7	9.5
39-017-0017	Ohio	Butler	Wilwood	17.2										
39-017-0019	Ohio	Butler	Oxford St. Road								11.4	11.0	11.2	10.2
39-017-1004	Ohio	Butler	Hook Field	16.9	13.4	14.6								
39-025-0022	Ohio	Clermont	Clermont Dr.	15.7	12.7	14.0	11.7	11.0	12.0	11.0				
39-061-0006	Ohio	Hamilton	Grooms Rd.	16.6	13.3	14.6	12.5	12.1	12.7	11.7	10.3	10.1	10.3	9.3
39-061-0010	Ohio	Hamilton	Ripple Road									10.5	10.4	9.2
39-061-0014	Ohio	Hamilton	Seymour & Vine	19.8	15.5	16.6	15.1	13.4	14.8	13.2	12.1	11.6	11.3	10.7
39-061-0040	Ohio	Hamilton	Howard Taft	17.5	13.6	15.1	12.6	12.7	13.3	12.1	10.5	10.6	10.4	9.2
39-061-0041	Ohio	Hamilton	Winneste Ave.	15.8										
39-061-0042	Ohio	Hamilton	W. 8th St	19.1	14.9	15.9	14.4	13.7	14.5	13.3	11.7	11.5	11.2	10.1
39-061-0043	Ohio	Hamilton	Kemper Rd.	16.9	14.5	14.8	13.3							
39-061-0048	Ohio	Hamilton	Colerain Ave.										12.9	
39-061-7001	Ohio	Hamilton	Sherman Ave.	18.4	14.4	15.1	13.7	13.0	14.1					
39-061-8001	Ohio	Hamilton	Murray Rd.	20.0	15.9	16.1	14.4	13.4						
39-165-0007	Ohio	Warren	Southeast St.			14.0	11.9	11.7	11.9	11.0				
Active Monitor														

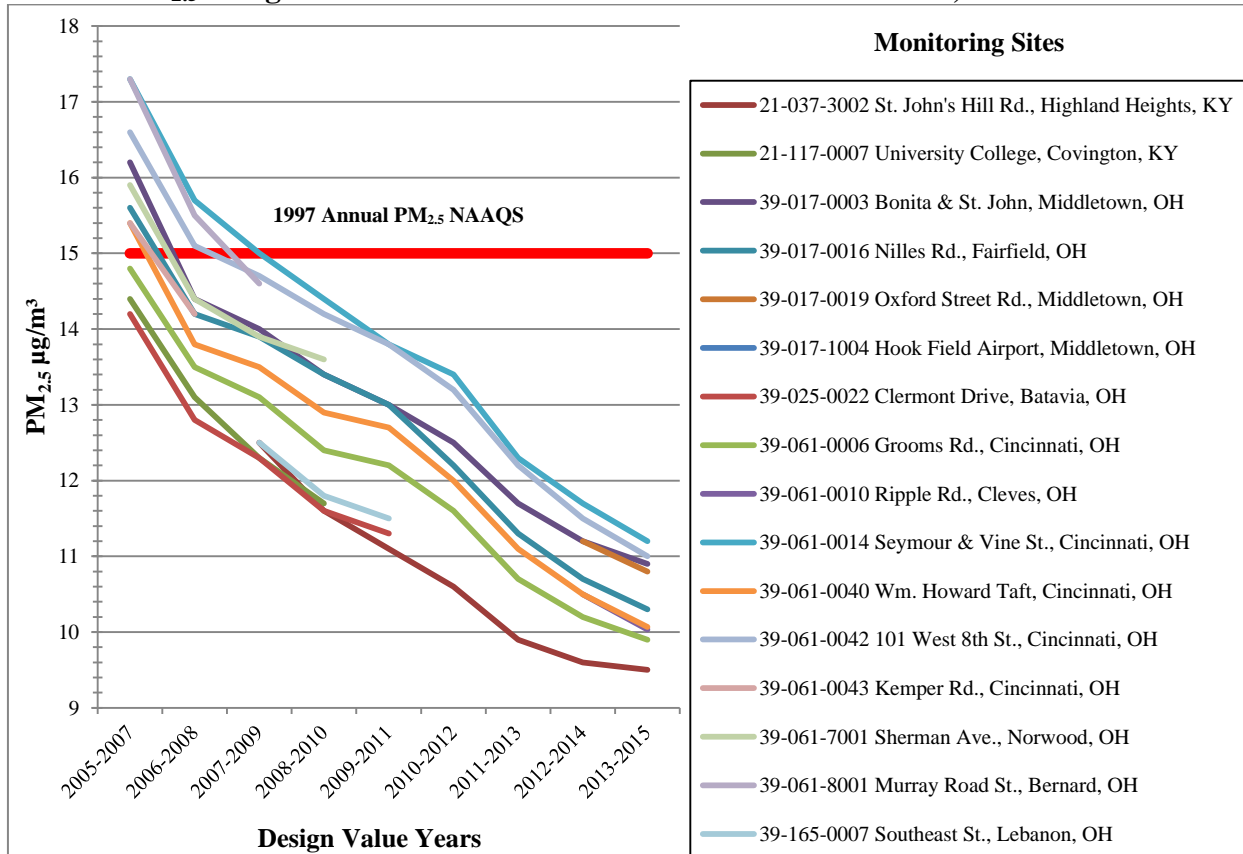
PM_{2.5} Annual Mean Trends – Cincinnati Nonattainment Area, 2005-2015



PM_{2.5} Design Values - Cincinnati Nonattainment Area, 2005-2015

Site ID	State	County	Site Name	PM _{2.5} Design Values µg/m ³									
				05-07	06-08	07-09	08-10	09-11	10-12	11-13	12-14	13-15	
21-037-3002	Kentucky	Campbell	John's Hill Rd.			12.5	11.6	11.1	10.6	9.9	9.6	9.5	
21-117-0007	Kentucky	Kenton	Univ. College	14.4	13.1	12.3	11.7						
39-017-0003	Ohio	Butler	Bonita & St.	16.2	14.4	14.0	13.4	13.0	12.5	11.7	11.2	10.9	
39-017-0016	Ohio	Butler	Nilles Rd.	15.6	14.2	13.9	13.4	13.0	12.2	11.3	10.7	10.3	
39-017-0019	Ohio	Butler	Oxford St. Road								11.2	10.8	
39-017-1004	Ohio	Butler	Hook Field	15.0									
39-025-0022	Ohio	Clermont	Clermont Dr.	14.2	12.8	12.3	11.6	11.3					
39-061-0006	Ohio	Hamilton	Grooms Rd.	14.8	13.5	13.1	12.4	12.2	11.6	10.7	10.2	9.9	
39-061-0010	Ohio	Hamilton	Ripple Road								10.5	10.0	
39-061-0014	Ohio	Hamilton	Seymour & Vine	17.3	15.7	15.0	14.4	13.8	13.4	12.3	11.7	11.2	
39-061-0040	Ohio	Hamilton	Howard Taft	15.4	13.8	13.5	12.9	12.7	12.0	11.1	10.5	10.1	
39-061-0042	Ohio	Hamilton	W. 8th St	16.6	15.1	14.7	14.2	13.8	13.2	12.2	11.5	11.0	
39-061-0043	Ohio	Hamilton	Kemper Rd.	15.4	14.2								
39-061-7001	Ohio	Hamilton	Sherman Ave.	15.9	14.4	13.9	13.6						
39-061-8001	Ohio	Hamilton	Murray Rd.	17.3	15.5	14.6							
39-165-0007	Ohio	Warren	Southeast St.			12.5	11.8	11.5					
Active Monitor				Value above the 1997 annual PM _{2.5} standard 15.0 µg/m ³									

PM_{2.5} Design Value Trends - Cincinnati Nonattainment Area, 2005 – 2015



ATTACHMENT 1

Air Quality System (AQS) Report for the Cincinnati-Hamilton, OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area from 2005-2015

United States Environmental Protection Agency, Air Quality System. Design Value Report.
Retrieved May 18, 2016.

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User ID: BJR

DESIGN VALUE REPORT

Report Request ID: 1447106

Report Code: AMP480

May. 18, 2016

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	21	037	0003								
	21	117	0007								
	39	017	0003								
	39	017	0016								
	39	017	0019								
	39	061	0010								
	39	061	0014								
	39	061	0040								
	39	061	0042								
	39	061	0048								
	21	037	3002								
	39	017	0017								
	39	017	1004								
	39	025	0022								
	39	061	0006								
	39	061	0041								
	39	061	0043								
	39	061	7001								
	39	061	8001								
	39	165	0007								

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
DESIGN VALUE	88101		

SELECTED OPTIONS

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

User ID: BJR

DESIGN VALUE REPORT

Report Request ID: 1447106

Report Code: AMP480

May. 18, 2016

AGENCY ROLE

PQAO

DATE CRITERIA	
Start Date	End Date
2005	2015

APPLICABLE STANDARDS
Standard Description
PM25 24-hour 2013
PM25 Annual 2013

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

Report Date: May. 18, 2016

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2005

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2005					2004					2003					24-Hour		Annual	
	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval				
21-037-0003 700 ALEXANDRIA PK, WATER PLT, FT THOMAS	113	4	38.0	14.8		119	4	27.5	12.8	Y	112	4	28.1	13.4	Y	31	Y	13.7	Y
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	117	4	42.1	15.9		115	4	29.4	13.4	Y	107	4	30.8	14.3	Y	34	Y	14.5	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2006

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2006					2005					2004					24-Hour		Annual	
	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-0003 700 ALEXANDRIA PK, WATER PLT, FT THOMAS	17	0	25.2*	11.5*		113	4	38.0	14.8		119	4	27.5	12.8	Y	30	N	13.1	N
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	114	4	32.6	13.3		117	4	42.1	15.9		115	4	29.4	13.4	Y	35	Y	14.2	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2007

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2007					2006					2005					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design	Valid	Design	Valid
	Days	Qrtrs	Perctil	Mean		Days	Qrtrs	Perctil	Mean		Days	Qrtrs	Perctil	Mean		Value	Ind.	Value	Ind.
21-037-0003 700 ALEXANDRIA PK, WATER PLT, FT THOMAS	0	0	*	*		17	0	25.2*	11.5*		113	4	38.0	14.8		32	N	13.2	N
21-037-3002 524A JOHN'S HILL ROAD	50	1	34.0*	14.4*		0	0	*	*		0	0	*	*		34	N	14.4	N
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	115	4	31.6	14.0		114	4	32.6	13.3		117	4	42.1	15.9		35	Y	14.4	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2008

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2008					2007					2006					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design	Valid	Design	Valid
	Days	Qrtrs	Perctil	Mean		Days	Qrtrs	Perctil	Mean		Days	Qrtrs	Perctil	Mean		Value	Ind.	Value	Ind.
21-037-0003 700 ALEXANDRIA PK, WATER PLT, FT THOMAS	0	0	*	*		0	0	*	*		17	0	25.2*	11.5*		25	N	11.5	N
21-037-3002 524A JOHN'S HILL ROAD	119	4	26.1	11.8	Y	50	1	34.0*	14.4*		0	0	*	*		30	N	13.1	N
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	119	4	25.2	12.0	Y	115	4	31.6	14.0		114	4	32.6	13.3		30	Y	13.1	Y

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

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2009

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2009					2008					2007					24-Hour		Annual	
	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Design Valid		Design Valid	
	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-3002 524A JOHN'S HILL ROAD	113	4	22.5	11.3		119	4	26.1	11.8	Y	50	1	34.0*	14.4*		28	N	12.5	N
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	113	4	23.1	11.0		119	4	25.2	12.0	Y	115	4	31.6	14.0		27	Y	12.3	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2010

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2010					2009					2008					24-Hour		Annual	
	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-3002 524A JOHN'S HILL ROAD	119	4	25.6	11.8		113	4	22.5	11.3		119	4	26.1	11.8	Y	25	Y	11.6	Y
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	51	1	22.0*	12.1*		113	4	23.1	11.0		119	4	25.2	12.0	Y	23	N	11.7	N

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

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2011

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2011					2010					2009					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Value	Ind.	Value	Ind.
21-037-3002 524A JOHN'S HILL ROAD	118	4	25.8	10.3		119	4	25.6	11.8		113	4	22.5	11.3		25	Y	11.1	Y
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	0	0	*	*		51	1	22.0*	12.1*		113	4	23.1	11.0		23	N	11.6	N

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2012					2011					2010					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Value	Ind.	Value	Ind.
21-037-3002 524A JOHN'S HILL ROAD	113	4	20.7	9.7	Y	118	4	25.8	10.3		119	4	25.6	11.8		24	Y	10.6	Y
21-117-0007 1401 DIXIE HWY, UNIVERSITY COLLEGE	0	0	*	*		0	0	*	*		51	1	22.0*	12.1*		22	N	12.1	N

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

<u>Site ID</u> / <u>STREET ADDRESS</u>	2013					2012					2011					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	<u>Eval</u>	Cred. Comp.	98th	Wtd.	Cert&	<u>Eval</u>	Cred. Comp.	98th	Wtd.	Cert&	<u>Eval</u>	Design Valid		Design Valid	
	<u>Days</u>	<u>Qtrrs</u>	<u>Perctil</u>	<u>Mean</u>		<u>Days</u>	<u>Qtrrs</u>	<u>Perctil</u>	<u>Mean</u>		<u>Days</u>	<u>Qtrrs</u>	<u>Perctil</u>	<u>Mean</u>		<u>Value</u>	<u>Ind.</u>	<u>Value</u>	<u>Ind.</u>
21-037-3002 524A JOHN'S HILL ROAD	116	4	21.6	9.6	Y	113	4	20.7	9.7	Y	118	4	25.8	10.3		23	Y	9.9	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2014

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2014					2013					2012					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&		Cred. Comp.	98th	Wtd.	Cert&		Cred. Comp.	98th	Wtd.	Cert&		Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-3002	116	4	23.2	9.7	Y	116	4	21.6	9.6	Y	113	4	20.7	9.7	Y	22	Y	9.6	Y
524A JOHN'S HILL ROAD																			

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2015

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / STREET ADDRESS	2015					2014					2013					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&		Cred. Comp.	98th	Wtd.	Cert&		Cred. Comp.	98th	Wtd.	Cert&		Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-3002 524A JOHN'S HILL ROAD	108	3	22.0*	9.4*	Y	116	4	23.2	9.7	Y	116	4	21.6	9.6	Y	22	Y	9.5	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2005

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2005					2004					2003					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	37	1	47.6	19.0*	Y	59	4	37.2	14.1	Y	331	3	38.7	15.4	Y	41	Y	16.2	Y
39-017-0016 400 NILLES RD.	122	4	43.4	17.9	Y	120	4	32.2	14.6	Y	115	4	34.8	15.8	Y	37	Y	16.1	Y
39-017-0017 3300 WILWOOD	122	4	44.9	17.2	Y	121	4	34.3	14.2	Y	102	3	34.6	14.7	Y	38	Y	15.4	Y
39-017-1004 HOOK FIELD AIRPORT	122	4	45.4	16.9	Y	120	4	31.6	13.6	Y	61	4	33.0	15.0	Y	37	Y	15.1	Y
39-025-0022 2400 CLERMONT CENTER DR.	114	4	38.3	15.7	Y	0	0	*	*		0	0	*	*		38	N	15.7	N
39-061-0006 11590 GROOMS RD	118	4	45.0	16.6	Y	0	0	*	*		0	0	*	*		45	N	16.6	N
39-061-0014 SEYMOUR & VINE ST.	58	4	38.5	19.8	Y	61	4	42.0	15.9	Y	357	4	37.8	16.9	Y	39	Y	17.5	Y
39-061-0040 250 WM. HOWARD TAFT	115	4	45.8	17.5	Y	115	4	30.5	14.6	Y	118	4	31.9	15.5	Y	36	Y	15.9	Y
39-061-0041 5300 WINNESTE AVE.	51	1	37.4	15.8*	Y	108	3	32.2*	14.6	Y	119	4	34.4	15.3	Y	35	N	15.2	N
39-061-0042 2101 W. 8TH ST.	106	3	44.4	19.1	Y	122	4	31.9	16.0	Y	119	4	33.8	16.7	Y	37	Y	17.3	Y
39-061-0043 3254 E. KEMPER RD.	103	3	39.9	16.9	Y	116	4	31.4	14.9	Y	119	4	37.3	15.7	Y	36	Y	15.8	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2005

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2005					2004					2003					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Value	Ind.	Value	Ind.
39-061-7001 2059 SHERMAN AVE.	119	4	47.1	18.4	Y	350	4	34.6	15.3	Y	338	4	37.1	16.0	Y	40	Y	16.6	Y
39-061-8001 300 MURRAY RD.	110	4	51.4	20.0	Y	112	4	33.9	16.4	Y	118	4	35.8	17.3	Y	40	Y	17.9	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2006

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2006					2005					2004					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	59	4	30.2	14.0	Y	37	1	47.6	19.0 *	Y	59	4	37.2	14.1	Y	38	Y	15.7	Y
39-017-0016 400 NILLES RD.	115	4	35.2	14.0	Y	122	4	43.4	17.9	Y	120	4	32.2	14.6	Y	37	Y	15.5	Y
39-017-0017 3300 WILWOOD	0	0	*	*		122	4	44.9	17.2	Y	121	4	34.3	14.2	Y	40	N	15.7	N
39-017-1004 HOOK FIELD AIRPORT	122	4	32.7	13.4	Y	122	4	45.4	16.9	Y	120	4	31.6	13.6	Y	37	Y	14.6	Y
39-025-0022 2400 CLERMONT CENTER DR.	117	4	31.6	12.7	Y	114	4	38.3	15.7	Y	0	0	*	*		35	N	14.2	N
39-061-0006 11590 GROOMS RD	118	4	33.3	13.3	Y	118	4	45.0	16.6	Y	0	0	*	*		39	N	14.9	N
39-061-0014 SEYMOUR & VINE ST.	58	4	35.2	15.5	Y	58	4	38.5	19.8	Y	61	4	42.0	15.9	Y	39	Y	17.1	Y
39-061-0040 250 WM. HOWARD TAFT	121	4	32.8	13.6	Y	115	4	45.8	17.5	Y	115	4	30.5	14.6	Y	36	Y	15.2	Y
39-061-0041 5300 WINNESTE AVE.	0	0	*	*		51	1	37.4	15.8 *	Y	108	3	32.2 *	14.6	Y	35	N	15.2	N
39-061-0042 2101 W. 8TH ST.	122	4	34.5	14.9	Y	106	3	44.4	19.1	Y	122	4	31.9	16.0	Y	37	Y	16.7	Y
39-061-0043 3254 E. KEMPER RD.	118	4	34.9	14.5	Y	103	3	39.9	16.9	Y	116	4	31.4	14.9	Y	35	Y	15.4	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2006

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2006					2005					2004					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Days	Qtrrs	Perctil	Mean		Value	Ind.	Value	Ind.
39-061-7001 2059 SHERMAN AVE.	111	4	34.0	14.4	Y	119	4	47.1	18.4	Y	350	4	34.6	15.3	Y	39	Y	16.0	Y
39-061-8001 300 MURRAY RD.	114	4	36.1	15.9	Y	110	4	51.4	20.0	Y	112	4	33.9	16.4	Y	40	Y	17.4	Y

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

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2007

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2007					2006					2005					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	118	4	36.8	15.4		59	4	30.2	14.0	Y	37	1	47.6	19.0*	Y	38	Y	16.2	Y
39-017-0016 400 NILLES RD.	115	4	34.5	14.9		115	4	35.2	14.0	Y	122	4	43.4	17.9	Y	38	Y	15.6	Y
39-017-0017 3300 WILWOOD	0	0	*	*		0	0	*	*		122	4	44.9	17.2	Y	45	N	17.2	N
39-017-1004 HOOK FIELD AIRPORT	112	4	36.4	14.6		122	4	32.7	13.4	Y	122	4	45.4	16.9	Y	38	Y	15.0	Y
39-025-0022 2400 CLERMONT CENTER DR.	114	4	33.5	14.0		117	4	31.6	12.7	Y	114	4	38.3	15.7	Y	34	Y	14.2	Y
39-061-0006 11590 GROOMS RD	296	4	34.7	14.6		118	4	33.3	13.3	Y	118	4	45.0	16.6	Y	38	Y	14.8	Y
39-061-0014 SEYMOUR & VINE ST.	109	4	36.5	16.6		58	4	35.2	15.5	Y	58	4	38.5	19.8	Y	37	Y	17.3	Y
39-061-0040 250 WM. HOWARD TAFT	107	4	34.7	15.1		121	4	32.8	13.6	Y	115	4	45.8	17.5	Y	38	Y	15.4	Y
39-061-0041 5300 WINNESTE AVE.	0	0	*	*		0	0	*	*		51	1	37.4	15.8*	Y	37	N	15.8	N
39-061-0042 2101 W. 8TH ST.	110	4	35.9	15.9		122	4	34.5	14.9	Y	106	3	44.4	19.1	Y	38	Y	16.6	Y
39-061-0043 3254 E. KEMPER RD.	116	4	34.0	14.8		118	4	34.9	14.5	Y	103	3	39.9	16.9	Y	36	Y	15.4	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2007

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2007					2006					2005					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-061-7001 2059 SHERMAN AVE.	111	4	33.7	15.1		111	4	34.0	14.4	Y	119	4	47.1	18.4	Y	38	Y	15.9	Y
39-061-8001 300 MURRAY RD.	110	4	35.4	16.1		114	4	36.1	15.9	Y	110	4	51.4	20.0	Y	41	Y	17.3	Y
39-165-0007 430 SOUTHEAST ST.	114	4	33.6	14.0		0	0	*	*		0	0	*	*		34	N	14.0	N

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

Report Date: May. 18, 2016

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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2008

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2008					2007					2006					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	120	4	27.1	13.8	Y	118	4	36.8	15.4		59	4	30.2	14.0	Y	31	Y	14.4	Y
39-017-0016 400 NILLES RD.	118	4	31.5	13.8	Y	115	4	34.5	14.9		115	4	35.2	14.0	Y	34	Y	14.2	Y
39-017-1004 HOOK FIELD AIRPORT	0	0	*	*		112	4	36.4	14.6		122	4	32.7	13.4	Y	35	N	14.0	N
39-025-0022 2400 CLERMONT CENTER DR.	116	4	23.6	11.7	Y	114	4	33.5	14.0		117	4	31.6	12.7	Y	30	Y	12.8	Y
39-061-0006 11590 GROOMS RD	174	4	27.0	12.5	Y	296	4	34.7	14.6		118	4	33.3	13.3	Y	32	Y	13.5	Y
39-061-0014 SEYMOUR & VINE ST.	120	4	33.0	15.1	Y	109	4	36.5	16.6		58	4	35.2	15.5	Y	35	Y	15.7	Y
39-061-0040 250 WM. HOWARD TAFT	107	4	25.5	12.6	Y	107	4	34.7	15.1		121	4	32.8	13.6	Y	31	Y	13.8	Y
39-061-0042 2101 W. 8TH ST.	111	4	27.5	14.4	Y	110	4	35.9	15.9		122	4	34.5	14.9	Y	33	Y	15.1	Y
39-061-0043 3254 E. KEMPER RD.	117	4	28.2	13.3	Y	116	4	34.0	14.8		118	4	34.9	14.5	Y	32	Y	14.2	Y
39-061-7001 2059 SHERMAN AVE.	112	4	30.3	13.7	Y	111	4	33.7	15.1		111	4	34.0	14.4	Y	33	Y	14.4	Y
39-061-8001 300 MURRAY RD.	115	4	31.0	14.4	Y	110	4	35.4	16.1		114	4	36.1	15.9	Y	34	Y	15.5	Y

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

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2008

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

<u>Site ID</u> / <u>STREET ADDRESS</u>	2008					2007					2006					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&		Cred. Comp.	98th	Wtd.	Cert&		Cred. Comp.	98th	Wtd.	Cert&		Design	Valid	Design	Valid
	<u>Days</u>	<u>Qrtrs</u>	<u>Perctil</u>	<u>Mean</u>	<u>Eval</u>	<u>Days</u>	<u>Qrtrs</u>	<u>Perctil</u>	<u>Mean</u>	<u>Eval</u>	<u>Days</u>	<u>Qrtrs</u>	<u>Perctil</u>	<u>Mean</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>	<u>Value</u>	<u>Ind.</u>
39-165-0007 430 SOUTHEAST ST.	118	4	24.2	11.9	Y	114	4	33.6	14.0		0	0	*	*		29	N	13.0	N

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

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2009

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2009					2008					2007					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	119	4	27.4	12.8		120	4	27.1	13.8	Y	118	4	36.8	15.4		30	Y	14.0	Y
39-017-0016 400 NILLES RD.	113	4	27.2	13.1		118	4	31.5	13.8	Y	115	4	34.5	14.9		31	Y	13.9	Y
39-017-1004 HOOK FIELD AIRPORT	0	0	*	*		0	0	*	*		112	4	36.4	14.6		36	N	14.6	N
39-025-0022 2400 CLERMONT CENTER DR.	121	4	22.0	11.0		116	4	23.6	11.7	Y	114	4	33.5	14.0		26	Y	12.3	Y
39-061-0006 11590 GROOMS RD	122	4	24.2	12.1		174	4	27.0	12.5	Y	296	4	34.7	14.6		29	Y	13.1	Y
39-061-0014 SEYMOUR & VINE ST.	356	4	27.1	13.4		120	4	33.0	15.1	Y	109	4	36.5	16.6		32	Y	15.0	Y
39-061-0040 250 WM. HOWARD TAFT	116	4	24.8	12.7		107	4	25.5	12.6	Y	107	4	34.7	15.1		28	Y	13.5	Y
39-061-0042 2101 W. 8TH ST.	109	4	27.0	13.7		111	4	27.5	14.4	Y	110	4	35.9	15.9		30	Y	14.7	Y
39-061-0043 3254 E. KEMPER RD.	0	0	*	*		117	4	28.2	13.3	Y	116	4	34.0	14.8		31	N	14.1	N
39-061-7001 2059 SHERMAN AVE.	119	4	25.7	13.0		112	4	30.3	13.7	Y	111	4	33.7	15.1		30	Y	13.9	Y
39-061-8001 300 MURRAY RD.	117	4	28.7	13.4		115	4	31.0	14.4	Y	110	4	35.4	16.1		32	Y	14.6	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2009

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2009					2008					2007					24-Hour		Annual	
	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-165-0007 430 SOUTHEAST ST.	119	4	23.6	11.7		118	4	24.2	11.9	Y	114	4	33.6	14.0		27	Y	12.5	Y

- Notes:**
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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2010

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2010					2009					2008					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	121	4	31.7	13.6		119	4	27.4	12.8		120	4	27.1	13.8	Y	29	Y	13.4	Y
39-017-0016 400 NILLES RD.	114	4	32.1	13.5		113	4	27.2	13.1		118	4	31.5	13.8	Y	30	Y	13.4	Y
39-025-0022 2400 CLERMONT CENTER DR.	114	4	27.7	12.0		121	4	22.0	11.0		116	4	23.6	11.7	Y	24	Y	11.6	Y
39-061-0006 11590 GROOMS RD	109	3	29.0*	12.7		122	4	24.2	12.1		174	4	27.0	12.5	Y	27	Y	12.4	Y
39-061-0014 SEYMOUR & VINE ST.	352	4	32.3	14.8		356	4	27.1	13.4		120	4	33.0	15.1	Y	31	Y	14.4	Y
39-061-0040 250 WM. HOWARD TAFT	110	4	28.7	13.3		116	4	24.8	12.7		107	4	25.5	12.6	Y	26	Y	12.9	Y
39-061-0042 2101 W. 8TH ST.	121	4	35.0	14.5		109	4	27.0	13.7		111	4	27.5	14.4	Y	30	Y	14.2	Y
39-061-0043 3254 E. KEMPER RD.	0	0	*	*		0	0	*	*		117	4	28.2	13.3	Y	28	N	13.3	N
39-061-7001 2059 SHERMAN AVE.	117	4	32.5	14.1		119	4	25.7	13.0		112	4	30.3	13.7	Y	30	Y	13.6	Y
39-061-8001 300 MURRAY RD.	11	0	33.3*	17.6*		117	4	28.7	13.4		115	4	31.0	14.4	Y	31	N	15.1	N
39-165-0007 430 SOUTHEAST ST.	118	4	27.0	11.9		119	4	23.6	11.7		118	4	24.2	11.9	Y	25	Y	11.8	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013

Design Value Year: 2011

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

State Name: Ohio

Site ID / STREET ADDRESS	2011					2010					2009					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	119	4	28.8	12.7		121	4	31.7	13.6		119	4	27.4	12.8		29	Y	13.0	Y
39-017-0016 400 NILLES RD.	116	4	26.8	12.4		114	4	32.1	13.5		113	4	27.2	13.1		29	Y	13.0	Y
39-017-0019 1300 OXFORD STATE ROAD	69	3	28.4*	12.7*		0	0	*	*		0	0	*	*		28	N	12.7	N
39-025-0022 2400 CLERMONT CENTER DR.	61	4	30.2	11.0		114	4	27.7	12.0		121	4	22.0	11.0		27	Y	11.3	Y
39-061-0006 11590 GROOMS RD	114	4	25.7	11.7		109	3	29.0*	12.7		122	4	24.2	12.1		26	Y	12.2	Y
39-061-0010 6950 RIPPLE RD.	52	2	26.2*	11.8*		0	0	*	*		0	0	*	*		26	N	11.8	N
39-061-0014 SEYMOUR & VINE ST.	118	4	28.2	13.2		352	4	32.3	14.8		356	4	27.1	13.4		29	Y	13.8	Y
39-061-0040 250 WM. HOWARD TAFT	117	4	29.7	12.1		110	4	28.7	13.3		116	4	24.8	12.7		28	Y	12.7	Y
39-061-0042 2101 W. 8TH ST.	119	4	30.2	13.3		121	4	35.0	14.5		109	4	27.0	13.7		31	Y	13.8	Y
39-061-7001 2059 SHERMAN AVE.	0	0	*	*		117	4	32.5	14.1		119	4	25.7	13.0		29	N	13.5	N
39-061-8001 300 MURRAY RD.	0	0	*	*		11	0	33.3*	17.6*		117	4	28.7	13.4		31	N	15.5	N

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2011

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

<u>Site ID</u> / <u>STREET ADDRESS</u>	2011					2010					2009					24-Hour		Annual	
	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Cred. Comp.		98th	Wtd.	Cert&	Design	Valid	Design	Valid
	<u>Days</u>	<u>Qtrrs</u>	<u>Perctil</u>	<u>Mean</u>	<u>Eval</u>	<u>Days</u>	<u>Qtrrs</u>	<u>Perctil</u>	<u>Mean</u>	<u>Eval</u>	<u>Days</u>	<u>Qtrrs</u>	<u>Perctil</u>	<u>Mean</u>	<u>Eval</u>	<u>Value</u>	<u>Ind.</u>	<u>Value</u>	<u>Ind.</u>
39-165-0007 430 SOUTHEAST ST.	59	4	28.4	11.0		118	4	27.0	11.9		119	4	23.6	11.7		26	Y	11.5	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2012					2011					2010					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	120	4	20.2	11.2	Y	119	4	28.8	12.7		121	4	31.7	13.6		27	Y	12.5	Y
39-017-0016 400 NILLES RD.	118	4	23.2	10.8	Y	116	4	26.8	12.4		114	4	32.1	13.5		27	Y	12.2	Y
39-017-0019 1300 OXFORD STATE ROAD	119	4	22.8	11.4	Y	69	3	28.4*	12.7*		0	0	*	*		26	N	12.1	N
39-025-0022 2400 CLERMONT CENTER DR.	0	0	*	*		61	4	30.2	11.0		114	4	27.7	12.0		29	N	11.5	N
39-061-0006 11590 GROOMS RD	116	4	21.7	10.3	Y	114	4	25.7	11.7		109	3	29.0*	12.7		25	Y	11.6	Y
39-061-0010 6950 RIPPLE RD.	96	2	21.7*	10.6*	Y	52	2	26.2*	11.8*		0	0	*	*		24	N	11.2	N
39-061-0014 SEYMOUR & VINE ST.	119	4	25.2	12.1	Y	118	4	28.2	13.2		352	4	32.3	14.8		29	Y	13.4	Y
39-061-0040 250 WM. HOWARD TAFT	121	4	20.0	10.5	Y	117	4	29.7	12.1		110	4	28.7	13.3		26	Y	12.0	Y
39-061-0042 2101 W. 8TH ST.	121	4	23.3	11.7	Y	119	4	30.2	13.3		121	4	35.0	14.5		30	Y	13.2	Y
39-061-7001 2059 SHERMAN AVE.	0	0	*	*		0	0	*	*		117	4	32.5	14.1		33	N	14.1	N
39-061-8001 300 MURRAY RD.	0	0	*	*		0	0	*	*		11	0	33.3*	17.6*		33	N	17.6	N

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2012					2011					2010					24-Hour		Annual	
	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Cred. Comp.	98th	Wtd.	Cert&	Eval	Design Valid		Design Valid	
	Days	Qrtrs	Perctil	Mean		Days	Qrtrs	Perctil	Mean		Days	Qrtrs	Perctil	Mean		Value	Ind.	Value	Ind.
39-165-0007 430 SOUTHEAST ST.	0	0	*	*		59	4	28.4	11.0		118	4	27.0	11.9		28	N	11.5	N

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

Report Date: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	120	4	25.8	11.1		120	4	20.2	11.2	Y	119	4	28.8	12.7		25	Y	11.7	Y
39-017-0016 400 NILLES RD.	118	4	23.3	10.7		118	4	23.2	10.8	Y	116	4	26.8	12.4		24	Y	11.3	Y
39-017-0019 1300 OXFORD STATE ROAD	121	4	25.5	11.0		119	4	22.8	11.4	Y	69	3	28.4*	12.7*		26	N	11.7	N
39-025-0022 2400 CLERMONT CENTER DR.	0	0	*	*		0	0	*	*		61	4	30.2	11.0		30	N	11.0	N
39-061-0006 11590 GROOMS RD	119	4	23.2	10.1		116	4	21.7	10.3	Y	114	4	25.7	11.7		24	Y	10.7	Y
39-061-0010 6950 RIPPLE RD.	120	4	22.4	10.5		96	2	21.7*	10.6*	Y	52	2	26.2*	11.8*		23	N	11.0	N
39-061-0014 SEYMOUR & VINE ST.	119	4	24.1	11.6		119	4	25.2	12.1	Y	118	4	28.2	13.2		26	Y	12.3	Y
39-061-0040 250 WM. HOWARD TAFT	121	4	24.5	10.6		121	4	20.0	10.5	Y	117	4	29.7	12.1		25	Y	11.1	Y
39-061-0042 2101 W. 8TH ST.	115	4	26.4	11.5		121	4	23.3	11.7	Y	119	4	30.2	13.3		27	Y	12.2	Y
39-165-0007 430 SOUTHEAST ST.	0	0	*	*		0	0	*	*		59	4	28.4	11.0		28	N	11.0	N

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: May. 18, 2016

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2014

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2014					2013					2012					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	116	4	24.7	11.3	Y	120	4	25.8	11.1		120	4	20.2	11.2	Y	24	Y	11.2	Y
39-017-0016 400 NILLES RD.	120	4	23.6	10.7	Y	118	4	23.3	10.7		118	4	23.2	10.8	Y	23	Y	10.7	Y
39-017-0019 1300 OXFORD STATE ROAD	119	4	23.9	11.2	Y	121	4	25.5	11.0		119	4	22.8	11.4	Y	24	Y	11.2	Y
39-061-0006 11590 GROOMS RD	119	4	22.4	10.3	Y	119	4	23.2	10.1		116	4	21.7	10.3	Y	22	Y	10.2	Y
39-061-0010 6950 RIPPLE RD.	113	4	24.3	10.4	Y	120	4	22.4	10.5		96	2	21.7*	10.6*	Y	23	Y	10.5	Y
39-061-0014 SEYMOUR & VINE ST.	121	4	23.2	11.3	Y	119	4	24.1	11.6		119	4	25.2	12.1	Y	24	Y	11.7	Y
39-061-0040 250 WM. HOWARD TAFT	120	4	23.6	10.4	Y	121	4	24.5	10.6		121	4	20.0	10.5	Y	23	Y	10.5	Y
39-061-0042 2101 W. 8TH ST.	109	4	24.8	11.2	Y	115	4	26.4	11.5		121	4	23.3	11.7	Y	25	Y	11.5	Y
39-061-0048 3428 COLERAIN AVE.	119	4	27.8	12.9		0	0	*	*		0	0	*	*		28	N	12.9	N

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

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Standard Units: Micrograms/cubic meter (LC) (105)
NAAQS Standard: PM25 24-hour 2013 / PM25 Annual 2013
Statistic: Annual Weighted Mean Level: 12
Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2015

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / STREET ADDRESS	2015					2014					2013					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-017-0003 BONITA & ST JOHN	115	4	20.7	10.3	Y	116	4	24.7	11.3	Y	120	4	25.8	11.1		24	Y	10.9	Y
39-017-0016 400 NILLES RD.	118	4	22.6	9.5	Y	120	4	23.6	10.7	Y	118	4	23.3	10.7		23	Y	10.3	Y
39-017-0019 1300 OXFORD STATE ROAD	120	4	21.2	10.2	Y	119	4	23.9	11.2	Y	121	4	25.5	11.0		24	Y	10.8	Y
39-061-0006 11590 GROOMS RD	117	4	19.4	9.3	Y	119	4	22.4	10.3	Y	119	4	23.2	10.1		22	Y	9.9	Y
39-061-0010 6950 RIPPLE RD.	119	4	20.5	9.2	Y	113	4	24.3	10.4	Y	120	4	22.4	10.5		22	Y	10.0	Y
39-061-0014 SEYMOUR & VINE ST.	118	4	23.0	10.7	Y	121	4	23.2	11.3	Y	119	4	24.1	11.6		23	Y	11.2	Y
39-061-0040 250 WM. HOWARD TAFT	119	4	21.3	9.2	Y	120	4	23.6	10.4	Y	121	4	24.5	10.6		23	Y	10.1	Y
39-061-0042 2101 W. 8TH ST.	115	4	22.8	10.1	Y	109	4	24.8	11.2	Y	115	4	26.4	11.5		25	Y	11.0	Y
39-061-0048 3428 COLERAIN AVE.	0	0	*	*		119	4	27.8	12.9		0	0	*	*		28	N	12.9	N

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

Report Date: May. 18, 2016

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).
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APPENDIX B

Historical Nitrogen Oxides (NO_x), Sulfur Dioxides (SO₂) and Direct Fine Particulate Matter (PM_{2.5}) Point Source Emissions (2005 and 2008) in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area

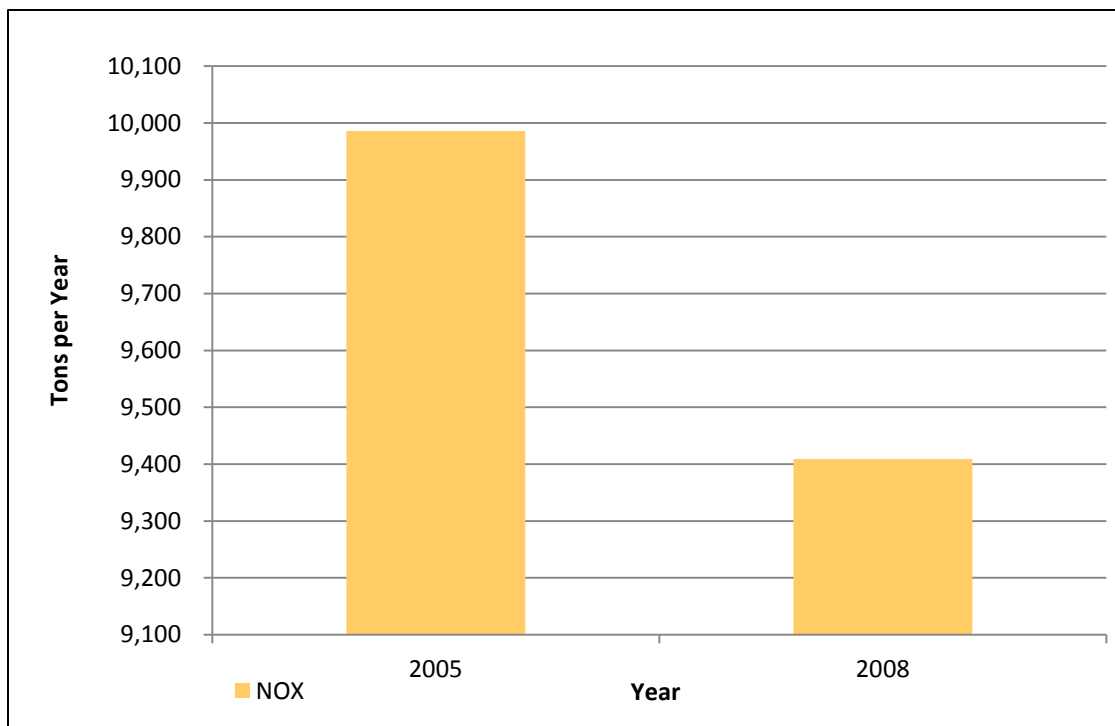
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Dearborn County, IN, Point Source Totals (Tons per Year)			
Year	NO _x	SO ₂	Direct PM _{2.5}
2005	9,985.98	47,864.85	741.32
2008	9,409.03	27,063.43	866.20

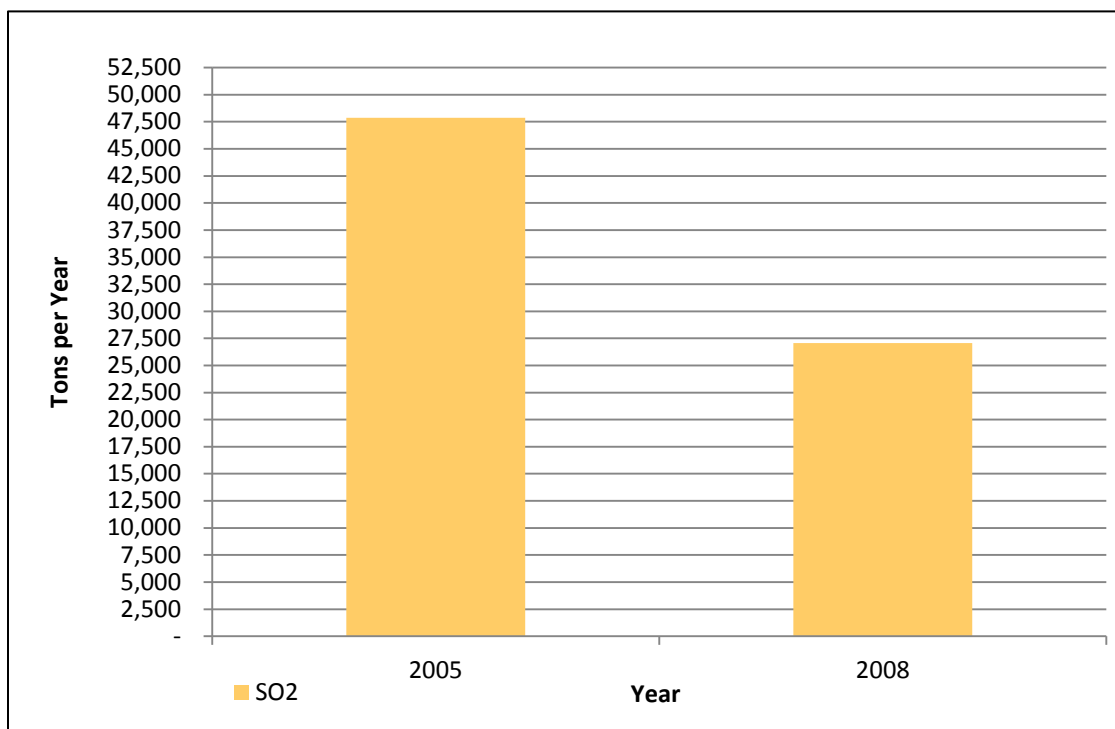
2005-Dearborn County, IN, Point Source Emissions (Tons per Year)						
County	EGU- NO _x	NON-EGU- NO _x	EGU-SO ₂	NON-EGU- SO ₂	EGU-Direct PM _{2.5}	NON-EGU-Direct PM _{2.5}
Dearborn, IN	7,961.30	2,024.68	46,533.70	1,331.15	673.94	67.38
	NO _x		SO ₂		Direct PM _{2.5}	
Grand Total	9,985.98		47,864.85		741.32	

2008-Dearborn County, IN, Point Source Emissions (Tons per Year)						
County	EGU- NO _x	NON-EGU- NO _x	EGU-SO ₂	NON-EGU- SO ₂	EGU-Direct PM _{2.5}	NON-EGU-Direct PM _{2.5}
Dearborn, IN	7,429.20	1,979.83	25,729.10	1,334.33	804.18	62.02
	NO _x		SO ₂		Direct PM _{2.5}	
Grand Total	9,409.03		27,063.43		866.20	

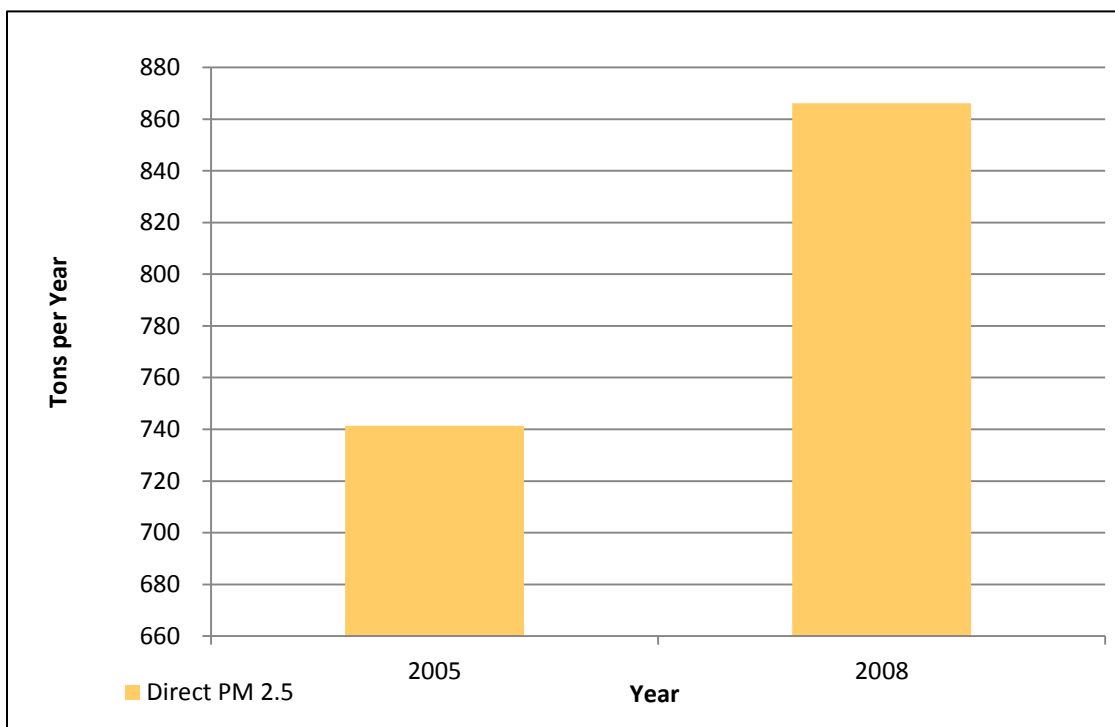
Dearborn County, IN, NO_x Point Source Emission Trends, 2005 and 2008



Dearborn County, IN, SO₂ Point Source Emission Trends, 2005 and 2008



Dearborn County, IN, Direct PM_{2.5} Point Source Emission Trends, 2005 and 2008

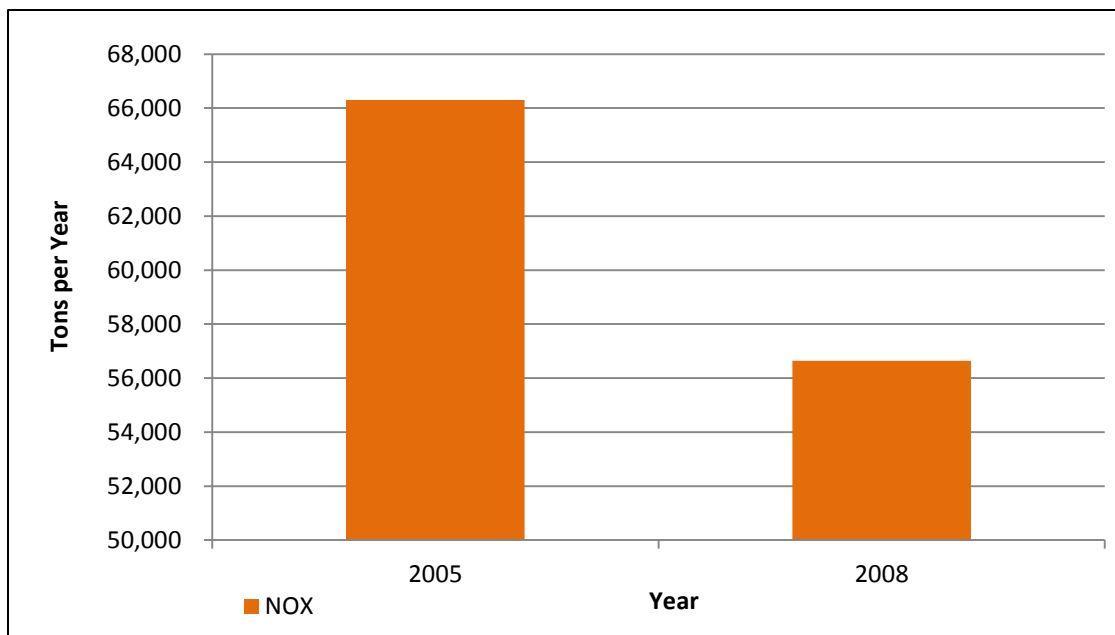


Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area Point Source Totals (Tons per Year)			
Year	NO_x	SO₂	Direct PM_{2.5}
2005	66,302.14	233,927.65	3,415.69
2008	56,644.39	111,818.09	3,091.67

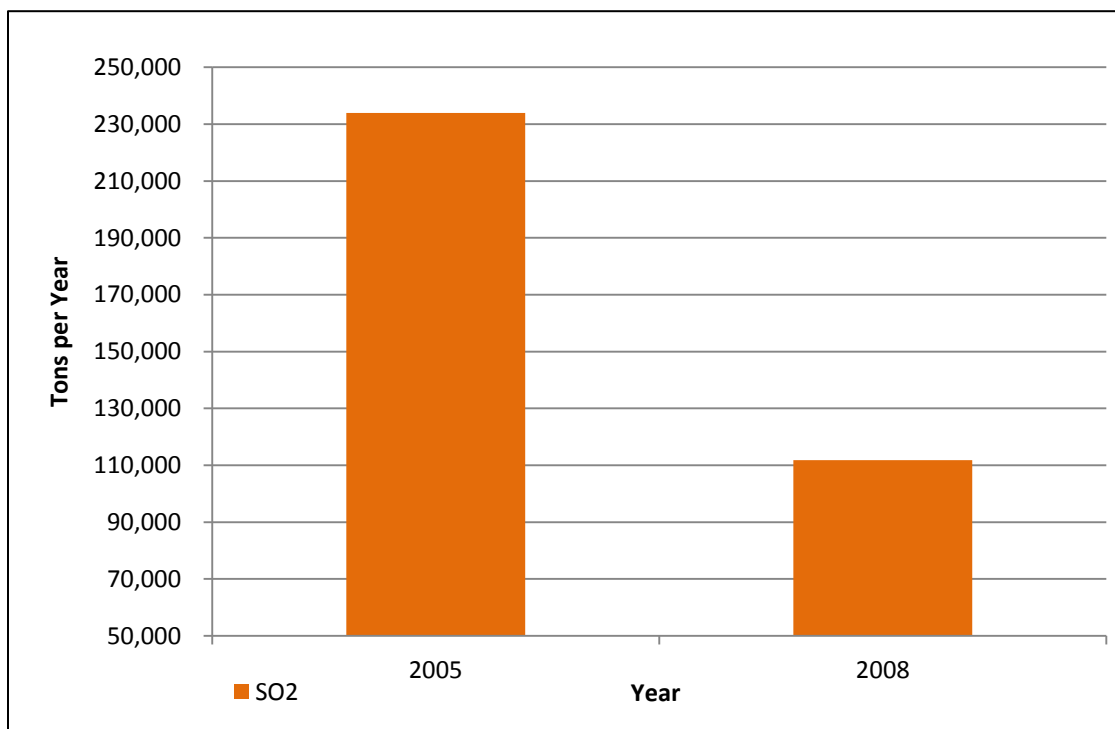
2005-Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area Point Source Emissions (Tons per Year)						
County	EGU NO_x	NON-EGU-NO_x	EGU SO₂	NON-EGU-SO₂	EGU-Direct PM_{2.5}	NON-EGU-Direct PM_{2.5}
Dearborn County, IN	7,961.30	2,024.68	46,533.70	1,331.15	673.94	67.38
Boone County, KY	3,926.27	58.03	3,644.98	16.82	76.85	58.77
Campbell County, KY	0.00	53.68	0.00	0.97	0.00	84.25
Kenton County, KY	0.00	19.50	0.00	12.91	0.00	9.53
Butler County, OH	743.27	4,367.15	1,959.10	6,185.26	15.27	944.29
Clermont County, OH	28,063.56	67.50	88,876.65	162.19	648.21	7.93
Hamilton County, OH	15,236.04	2,756.21	77,381.13	7,819.40	648.64	161.88
Warren County, OH	0.00	1,024.95	0.00	3.39	0.00	18.75
	NO_x		SO₂		Direct PM_{2.5}	
Grand Total	66,302.14		233,927.65		3,415.69	

2008-Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area Point Source Emissions (Tons per Year)						
County	EGU NO_x	NON-EGU-NO_x	EGU SO₂	NON-EGU-SO₂	EGU-Direct PM_{2.5}	NON-EGU-Direct PM_{2.5}
Dearborn County, IN	7,429.20	1,979.83	25,729.10	1,334.33	804.18	62.02
Boone County, KY	1,962.59	61.66	2,812.16	17.97	76.70	68.81
Campbell County, KY	0.00	49.52	0.00	0.96	0.00	89.52
Kenton County, KY	0.00	20.44	0.00	13.89	0.00	11.11
Butler County, OH	856.92	3,940.28	2,181.63	5,442.54	16.78	1,045.15
Clermont County, OH	24,233.18	42.71	42,918.28	118.05	532.61	3.86
Hamilton County, OH	12,372.00	2,652.79	24,693.00	6,552.65	202.88	158.14
Warren County, OH	0.00	1,043.27	0.00	3.53	0.00	19.91
	NO_x		SO₂		Direct PM_{2.5}	
Grand Total	56,644.39		111,818.09		3,091.67	

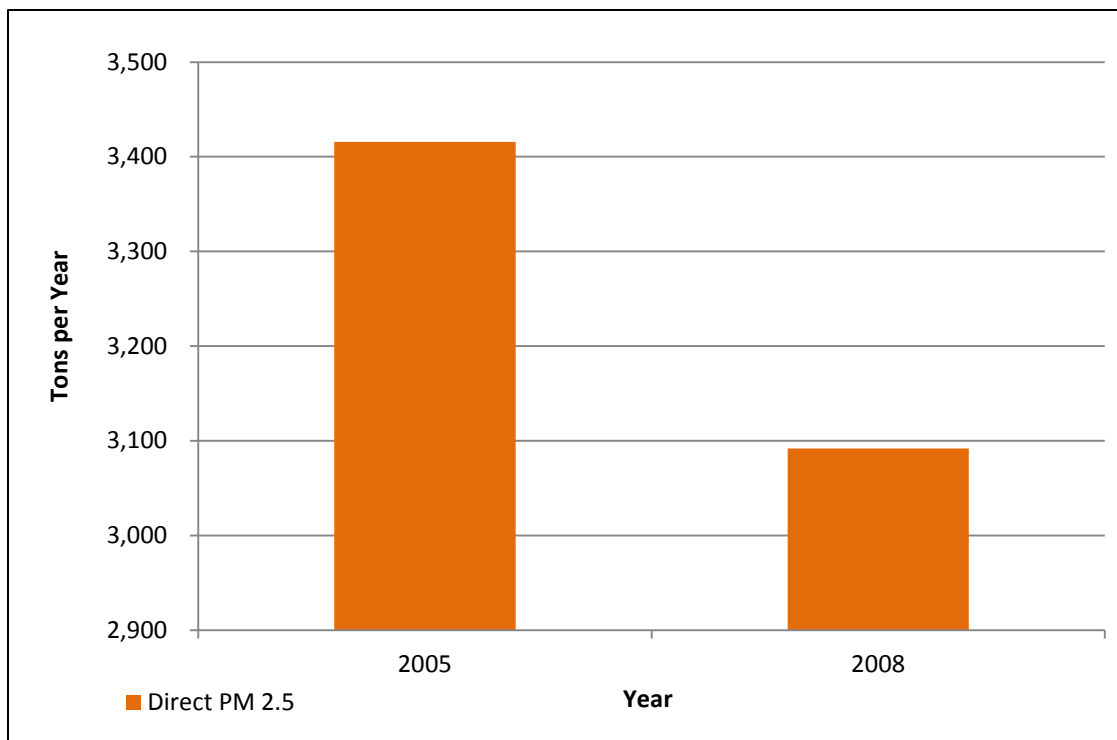
Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area NO_x Point Source Emission Trends, 2005 and 2008



Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area SO₂ Point Source Emission Trends, 2005 and 2008



**Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area Direct PM_{2.5} Point Source
Emission Trends, 2005 and 2008**



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APPENDIX C

Historical Nitrogen Oxides (NO_x), Sulfur Dioxides (SO₂) and Direct Fine Particulate Matter (PM_{2.5}) (2005 and 2008) Emission Trends for All Emission Categories in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area

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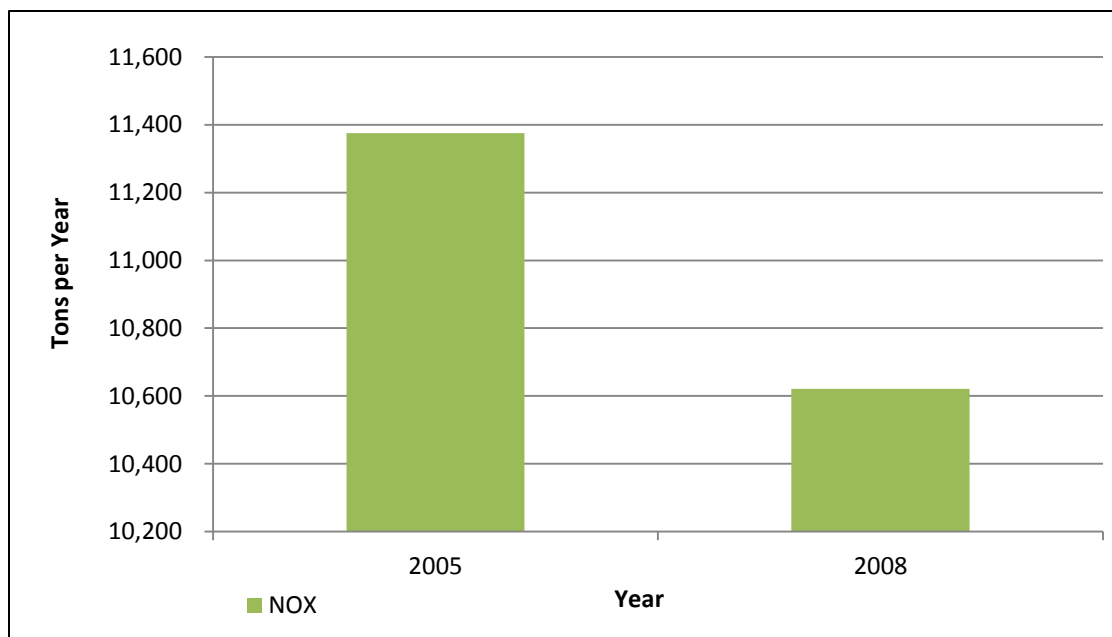
2005-Dearborn County, IN				
COUNTY, STATE	Sector	NO_x	Direct PM_{2.5}	SO₂
DEARBORN COUNTY, IN	ONROAD	865.46	33.98	2.45
DEARBORN COUNTY, IN	NONROAD	382.53	23.96	40.16
DEARBORN COUNTY, IN	AREA	141.37	4.29	78.72
DEARBORN COUNTY, IN	POINT	9,985.98	741.32	47,864.85

	2005 Dearborn County, IN Totals				
	ONROAD	NONROAD	AREA	POINT	GRAND TOTAL
NO_x	865.46	382.53	141.37	9,985.98	11,375.34
Direct PM_{2.5}	33.98	23.96	4.29	741.32	803.55
SO₂	2.45	40.16	78.72	47,864.85	47,986.18

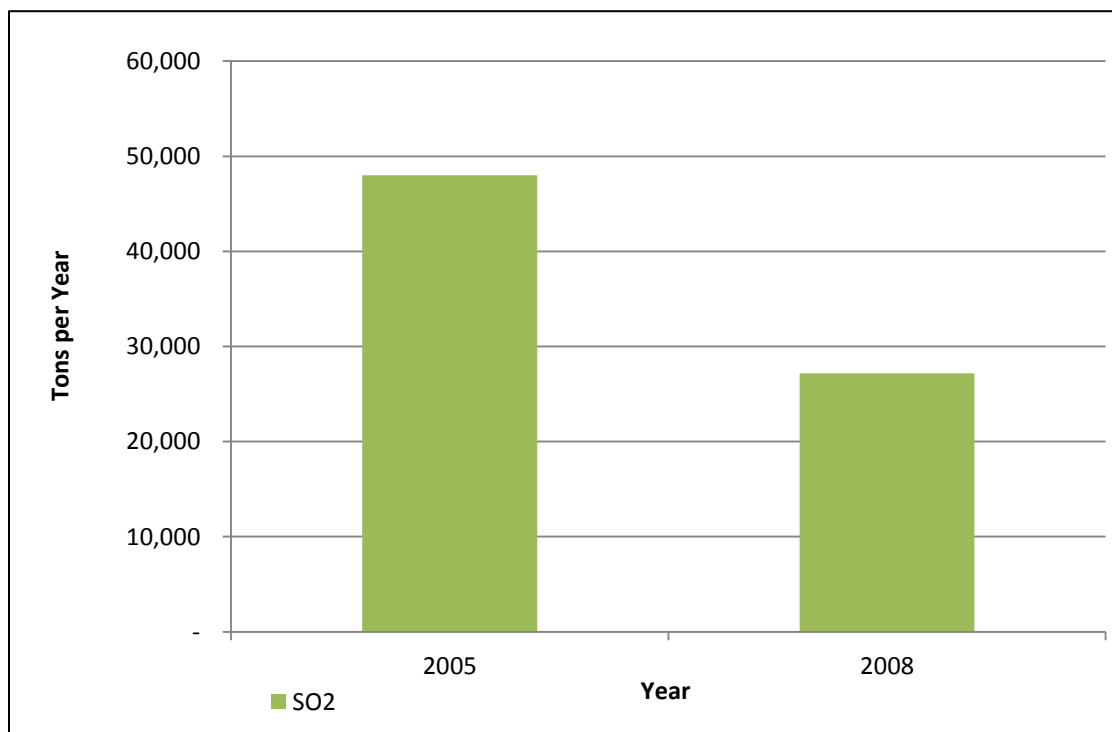
2008-Dearborn County, IN				
COUNTY, STATE	Sector	NO_x	Direct PM_{2.5}	SO₂
DEARBORN COUNTY, IN	ONROAD	748.81	29.89	2.69
DEARBORN COUNTY, IN	NONROAD	318.09	19.91	17.38
DEARBORN COUNTY, IN	AREA	145.42	4.29	81.02
DEARBORN COUNTY, IN	POINT	9,409.03	866.20	27,063.43

	2008 Dearborn County, IN Totals				
	ONROAD	NONROAD	AREA	POINT	GRAND TOTAL
NO_x	748.81	318.09	145.42	9,409.03	10,621.35
Direct PM_{2.5}	29.89	19.91	4.29	866.20	920.29
SO₂	2.69	17.38	81.02	27,063.43	27,164.52

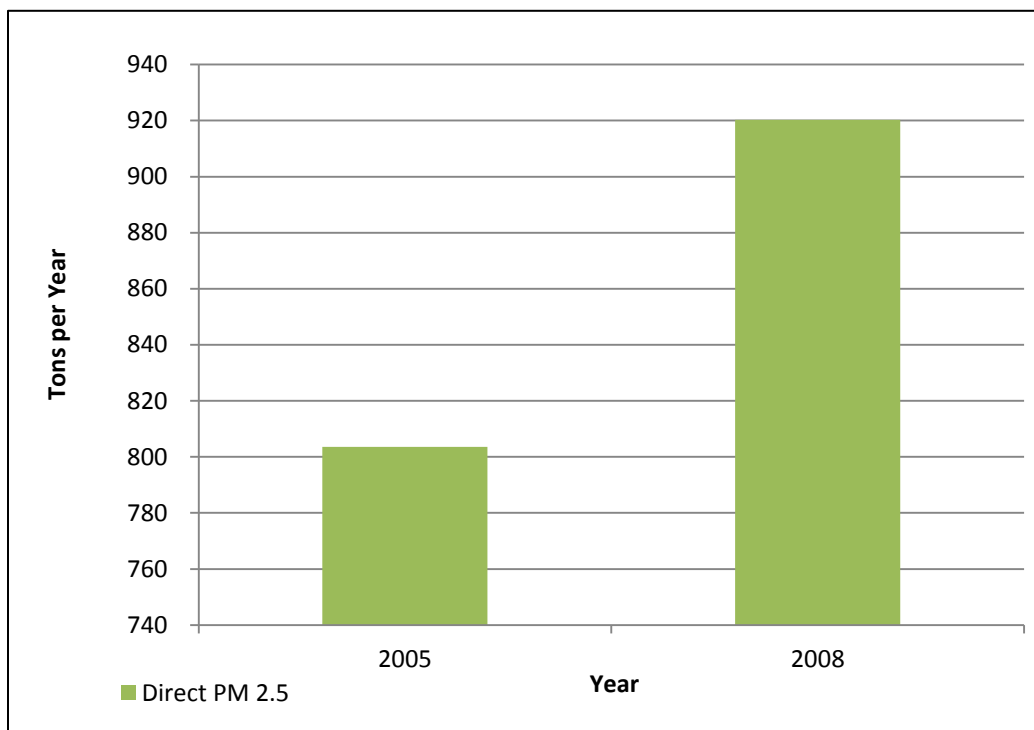
NO_x Emission Trends, All Sources in Dearborn County, IN, 2005 and 2008-With CAIR



SO₂ Emission Trends, All Sources in Dearborn County, IN, 2005 and 2008-With CAIR



**Direct PM_{2.5} Emission Trends, All Sources in Dearborn County, IN, 2005 and 2008-With
CAIR**



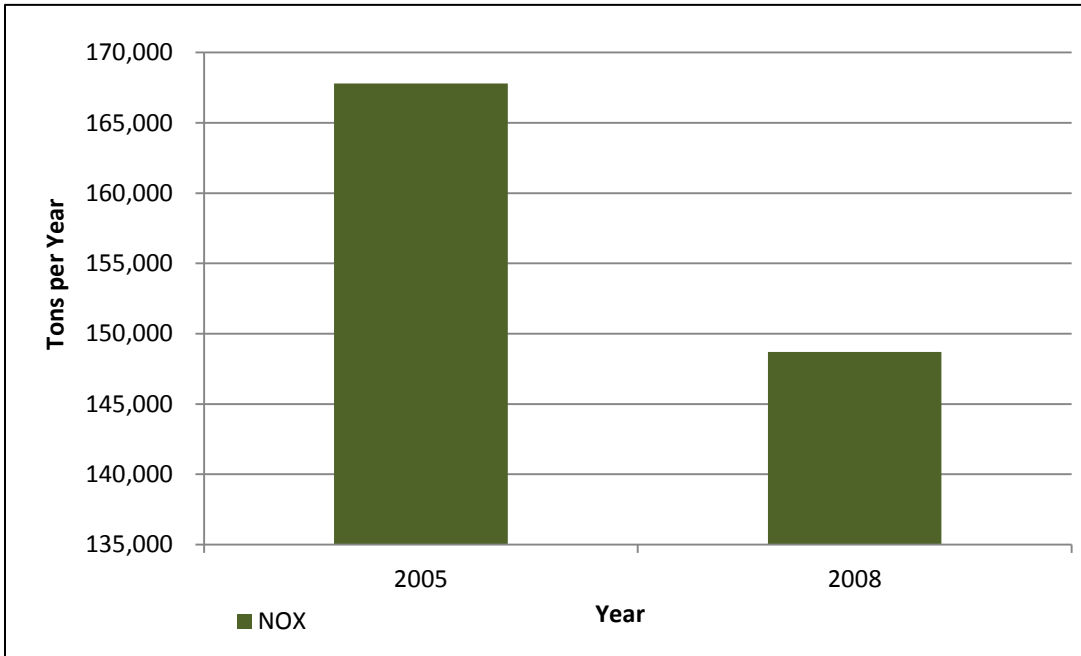
2005-Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area				
COUNTY, STATE	Sector	NO_x	Direct PM_{2.5}	SO₂
DEARBORN COUNTY, IN	ONROAD	865.46	33.98	2.45
DEARBORN COUNTY, IN	NONROAD	382.53	23.96	40.16
DEARBORN COUNTY, IN	AREA	141.37	4.29	78.72
DEARBORN COUNTY, IN	POINT	9,985.98	741.32	47,864.85
BOONE COUNTY, KY	ONROAD	5,126.88	205.21	15.91
BOONE COUNTY, KY	NONROAD	3,858.96	304.76	494.27
BOONE COUNTY, KY	AREA	1,844.50	351.27	1,054.33
BOONE COUNTY, KY	POINT	3,984.30	135.62	3,661.80
CAMPBELL COUNTY, KY	ONROAD	3,041.21	120.30	9.30
CAMPBELL COUNTY, KY	NONROAD	1,902.55	80.95	239.99
CAMPBELL COUNTY, KY	AREA	523.45	200.08	471.77
CAMPBELL COUNTY, KY	POINT	53.68	84.25	0.97
KENTON COUNTY, KY	ONROAD	5,328.44	212.29	16.24
KENTON COUNTY, KY	NONROAD	2,684.68	119.08	248.34
KENTON COUNTY, KY	AREA	1,542.27	365.74	1,196.61
KENTON COUNTY, KY	POINT	19.50	9.53	12.91
BUTLER COUNTY, OH	ONROAD	10,910.37	413.97	30.01
BUTLER COUNTY, OH	NONROAD	3,268.33	216.47	341.20
BUTLER COUNTY, OH	AREA	796.34	173.24	224.54
BUTLER COUNTY, OH	POINT	5,110.42	959.56	8,144.36
CLERMONT COUNTY, OH	ONROAD	7,295.87	281.79	20.51
CLERMONT COUNTY, OH	NONROAD	1,477.30	110.65	161.66
CLERMONT COUNTY, OH	AREA	612.97	193.70	164.72
CLERMONT COUNTY, OH	POINT	28,131.06	656.14	89,038.84
HAMILTON COUNTY, OH	ONROAD	31,127.09	1,222.02	88.85
HAMILTON COUNTY, OH	NONROAD	6,309.78	398.01	592.45
HAMILTON COUNTY, OH	AREA	1,923.27	303.61	163.45
HAMILTON COUNTY, OH	POINT	17,992.25	810.52	85,200.53
WARREN COUNTY, OH	ONROAD	8,224.57	320.74	208.73
WARREN COUNTY, OH	NONROAD	1,886.04	146.67	31.67
WARREN COUNTY, OH	AREA	426.57	236.92	140.25
WARREN COUNTY, OH	POINT	1,024.95	18.75	3.39

	2005 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area Totals				
	ONROAD	NONROAD	AREA	POINT	GRAND TOTAL
NO_x	71,919.89	21,770.17	7,810.74	66,302.14	167,802.93
Direct PM_{2.5}	2,810.30	1,400.55	1,828.85	3,415.69	9,455.39
SO₂	392.00	2,149.74	3,494.39	233,927.65	239,963.79

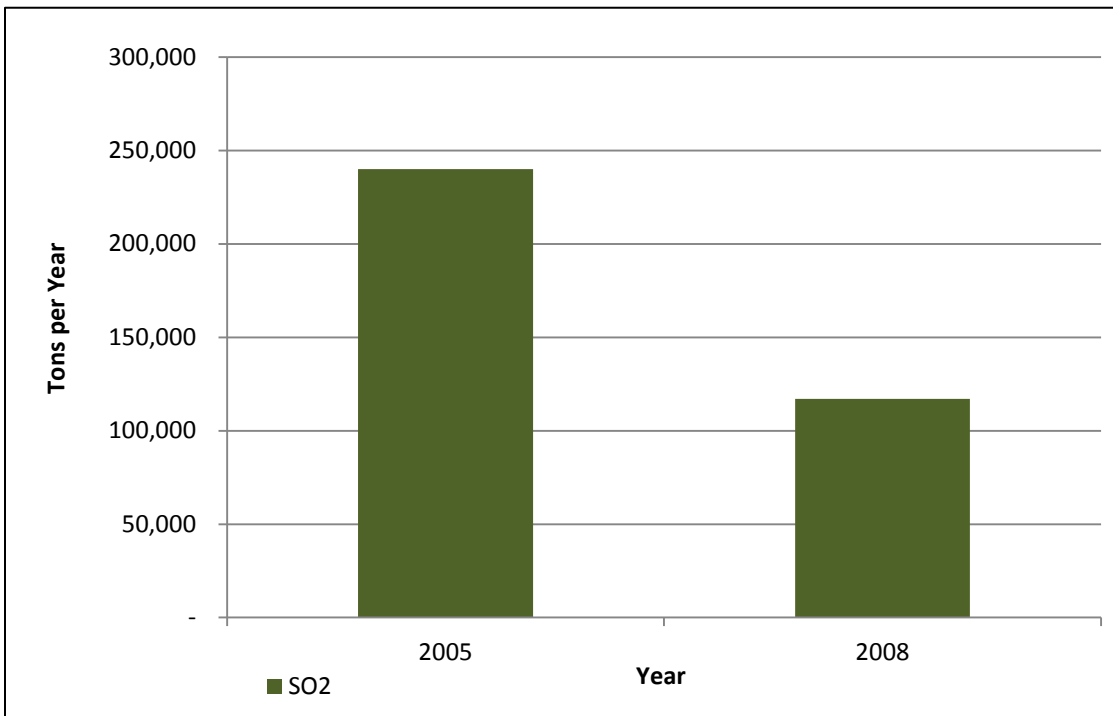
2008-Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area				
COUNTY, STATE	Sector	NO _x	Direct PM _{2.5}	SO ₂
DEARBORN COUNTY, IN	ONROAD	748.81	29.89	2.69
DEARBORN COUNTY, IN	NONROAD	318.09	19.91	17.38
DEARBORN COUNTY, IN	AREA	145.42	4.29	81.02
DEARBORN COUNTY, IN	POINT	9,409.03	866.20	27,063.43
BOONE COUNTY, KY	ONROAD	5,067.94	251.85	16.71
BOONE COUNTY, KY	NONROAD	3,772.42	310.52	435.93
BOONE COUNTY, KY	AREA	1,897.28	353.71	1,066.79
BOONE COUNTY, KY	POINT	2,024.25	145.51	2,830.13
CAMPBELL COUNTY, KY	ONROAD	2,988.33	146.46	9.69
CAMPBELL COUNTY, KY	NONROAD	1,833.46	76.09	206.21
CAMPBELL COUNTY, KY	AREA	536.71	201.26	479.14
CAMPBELL COUNTY, KY	POINT	49.52	89.52	0.96
KENTON COUNTY, KY	ONROAD	5,057.93	247.31	16.34
KENTON COUNTY, KY	NONROAD	2,562.60	110.61	190.40
KENTON COUNTY, KY	AREA	1,581.60	366.69	1,210.42
KENTON COUNTY, KY	POINT	20.44	11.11	13.89
BUTLER COUNTY, OH	ONROAD	9,803.70	377.64	34.25
BUTLER COUNTY, OH	NONROAD	2,833.89	185.81	174.34
BUTLER COUNTY, OH	AREA	807.64	180.43	221.09
BUTLER COUNTY, OH	POINT	4,797.20	1,061.93	7,624.17
CLERMONT COUNTY, OH	ONROAD	6,516.40	256.60	23.32
CLERMONT COUNTY, OH	NONROAD	1,284.92	95.48	66.25
CLERMONT COUNTY, OH	AREA	619.27	196.15	162.20
CLERMONT COUNTY, OH	POINT	24,275.89	536.47	43,036.33
HAMILTON COUNTY, OH	ONROAD	27,020.93	1,080.54	98.30
HAMILTON COUNTY, OH	NONROAD	5,402.04	345.12	274.62
HAMILTON COUNTY, OH	AREA	1,955.47	323.94	161.80
HAMILTON COUNTY, OH	POINT	15,024.79	361.02	31,245.65
WARREN COUNTY, OH	ONROAD	7,267.18	289.56	76.29
WARREN COUNTY, OH	NONROAD	1,607.45	124.78	34.56
WARREN COUNTY, OH	AREA	432.28	238.33	138.31
WARREN COUNTY, OH	POINT	1,043.27	19.91	3.53

	2008 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area Totals				
	ONROAD	NONROAD	AREA	POINT	GRAND TOTAL
NO_x	64,471.22	19,614.87	7,975.67	56,644.39	148,706.15
Direct PM_{2.5}	2,679.85	1,268.32	1,864.80	3,091.67	8,904.64
SO₂	277.59	1,399.69	3,520.77	111,818.09	117,016.14

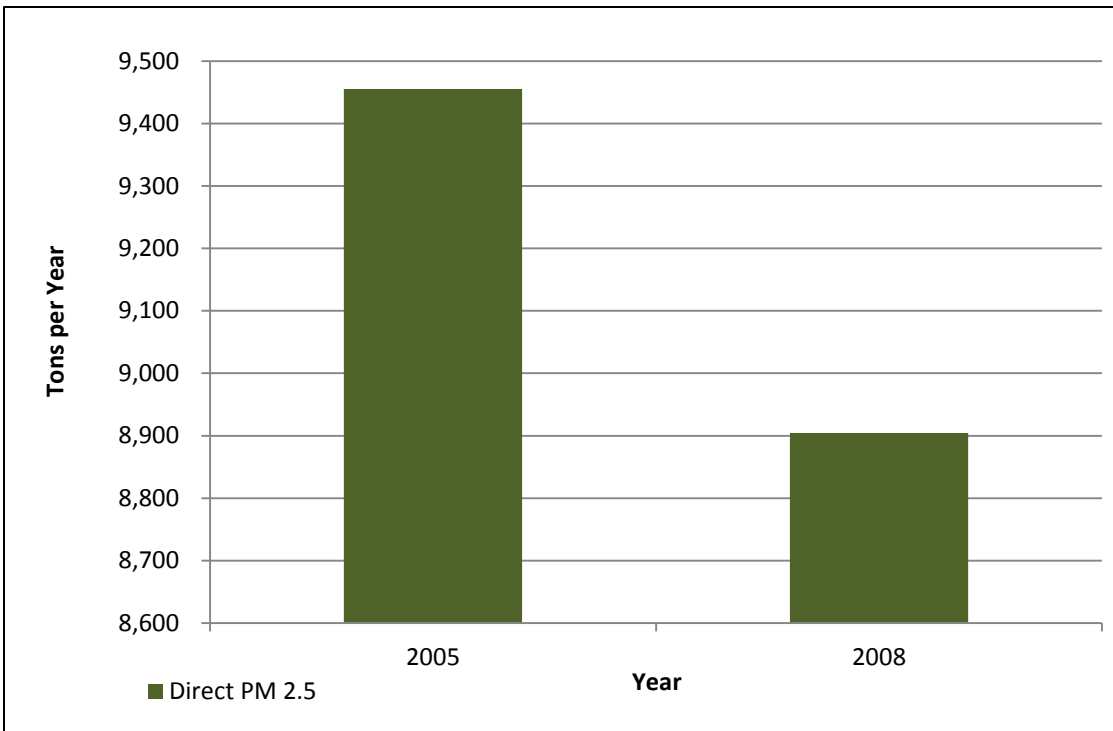
**NO_x Emission Trends, All Sources in Entire Cincinnati-Hamilton, OH-KY-IN
Nonattainment Area, 2005 and 2008-With CAIR**



**SO₂ Emission Trends, All Sources in Entire Cincinnati-Hamilton, OH-KY-IN
Nonattainment Area, 2005 and 2008-With CAIR**



**Direct PM_{2.5} Emission Trends, All Sources in Entire Cincinnati-Hamilton, OH-KY-IN
Nonattainment Area, 2005 and 2008-IN/KY-With CAIR, OH-Without CAIR**



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APPENDIX D

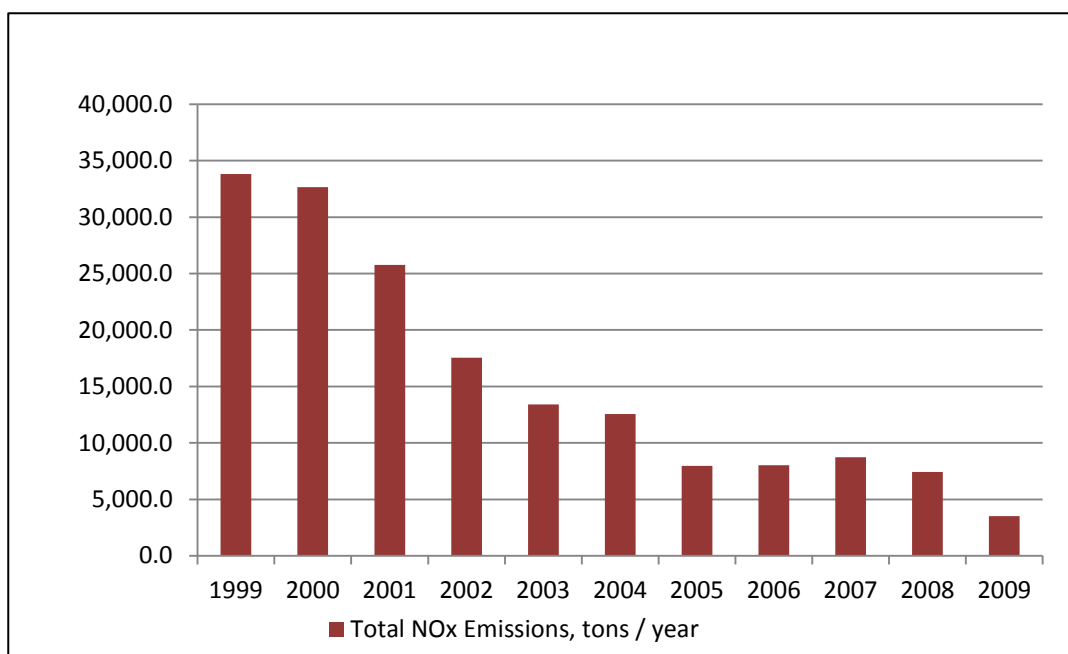
Historical Nitrogen Oxides (NO_x) and Sulfur Dioxide (SO₂) Emissions from Electric Generating Units in the 1997 Annual PM_{2.5} Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area

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Lawrenceburg Township, Dearborn County, Indiana NO_x Emissions from EGUs

Year	Total NO _x Emissions, tons/year
1999	33,807.1
2000	32,657.1
2001	25,774.7
2002	17,533.8
2003	13,416.7
2004	12,552.8
2005	7,961.3
2006	8,041.6
2007	8,739.2
2008	7,429.2
2009	3,529.3

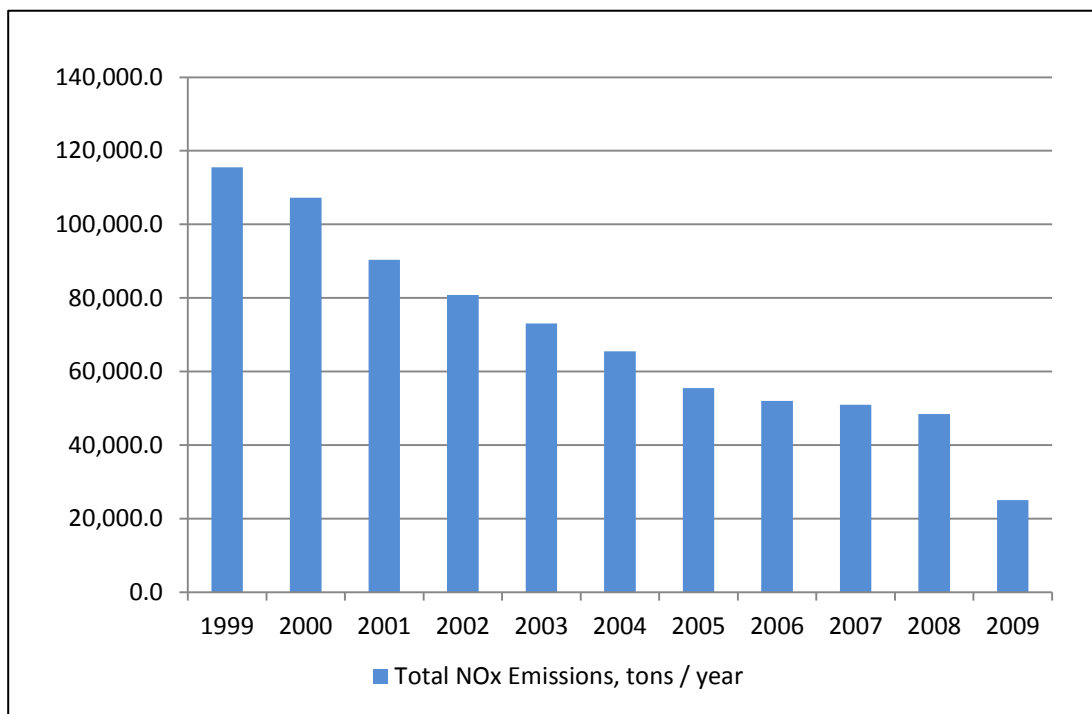
Lawrenceburg Township, Dearborn County, Indiana NO_x Emissions from EGUs



Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x Emissions from EGUs

Year	Total NO _x Emissions, tons/year
1999	115,477.8
2000	107,227.9
2001	90,347.2
2002	80,808.6
2003	73,084.4
2004	65,491.6
2005	55,492.4
2006	52,004.5
2007	50,979.6
2008	48,464.0
2009	24,997.8

Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x Emissions from EGUs



**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 1999**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	33,807.1
Kentucky	East Bend	10,113.8
Ohio	Miami Fort Generating Station	26,429.1
Ohio	William H Zimmer Generating Station	22,792.3
Ohio	Walter C Beckjord Generating Station	22,091.4
Ohio	Woodsdale	244.1
Total		115,477.8

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2000**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	32,657.1
Kentucky	East Bend	8,671.0
Ohio	Madison Generating Station	15.1
Ohio	Miami Fort Generating Station	25,518.8
Ohio	William H Zimmer Generating Station	18,682.3
Ohio	Walter C Beckjord Generating Station	21,408.7
Ohio	Woodsdale	274.9
Total		107,227.9

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2001**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	25,774.7
Kentucky	East Bend	8,161.5
Ohio	Madison Generating Station	32.0
Ohio	Miami Fort Generating Station	18,598.8
Ohio	William H Zimmer Generating Station	20,886.3
Ohio	Walter C Beckjord Generating Station	16,743.0
Ohio	Woodsdale	150.9
Total		90,347.2

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2002**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	17,533.8
Kentucky	East Bend	5,454.9
Ohio	Madison Generating Station	48.7
Ohio	Miami Fort Generating Station	17,941.5
Ohio	William H Zimmer Generating Station	20,965.6
Ohio	Walter C Beckjord Generating Station	18,736.8
Ohio	Woodsdale	127.3
Total		80,808.6

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2003**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	13,416.7
Kentucky	East Bend	7,056.0
Ohio	Madison Generating Station	51.7
Ohio	Miami Fort Generating Station	15,593.7
Ohio	William H Zimmer Generating Station	20,174.0
Ohio	Walter C Beckjord Generating Station	16,727.9
Ohio	Woodsdale	64.4
Total		73,084.4

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2004**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	12,552.8
Kentucky	East Bend	6,187.2
Ohio	Madison Generating Station	14.0
Ohio	Miami Fort Generating Station	17,102.2
Ohio	William H Zimmer Generating Station	14,692.7
Ohio	Walter C Beckjord Generating Station	14,914.2
Ohio	Woodsdale	28.5
Total		65,491.6

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2005**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	7,961.3
Kentucky	East Bend	3,952.2
Ohio	Madison Generating Station	91.5
Ohio	Miami Fort Generating Station	15,264.6
Ohio	William H Zimmer Generating Station	15,153.0
Ohio	Walter C Beckjord Generating Station	13,012.8
Ohio	Woodsdale	57.0
Total		55,492.4

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2006**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	8,041.6
Kentucky	East Bend	5,399.7
Ohio	Madison Generating Station	38.4
Ohio	Miami Fort Generating Station	12,797.9
Ohio	William H Zimmer Generating Station	13,851.3
Ohio	Walter C Beckjord Generating Station	11,830.2
Ohio	Woodsdale	45.4
Total		52,004.5

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2007**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	8,739.2
Kentucky	East Bend	5,563.0
Ohio	Madison Generating Station	44.3
Ohio	Miami Fort Generating Station	9,754.6
Ohio	William H Zimmer Generating Station	13,736.6
Ohio	Walter C Beckjord Generating Station	13,031.8
Ohio	Woodsdale	110.1
Total		50,979.6

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2008**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	7,429.2
Kentucky	East Bend	4,492.4
Ohio	Madison Generating Station	16.1
Ohio	Miami Fort Generating Station	12,371.7
Ohio	William H Zimmer Generating Station	16,531.1
Ohio	Walter C Beckjord Generating Station	7,549.0
Ohio	Woodsdale	74.5
Total		48,464.0

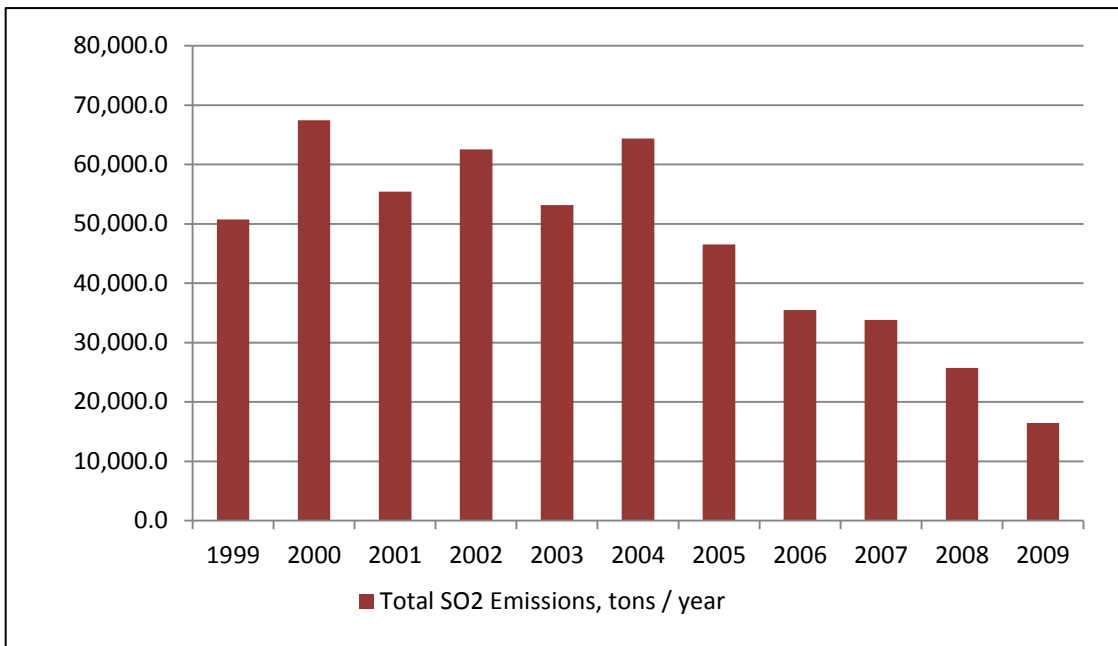
**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area NO_x
Emissions from EGUs, 2009**

State	Facility	NO_x Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	3,529.3
Kentucky	East Bend	2,436.2
Ohio	Madison Generating Station	25.6
Ohio	Miami Fort Generating Station	4,337.8
Ohio	William H Zimmer Generating Station	3,646.4
Ohio	Walter C Beckjord Generating Station	10,948.2
Ohio	Woodsdale	74.3
Total		24,997.8

Lawrenceburg Township, Dearborn County, Indiana SO₂ Emissions from EGUs

Year	Total SO ₂ Emissions, tons/year
1999	50,715.7
2000	67,446.1
2001	55,430.6
2002	62,531.7
2003	53,175.0
2004	64,387.3
2005	46,533.7
2006	35,494.2
2007	33,828.9
2008	25,729.1
2009	16,442.3

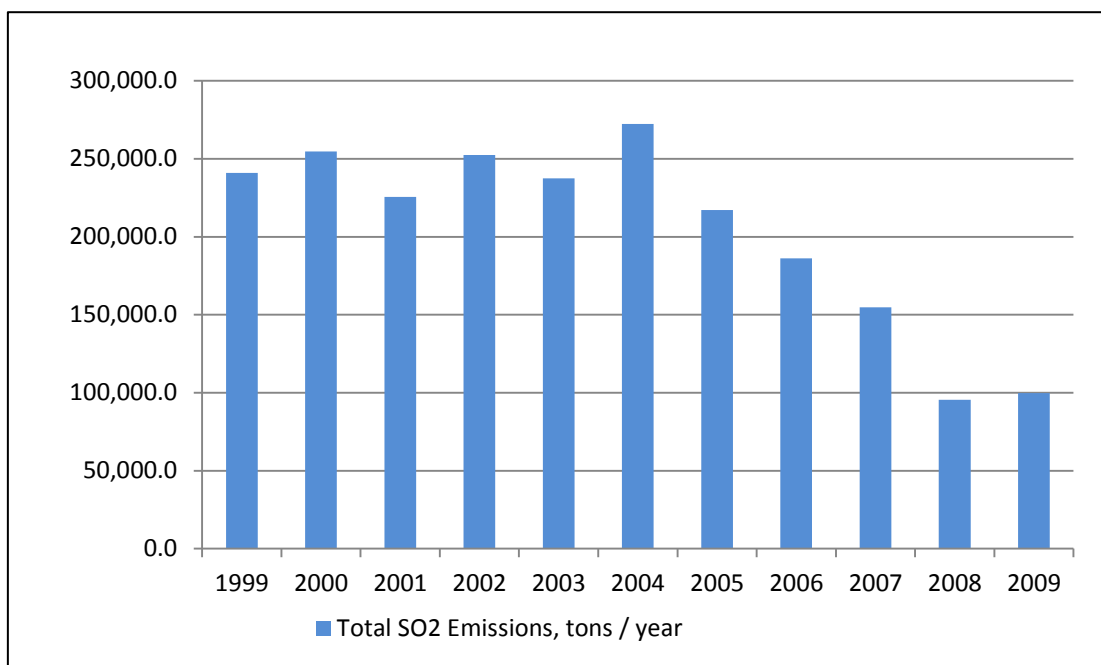
Lawrenceburg Township, Dearborn County, Indiana SO₂ Emissions from EGUs



Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area SO₂ Emissions from EGUs

Year	Total SO ₂ Emissions, tons/year
1999	240,983.6
2000	254,655.4
2001	225,526.3
2002	252,572.9
2003	237,439.2
2004	272,465.6
2005	217,111.1
2006	186,150.3
2007	154,905.1
2008	95,498.4
2009	99,757.0

Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area SO₂ Emissions from EGUs



**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 1999**

State	Facility	SO ₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	50,715.7
Kentucky	East Bend	18,095.8
Ohio	Miami Fort Generating Station	78,086.2
Ohio	William H Zimmer Generating Station	25,482.4
Ohio	Walter C Beckjord Generating Station	68,601.7
Ohio	Woodsdale	1.8
Total		240,983.6

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2000**

State	Facility	SO ₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	67,446.1
Kentucky	East Bend	14,850.4
Ohio	Madison Generating Station	0.2
Ohio	Miami Fort Generating Station	81,512.4
Ohio	William H Zimmer Generating Station	19,410.6
Ohio	Walter C Beckjord Generating Station	71,433.5
Ohio	Woodsdale	2.2
Total		254,655.4

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2001**

State	Facility	SO ₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	55,430.6
Kentucky	East Bend	13,106.5
Ohio	Madison Generating Station	0.6
Ohio	Miami Fort Generating Station	73,538.9
Ohio	William H Zimmer Generating Station	21,651.5
Ohio	Walter C Beckjord Generating Station	61,797.4
Ohio	Woodsdale	0.8
Total		225,526.3

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2002**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	62,531.7
Kentucky	East Bend	12,918.1
Ohio	Madison Generating Station	0.7
Ohio	Miami Fort Generating Station	85,699.4
Ohio	William H Zimmer Generating Station	21,491.8
Ohio	Walter C Beckjord Generating Station	69,930.6
Ohio	Woodsdale	0.6
Total		252,572.9

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2003**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	53,175.0
Kentucky	East Bend	14,959.8
Ohio	Madison Generating Station	0.2
Ohio	Miami Fort Generating Station	81,514.6
Ohio	William H Zimmer Generating Station	22,917.9
Ohio	Walter C Beckjord Generating Station	64,871.3
Ohio	Woodsdale	0.4
Total		237,439.2

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2004**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	64,387.3
Kentucky	East Bend	11,545.5
Ohio	Madison Generating Station	0.2
Ohio	Miami Fort Generating Station	100,576.7
Ohio	William H Zimmer Generating Station	21,638.3
Ohio	Walter C Beckjord Generating Station	74,317.5
Ohio	Woodsdale	0.1
Total		272,465.6

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2005**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	46,533.7
Kentucky	East Bend	3,666.7
Ohio	Madison Generating Station	1.6
Ohio	Miami Fort Generating Station	77,583.2
Ohio	William H Zimmer Generating Station	22,379.5
Ohio	Walter C Beckjord Generating Station	66,946.1
Ohio	Woodsdale	0.3
Total		217,111.1

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2006**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	35,494.2
Kentucky	East Bend	3,946.5
Ohio	Madison Generating Station	0.7
Ohio	Miami Fort Generating Station	62,028.0
Ohio	William H Zimmer Generating Station	22,054.1
Ohio	Walter C Beckjord Generating Station	62,626.6
Ohio	Woodsdale	0.2
Total		186,150.3

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2007**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	33,828.9
Kentucky	East Bend	2,451.8
Ohio	Madison Generating Station	0.8
Ohio	Miami Fort Generating Station	46,938.9
Ohio	William H Zimmer Generating Station	16,776.4
Ohio	Walter C Beckjord Generating Station	54,907.7
Ohio	Woodsdale	0.6
Total		154,905.1

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2008**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	25,729.1
Kentucky	East Bend	2,713.4
Ohio	Madison Generating Station	0.2
Ohio	Miami Fort Generating Station	24,693.2
Ohio	William H Zimmer Generating Station	15,961.6
Ohio	Walter C Beckjord Generating Station	26,400.5
Ohio	Woodsdale	0.4
Total		95,498.4

**Entire Cincinnati-Hamilton OH-KY-IN Nonattainment Area
SO₂ Emissions from EGUs, 2009**

State	Facility	SO₂ Emissions, tons/year
Indiana	American Electric Power (AEP)- Tanners Creek Generating Station	16,442.3
Kentucky	East Bend	1,724.6
Ohio	Madison Generating Station	0.4
Ohio	Miami Fort Generating Station	25,339.9
Ohio	William H Zimmer Generating Station	14,284.9
Ohio	Walter C Beckjord Generating Station	41,964.5
Ohio	Woodsdale	0.4
Total		99,757.0

APPENDIX E

**Regulatory Impact Analysis (RIA) PM_{2.5} Precursor
Emissions Inventory (provided by U.S. EPA, Region
5), 2007 Base-Year and 2020 Projected-Year for
Ammonia (NH₃) and Volatile Organic Compounds
(VOCs) in the 1997 Annual PM_{2.5} Cincinnati-
Hamilton, OH-KY-IN, Nonattainment Area**

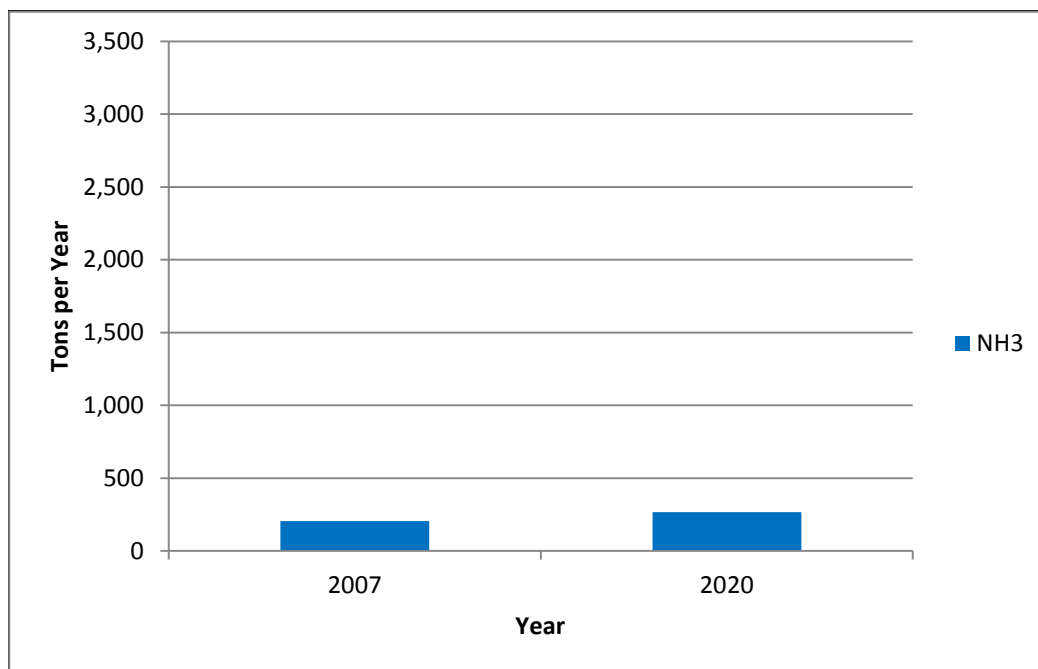
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Lawrenceburg Township, Dearborn County, IN, Percent Change (Tons Per Year)				
	2007	2020	Change	% Change
NH₃	205.87	266.81	+60.95	+29.60%
VOC	3,643.54	2,751.51	-892.03	-24.48%

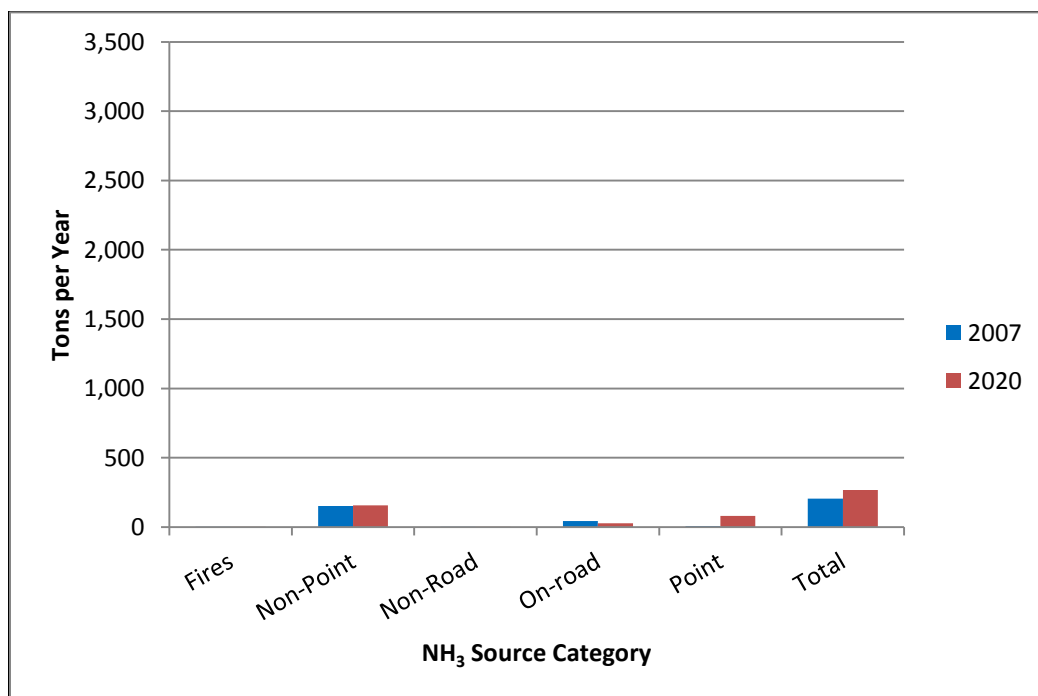
2007 Lawrenceburg Township, Dearborn County, IN, (Tons Per Year)						
	FIRES	NON-POINT	NON-ROAD	ON-ROAD	POINT	TOTAL
NH₃	2.91	151.35	0.32	44.74	6.54	205.87
VOC	41.86	804.35	198.17	1,167.24	1,431.91	3,643.54

2020 Lawrenceburg Township, Dearborn County, IN, (Tons Per Year)						
	FIRES	NON-POINT	NON-ROAD	ON-ROAD	POINT	TOTAL
NH₃	2.91	155.94	0.39	26.77	80.81	266.81
VOC	41.86	778.66	109.36	420.16	1,401.46	2,751.51

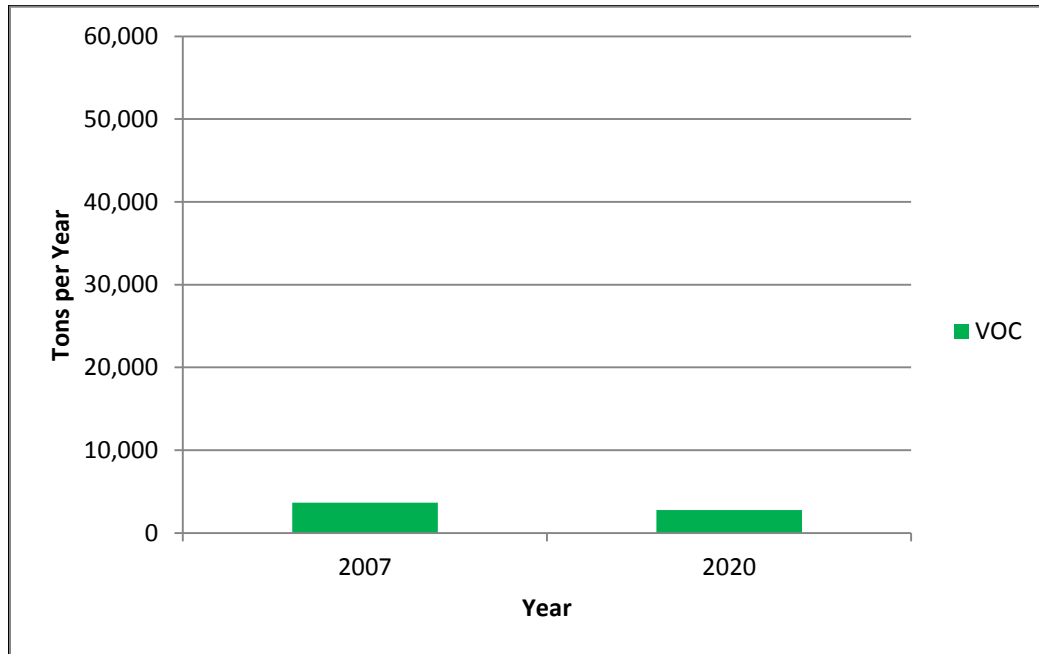
Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions, Lawrenceburg Township, Dearborn County, Indiana



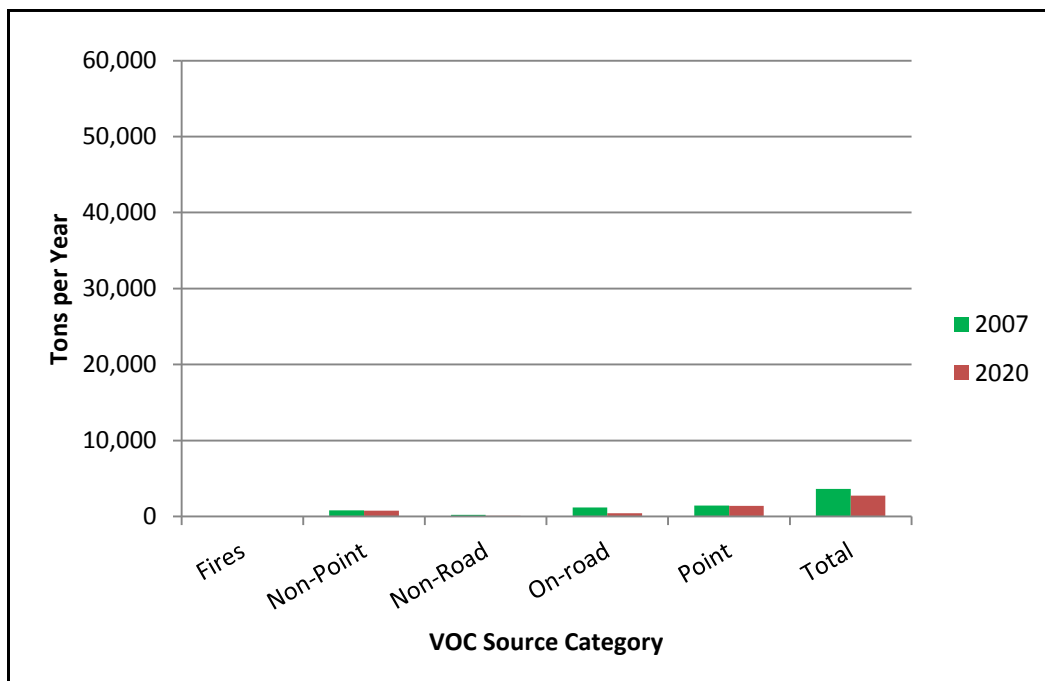
Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions by Source Category - Lawrenceburg Township, Dearborn County, Indiana



**Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions -
Lawrenceburg Township, Dearborn County, Indiana**



**Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions by Source
Category - Lawrenceburg Township, Dearborn County, Indiana**

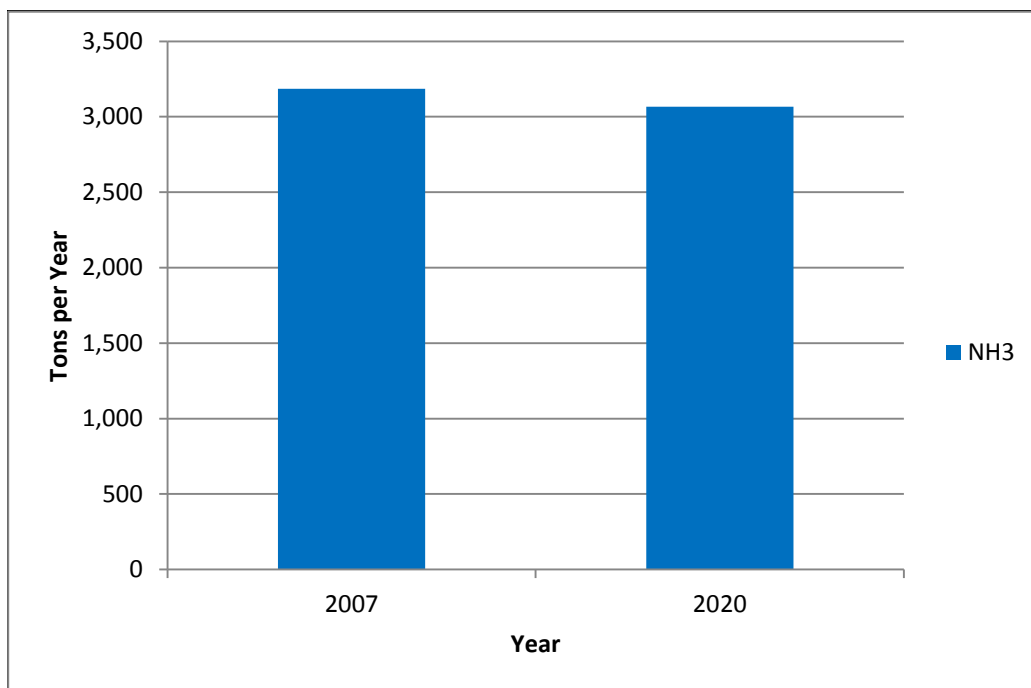


Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area Percent Change (Tons Per Year)				
	2007	2020	Change	% Change
NH₃	3,185.82	3,066.89	-118.93	-3.73%
VOC	59,120.69	42,404.28	-16,716.41	-28.28%

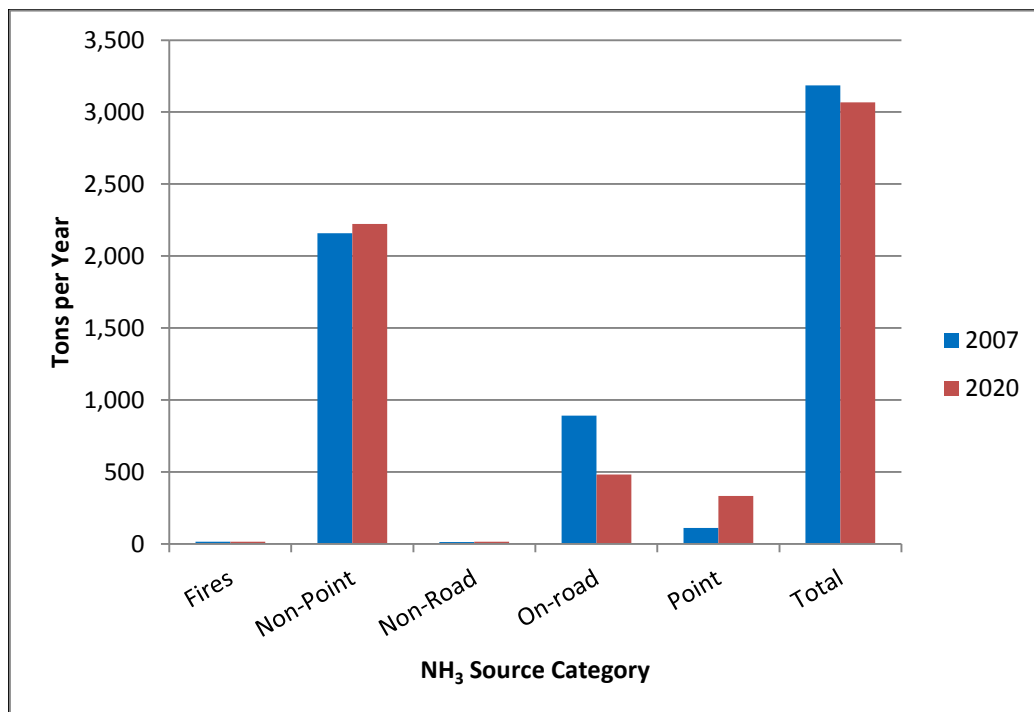
NH₃ - 2007 Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area (Tons Per Year)						
	FIRES	NON- POINT	NON- ROAD	ON- ROAD	POINT	TOTAL
DEARBORN COUNTY, IN	2.91	151.35	0.32	44.74	6.5	205.87
BOONE COUNTY, KY	0.49	136.84	1.27	50.71	24.53	213.84
CAMPBELL COUNTY, KY		83.95	0.74	35.67	0	120.36
KENTON COUNTY, KY	6.20	100.20	0.96	77.42	0.02	184.80
BUTLER COUNTY, OH	0.74	521.18	2.37	127.57	32.12	683.98
CLERMONT COUNTY, OH		158.80	1.23	69.51	3.84	233.39
HAMILTON COUNTY, OH	5.02	447.04	4.70	394.97	41.45	893.18
WARREN COUNTY, OH	0.25	558.59	1.51	89.37	0.68	650.40
TOTAL	15.60	2,157.96	13.11	889.95	109.19	3,185.82
VOC - 2007 Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area (Tons Per Year)						
	FIRES	NON- POINT	NON- ROAD	ON- ROAD	POINT	TOTAL
DEARBORN COUNTY, IN	41.86	804.35	198.18	1,167.24	1,431.91	3,643.54
BOONE COUNTY, KY	7.048	1,208.37	1,161.68	1,083.04	846.53	4,306.67
CAMPBELL COUNTY, KY		721.06	360.14	926.90	146.03	2,154.13
KENTON COUNTY, KY	89.09	1,332.32	556.62	1,714.95	232.46	3,925.44
BUTLER COUNTY, OH	10.57	4,473.08	1,446.42	2,948.17	1,005.27	9,883.50
CLERMONT COUNTY, OH		2,543.10	916.79	1,642.83	175.80	5,278.51
HAMILTON COUNTY, OH	72.21	10,914.60	3,636.49	8,767.52	1,014.06	24,404.88
WARREN COUNTY, OH	3.52	2,151.67	1,017.30	2,066.05	285.48	5,524.02
TOTAL	224.30	24,148.54	9,293.61	20,316.70	5,137.54	59,120.69

NH₃ - 2020 Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area (Tons Per Year)						
	FIRES	NON- POINT	NON- ROAD	ON- ROAD	POINT	TOTAL
DEARBORN COUNTY, IN	2.91	155.94	0.39	26.77	80.81	266.81
BOONE COUNTY, KY	0.49	140.38	1.53	29.41	35.44	207.26
CAMPBELL COUNTY, KY		85.15	0.81	26.07	0	112.03
KENTON COUNTY, KY	6.20	103.21	1.14	43.54	0.02	154.10
BUTLER COUNTY, OH	0.74	535.10	2.68	67.89	30.81	637.20
CLERMONT COUNTY, OH		162.58	1.40	40.51	99.45	303.94
HAMILTON COUNTY, OH	5.02	457.96	5.26	203.10	84.42	755.76
WARREN COUNTY, OH	0.25	583.03	1.73	44.08	0.71	629.79
TOTAL	15.60	2,223.33	14.93	481.38	331.64	3,066.89
VOC - 2020 Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area (Tons Per Year)						
	FIRES	NON- POINT	NON- ROAD	ON- ROAD	POINT	TOTAL
DEARBORN COUNTY, IN	41.86	778.66	109.36	420.16	1,401.46	2,751.51
BOONE COUNTY, KY	7.05	1,113.49	668.35	400.14	873.91	3,062.94
CAMPBELL COUNTY, KY		695.11	178.32	374.82	146.18	1,394.43
KENTON COUNTY, KY	89.09	1,370.57	331.02	628.44	218.74	2,637.86
BUTLER COUNTY, OH	10.57	4,447.33	836.15	1,196.66	956.70	7,447.40
CLERMONT COUNTY, OH		2,524.71	527.21	693.45	230.44	3,975.82
HAMILTON COUNTY, OH	72.21	10,967.52	2,012.61	3,585.35	820.45	17,458.15
WARREN COUNTY, OH	3.52	2,182.31	564.49	742.46	183.38	3,676.17
TOTAL	224.30	24,079.71	5,227.52	8,041.48	4,831.27	42,404.28

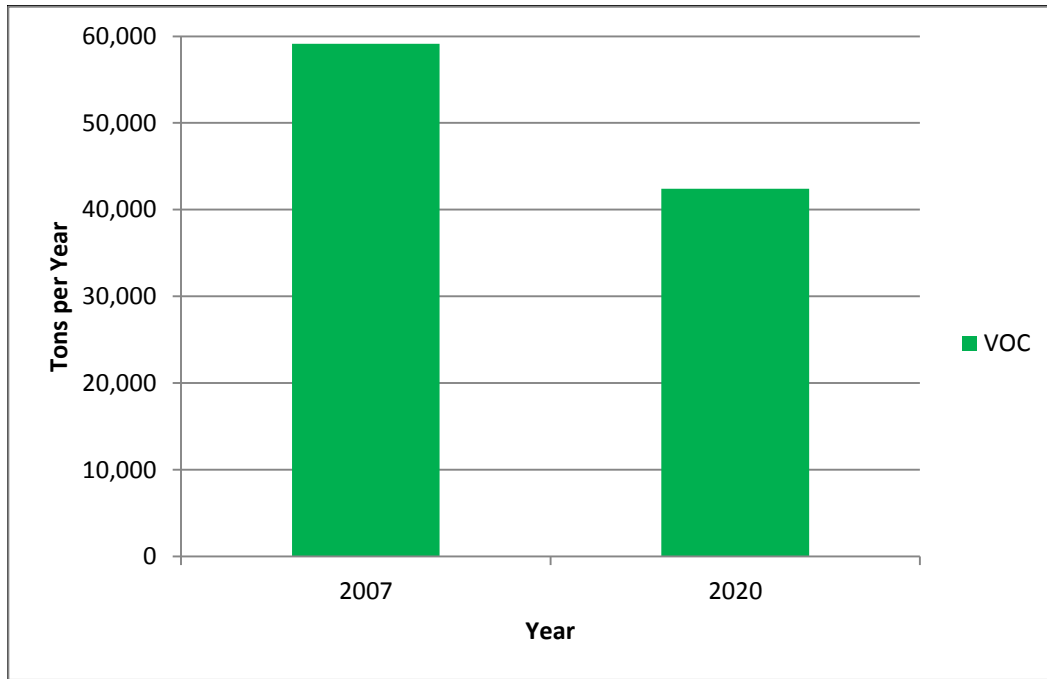
Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



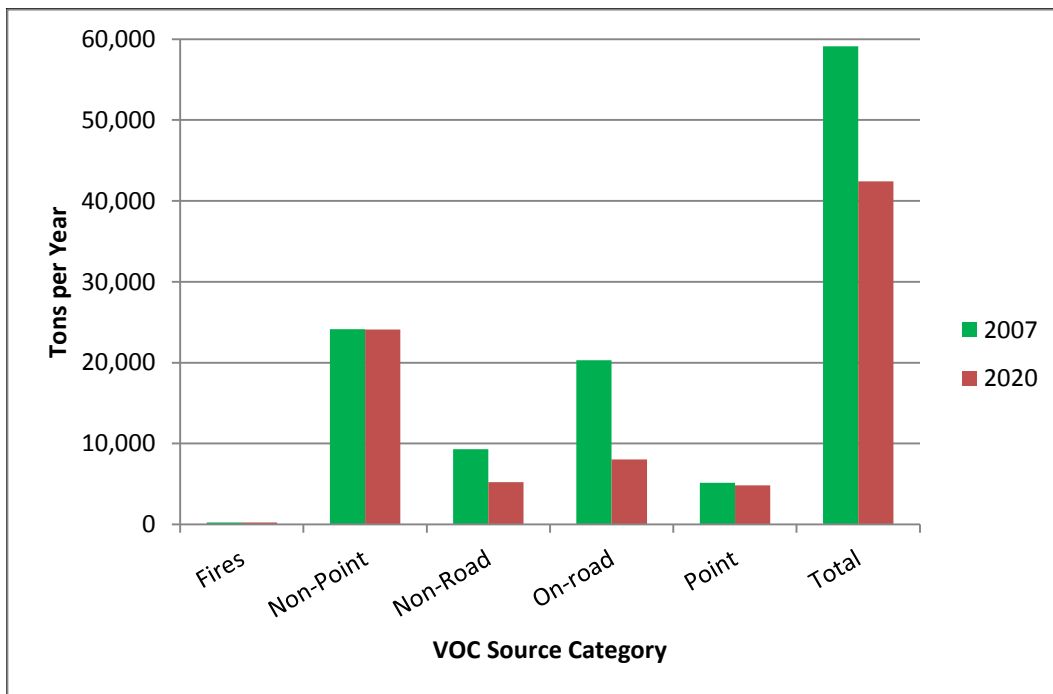
Comparison of 2007 (Base-Year) and 2020 (Projected-Year) NH₃ Emissions by Source Category - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



Comparison of 2007 (Base-Year) and 2020 (Projected-Year) VOC Emissions by Source Category - Entire Cincinnati-Hamilton, OH-KY-IN, Nonattainment Area



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APPENDIX F

Public Participation Process Documentation

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LEGAL NOTICE OF PUBLIC HEARING

REVISED REQUEST FOR REDESIGNATION AND MAINTENANCE PLAN FOR THE INDIANA PORTION OF THE CINCINNATI- HAMILTON, OHIO, KENTUCKY, INDIANA (OH-KY-IN), 1997 ANNUAL FINE PARTICLES NONATTAINMENT AREA

Lawrenceburg Township, Dearborn County

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/6394.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 public hearing regarding the "Revised Request for Redesignation and Maintenance Plan for the Indiana Portion of the Cincinnati-Hamilton, (OH-KY-IN), 1997 Annual Fine Particles (PM_{2.5}) Nonattainment Area - Lawrenceburg Township, Dearborn County". All interested persons are invited and will be given reasonable opportunity to express their views concerning the submittal of the Draft Redesignation Petition and Maintenance.

Lawrenceburg Township, Dearborn County, Indiana was designated as "nonattainment" as a portion of the Cincinnati-Hamilton, OH-KY-IN, 1997 Annual PM_{2.5} Nonattainment Area. This area was classified as a "marginal" nonattainment area and subject to the requirements of Section 172 of the Clean Air Act (CAA). One of the compliance requirements mandated by Section 172(c) of the CAA is the development of a plan demonstrating that the area will meet the federal 1997 annual PM_{2.5} air quality standard by the required attainment date. This Redesignation and Maintenance Plan is being drafted and submitted consistent with United States Environmental Protection Agency (U.S. EPA) guidance.

Copies of the draft documents will be available on or before June 29, 2016, 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, N1003, Indianapolis, Indiana.
- Indiana Department of Environmental Management, Southeast Regional Office, 820 West Sweet Street, Brownstown, Indiana
- Lawrenceburg Public Library, 150 Mary Street, Lawrenceburg, Indiana
- Lawrenceburg City Building, 230 Walnut Street, Lawrenceburg, Indiana

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

<http://www.in.gov/idem/airquality/2402.htm>

Any person may submit written comments on the *Revised Request for Redesignation and Maintenance Plan for the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana (OH-KY-IN), 1997 Annual PM_{2.5} Nonattainment Area - Lawrenceburg Township, Dearborn County* on or before August 15, 2016. Written comments should be directed to: Mrs. Leslie Ferguson, Office of Air Quality, N1003, Indiana Department of Environmental Management, 100 North Senate Avenue, Indianapolis, Indiana 46204; or fax (317) 233-5967; or email 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 *Revised Request for Redesignation and Maintenance Plan for the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana (OH-KY-IN), 1997 Annual PM_{2.5} Nonattainment Area - Lawrenceburg Township, Dearborn County*, will be held if a public hearing request is received by July 29, 2016. If a hearing is requested, the hearing will be held on August 10, 2016. The hearing will convene at 6:00 p.m. local time at the Lawrenceburg Public Library, Ewbank Meeting Rooms 1 & 2, 150 Mary Street, Lawrenceburg, Indiana 47025. If a request for a public hearing is not received by July 29, 2016, the hearing will be cancelled. Interested parties can check the online calendar at <http://www.in.gov/activecalendar/EventList.aspx> or contact Mrs. Leslie Ferguson at 317-233-1179, after July 29, 2016, to see if the hearing has been cancelled or will convene.

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 Mrs. Leslie Ferguson, at the Indiana Department of Environmental Management, Office of Air Quality, 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).

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

Michael R. Pence
Governor

Carol S. Comer
Commissioner

June 22, 2016

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 Revised Request for Redesignation and Maintenance Plan for the Indiana Portion of the Cincinnati-Hamilton, Ohio, Kentucky, Indiana (OH-KY-IN), 1997 Annual Fine Particles Nonattainment Area

was published on IDEM's web site on June 21, 2016. It is expected that it and the draft documents will remain posted until at least August 15, 2016.

The notice in full was available online at the following web address, under "Southeastern/Dearborn County".

<http://www.in.gov/idem/5474.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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zone Standard

[Appendix J \[PDF\]](#)

ons MOBILE6.2 To MOVES

- [MOBILE6.2 to MOVES MVEB Replacement Update to the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-Hour Ozone Standard \(December 11, 2012\) \[PDF\]](#) 

1997 Annual Fine Particles

- [Draft Revised Request for Redesignation and Maintenance Plan for the Indiana Portion of the Cincinnati-Hamilton, Ohio, Kentucky, Indiana \(OH-KY-IN\), 1997 Annual Fine Particles Nonattainment Area |PDF|](#) 
 - [Appendix A |PDF|](#) 
 - [Attachment 1 |PDF|](#) 
 - [Appendix B |PDF|](#) 
 - [Appendix C |PDF|](#) 
 - [Appendix D |PDF|](#) 
 - [Appendix E |PDF|](#) 
 - [Appendix F |PDF|](#) 
- [Vacatur of Redesignation of Dearborn County \(Lawrenceburg Township\) Annual Fine Particles \(March 18, 2015\) |PDF|](#) 
- [Approval and Promulgation of Dearborn County \(Lawrenceburg Township\) Annual Fine Particles State Implementation Plan effective December 23, 2011](#)
- [Cover Letter to U.S. EPA \(January 25, 2011\) |PDF|](#) 
- [Final Dearborn County \(Lawrenceburg Township\) Annual Fine Particles Redesignation Request and Maintenance Plan |PDF|](#) 
 - [Appendix A |PDF|](#) 
 - [Appendix B |PDF|](#) 
 - [Appendix C |PDF|](#) 
 - [Appendix D |PDF|](#) 

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Resources

Air Toxics Program

AirNow

Partners for Clean Air

Smog Watch

Vehicle Emissions Testing Program

U.S. EPA Office of Air and Radiation



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http://www.in.gov/idem/6394.htm IDEM: Public Notices: Southeast...

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Blue-Green Algae
Community Environmental Health
Criminal Investigations
CTAP: Compliance and Technical Assistance Program

agency public notices for this region as required by statute or rule including: permitting, rulemaking, meeting and hearing notices. Click highlighted links to view additional information related to the notice. Unless otherwise noted, contact information is included on the notices.

The [IN.gov News and Events Calendar](#) provides information on public meetings that do not require public notice.


Subscriptions: Want to know about new notices as soon as they're posted? You can now subscribe to this regional public notice page. By subscribing to a region, you will be sent an e-mail or text message to your phone every time IDEM adds information to this regional page. This allows you to stay current on all posting and never miss a new posting. To subscribe, click on the subscription link in the left hand column.

Southeast Indiana

Public Notices: Southeastern Region				
Name or Facility	Type of Notice/Event	Publication Dates	Public Comment?	Additional Information
Clark				
Vectren Corporation	Application for a Minor Source Operating Permit (MSOP) [PDF]	05/16/2016 - 06/15/2016	Yes	Permit Number: M019-37082-00068
Clark-Floyd Landfill	Significant Source Modification to a Part 70 Operating Permit (36828) [PDF] Significant Permit Modification to a Part 70 Operating Permit (36988) [PDF]	05/14/2016 - 06/13/2016	Yes	Permit Number: 019-36828-00097 and 019-36988-00097
Borden Tri-County Regional Water/Activated Carbon Feeder	Chemical Addition Construction For Drinking Water [PDF]	05/02/2016 - 06/01/2016	Yes	Project Manager: Marc Hancock Permit Number: 11538
Dearborn				
Draft Revised Request for Redesignation and Maintenance Plan for the Indiana Portion of the Cincinnati-Hamilton, Ohio, Kentucky, Indiana (OH-KY-IN), 1997 Annual Fine Particles Nonattainment Area	Legal Notice and Opportunity for Public Hearing [PDF]	06/29/2016 - 07/29/2016	Yes	Project Manager: Leslie Ferguson Additional information is available on the IDEM Air Quality in Indiana: Redesignations and Maintenance Plans, Dearborn County page.
MGPI of Indiana	NPDES Draft Renewal [PDF]	06/16/2016 - 07/18/2016	Yes	Project Manager: Richard Hamblin Permit Number: IN0003131
Matthews Aurora, LLC	Significant Source Modification to a Part 70 Operating Permit (36767) [PDF] Significant Permit Modification to a Part 70	05/31/2016 - 06/30/2016	Yes	Permit Number: 029-36767-00001 and 029-36898-00001

Date and Time

Date and Time Additional Clocks



Date: Tuesday, June 21, 2016

Time: 4:31:57 PM

[Change date and time...](#)

Time zone (UTC-05:00) Eastern Time (US & Canada)

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Daylight Saving Time ends on Sunday, November 06, 2016 at 2:00 AM. The clock is set to go back 1 hour at that time.

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OK Cancel Apply

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4:31 PM 6/21/2016