

REDESIGNATION REQUEST AND
MAINTENANCE PLAN FOR
THE OHIO PORTION OF THE
HUNTINGTON-ASHLAND,
OH-KY-WV
ANNUAL PM_{2.5}
NONATTAINMENT AREA

Adams, Gallia, Lawrence and Scioto
Counties, Ohio

Prepared by:
Ohio Environmental Protection Agency
Division of Air Pollution Control

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REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE OHIO PORTION OF THE HUNTINGTON-ASHLAND, OH-KY-WV ANNUAL PM_{2.5} NONATTAINMENT AREA

Adams, Gallia, Lawrence, and Scioto Counties, Ohio

CHAPTER ONE

Introduction

The Clean Air Act (CAA), as amended, requires each State with areas failing to meet the annual PM_{2.5}¹ National Ambient Air Quality Standards (NAAQS) to develop State Implementation Plans (SIPs) to expeditiously attain and maintain the standards. The United States Environmental Protection Agency (U.S. EPA) revised the NAAQS for particulate matter in July 1997. It replaced the existing PM₁₀ standard with a health-based PM_{2.5} standard and retained the PM₁₀ standard as a particulate standard protecting welfare. The standards include an annual standard set at 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), based on the 3-year average of annual mean PM_{2.5} concentrations and a 24-hour standard of 65 $\mu\text{g}/\text{m}^3$, based on the 3-year average of the 98th percentile of 24-hour concentrations.

The revised NAAQS was legally challenged in the U.S. Court of Appeals for the District of Columbia Circuit (the D.C. Circuit). On May 14, 1999, the D.C. Circuit remanded, without vacatur, the standards back to U.S. EPA. The remand did not question the level at which U.S. EPA set the standards but rather the constitutionality of the CAA provision that authorizes U.S. EPA to set national air quality standards. U.S. EPA requested a rehearing which the D.C. Circuit denied.

Therefore, in December 1999, U.S. EPA appealed the D.C. Circuit decision to the U.S. Supreme Court. The U.S. Supreme Court issued a decision on February 27, 2001 that unanimously affirmed the constitutionality of the CAA provision but did remand several other issues back to the D.C. Circuit, including the issue of whether U.S. EPA acted arbitrarily and capriciously in establishing the specific levels of the standards.

The D.C. Circuit heard arguments in this remanded case in December 2001, and issued its decision on March 26, 2002. The D.C. Circuit rejected the claims that

1 Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

Fine particle pollution or PM_{2.5} describes particulate matter that is 2.5 micrometers in diameter and smaller - 1/30th the diameter of a human hair. Fine particle pollution can be emitted directly or formed secondarily in the atmosphere.

the U.S. EPA had acted arbitrarily and capriciously in setting the levels of the standards.

On December 17, 2004, U.S. EPA promulgated the initial PM_{2.5} nonattainment areas designations for the PM_{2.5} standards across the country. Modifications to those designations were made and an effective date was set at April 5, 2005. Unlike Subpart 2 of the CAA Amendments of 1990 which defined five ozone nonattainment classifications for the areas that exceed the NAAQS based on the severity of the ozone levels, PM_{2.5} nonattainment designations are simply labeled “nonattainment.” The CAA Amendments require states with PM_{2.5} nonattainment areas to submit a plan within three years of the effective date of the designations (April 5, 2008) detailing how the PM_{2.5} standards will be attained by April 5, 2010. Ohio EPA submitted its attainment demonstration for the entire State of Ohio on July 16, 2008.

Section 107(d)(3)(E) of the CAA allows states to request nonattainment areas to be redesignated to attainment provided certain criteria are met. The following are the criteria that must be met in order for an area to be redesignated from nonattainment to attainment:

- i)* A determination that the area has attained the PM_{2.5} standard.
- ii)* An approved State Implementation Plan (SIP) for the area under Section 110(k).
- iii)* A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and other federal requirements.
- iv)* A fully approved maintenance plan under Section 175(A).
- v)* 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 annual PM_{2.5} standard.

Geographical Description and Background

The current Huntington-Ashland nonattainment area is located in southern Ohio and includes the following counties: Adams (partial nonattainment of Monroe and Sprigg townships only), Gallia (partial nonattainment of Cheshire Township only), Lawrence and Scioto in Ohio; Boyd and Lawrence (partial nonattainment of the area described by U.S. Census 2000 block group identifier 21-127-9901-6 only) in Kentucky; and Cabell, Wayne and Mason (partial nonattainment of Graham Tax District only), in West Virginia. This area is shown in Figure 1 under Chapter Three.

The Huntington-Ashland area has not previously been subject to nonattainment area rulemakings for fine particles.

As a result of the 2005 PM_{2.5} designations, U.S. EPA designated the Huntington-Ashland area nonattainment for the 15.0 µg/m³ annual standard², and Ohio EPA was required to develop a plan to reduce oxides of nitrogen (NO_x), sulfur dioxide (SO₂) and direct PM_{2.5} emissions and to demonstrate that the area will meet the federal annual air quality standard by April 5, 2010. Ohio's main PM_{2.5} components are primary particles (organic carbon, crustal material, and elemental carbon), SO₂ and NO_x, which were included in the attainment demonstration analysis. Volatile organic compounds (VOCs) and ammonia (NH₃) were not included in the analysis since they were not part of Ohio's current attainment strategy for PM_{2.5} (although controls for VOCs have been implemented for ozone nonattainment). This is consistent with U.S. EPA's "Clean Air Particle Implementation Rule" [74FR 20856] (hereafter referred to as "Implementation Rule"). In the Implementation Rule U.S. EPA presumes NH₃ emissions are not a PM_{2.5} attainment plan precursor and that States are not required to address VOC unless the State or U.S. EPA makes a technical demonstration that emissions of VOCs significantly contribute to nonattainment of the annual PM_{2.5} standard.

This document is intended to support Ohio's request that the Ohio portions of the Huntington-Ashland area be redesignated from nonattainment to attainment for the annual PM_{2.5} standard. In addition, the States of Kentucky and West Virginia also intend to submit requests for their respective portions of the Huntington-Ashland area.

Status of Air Quality

PM_{2.5} complete quality-assured ambient air quality monitoring data for the most recent three (3) years, 2008 through 2010, demonstrate that the air quality has met the NAAQS for annual PM_{2.5} in this nonattainment area. The NAAQS attainment, accompanied by decreases in emission levels discussed in Chapter Four, supports a redesignation to attainment for the Huntington-Ashland area based on the requirements in Section 107(d)(3)(E) of the CAA as amended.

² There were no monitors in Ohio that violated the 1997 24-hour PM_{2.5} standard of 65 µg/m³.

CHAPTER TWO

Requirements for Redesignation

U.S. EPA has published detailed guidance in a document entitled *Procedures for Processing Requests to Redesignate Areas to Attainment* (redesignation guidance), issued September 4, 1992, to Regional Air Directors. The redesignation request and maintenance plan are based on the redesignation guidance, supplemented with additional guidance received from staff of U.S. EPA Region 5.

Below is a summary of each redesignation criterion as it applies to the Huntington-Ashland area.

i.) Attainment of the standard (CAA Section 107(d)(3)(E)(i))

There are two components involved in making this demonstration. The first component relies on ambient air quality data. The data that are used to demonstrate attainment should be the product of ambient monitoring that is representative of the area of highest concentration. The data should be collected and quality-assured in accordance with 40 CFR 58 and recorded in the Air Quality System (AQS) in order for it to be available to the public for review.

The second component relies upon supplemental U.S. EPA-approved air quality modeling. While no modeling is required for redesignating nonattainment areas, the redesignation guidance states it is “generally necessary” for particulate matter redesignations. Appendix C and Appendix D contains the most recent modeling results showing future attainment and maintenance are provided. Chapter Three discusses this requirement in more detail and provides the attainment demonstration.

ii.) Permanent and enforceable improvement in air quality (CAA Section 107(d)(3)(E)(iii))

The state must be able to reasonably attribute the improvement in air quality to emission reductions which are permanent and enforceable. The state should estimate the percent reduction achieved from federal measures as well as control measures that have been adopted and implemented by the state.

It was not necessary for Ohio to adopt or implement control measures for these counties beyond the federal measures.

Ohio EPA has adopted several rules recently that will have an impact on statewide PM_{2.5} emissions in the future:

- Clean Air Interstate Rule (CAIR)
- NO_x SIP Call Rules

In addition, since the initial designations were made federally enforceable consent decrees have resulted in reductions in emissions from utilities across the state.

Chapters Four and Five discuss this requirement in more detail.

- iii.) Section 110 and Part D requirements (CAA Section 107(d)(3)(E)(v))
 For purposes of redesignation, a state must meet all requirements of Section 110 and Part D that were applicable prior to submittal of the complete redesignation request.

Subpart 1 of Part D consists of general requirements applicable to all areas which are designated nonattainment based on a violation of the NAAQS. Subpart 4 of Part D consists of more specific requirements applicable to particulate matter (specifically to address PM₁₀). However, for the purpose of implementing the 1997 PM_{2.5} standard, U.S. EPA's Implementation Rule stated Subpart 1, rather than Subpart 4, is appropriate for the purpose of implementing PM_{2.5}. [72 FR 20589]

- i.) Section 110(a) requirements
 Section 110(a) of Title I of the CAA contains the general requirements for a SIP. Section 110(a)(2) provides that the implementation plan submitted by a state must have been adopted by the state after reasonable public notice and hearing, and that, among other things, it must include enforceable emission limitations and other control measures, means or techniques necessary to meet the requirements of the CAA; provide for establishment and operation of appropriate devices, methods, systems and procedures necessary to monitor ambient air quality; provide for implementation of a source permit program to regulate the modification and construction of any stationary source within the areas covered by the plan; include provisions for the implementation of Part C, prevention of significant deterioration (PSD) and Part D, NSR permit programs; include criteria for stationary source emission control measures, monitoring, and reporting; include provisions for air quality modeling; and provide for public and local agency participation in planning and emission control rule development. In Ohio's December 5, 2007 and September 4, 2009 infrastructure SIP submissions, Ohio

verified that the State fulfills the requirements of Section 110(a)(2) of the Act.

Section 110(a)(2)(D) also requires State plans to prohibit emissions from within the State which contribute significantly to nonattainment or maintenance areas in any other State, or which interfere with programs under Part C to prevent significant deterioration of air quality or to achieve reasonable progress toward the national visibility goal for Federal class I areas (national parks and wilderness areas). In order to assist States in addressing their obligations regarding regionally transported pollution, U.S. EPA finalized CAIR to reduce SO₂ and NO_x emissions from large electric generating units (EGU). Ohio has met the requirements of the federal CAIR to reduce NO_x and SO₂ emissions contributing to downwind states. On February 1, 2008, U.S. EPA approved Ohio's CAIR program, which can be found in Ohio Administrative Code (OAC) Chapter 3745-109³. On July 6, 2010, U.S. EPA proposed a replacement to the CAIR program, the Transport Rule. [75 FR 45210] Upon finalization, it will further assist States in addressing their obligations regarding regionally transported pollution by providing reductions in NO_x and SO₂ emissions in 2012 and 2014.

ii.) Section 172(c) requirements

This Section contains general requirements for nonattainment plans. The requirements for reasonable further progress, identification of certain emissions increases, and other measures needed for attainment will not apply for redesignations because they only have meaning for areas not attaining the standard. The requirements for an emission inventory will be satisfied by the inventory requirements of the maintenance plan. Chapters Four and Five discuss this requirement in more detail.

iii.) Conformity

The state must work with U.S. EPA to show that its SIP provisions are consistent with the Section 176(c)(4) conformity requirements. The redesignation request should include conformity procedures, if the state already has these procedures in place. If a state does not have conformity procedures in place at the time that it submits a

³ <http://www.epa.ohio.gov/dapc/regs/regs.aspx#3745-109>

redesignation request, the state must commit to follow U.S. EPA's conformity regulation upon issuance, as applicable.

iv.) Maintenance plans (CAA Section 107(d)(3)(E)(iv))

Section 107(d)(3)(E) stipulates that for an area to be redesignated, U.S. EPA must fully approve a maintenance plan that meets the requirements of Section 175(A). The maintenance plan will constitute a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation. Section 175(A) further states that the plan shall contain such additional measures, if any, as may be necessary to ensure such maintenance.

In addition, the maintenance plan shall contain such contingency measures as the Administrator deems necessary to ensure prompt correction of any violation of the NAAQS. At a minimum, the contingency measures must include a requirement that the state will implement all measures contained in the nonattainment SIP prior to redesignation.

States seeking redesignation of a nonattainment area should consider the following provisions:

- a) attainment inventory;
- b) maintenance demonstration;
- c) monitoring network;
- d) verification of continued attainment; and
- e) contingency plan.

Chapter Six discusses this requirement in more detail.

CHAPTER THREE

PM_{2.5} MONITORING

CAA Section 107(d)(3)(E)(i)

Requirement 1 of 4

A demonstration that the NAAQS for annual PM_{2.5}, as published in 40 CFR 50.7, has been attained.

Background

There are 4 monitors measuring PM_{2.5} concentrations in this nonattainment area. Two are located in Ohio⁴ and are operated by Ohio EPA Division of Air Pollution Control, Southeast District Office and the Portsmouth City Health Department Air Pollution Unit. A listing of the design values based on the three-year average of the annual mean concentrations from 2008 through 2010 are shown in Table 1. The locations of the monitoring sites for this nonattainment area are shown on Figure 1.

⁴ The two remaining PM_{2.5} monitors are located in Kentucky and West Virginia, respectively.

In accordance with the CAA Amendments, three complete years of monitoring data are required to demonstrate attainment at a monitoring site. The annual PM_{2.5} primary and secondary ambient air quality standards are met at an ambient air quality monitoring site when the three-year average of the annual average is less than 15.0 µg/m³. While calculating design values, three significant digits must be carried in the computations, with final values rounded to the nearest 0.1 µg/m³. Decimals 0.05 or greater are rounded up, and those less than 0.05 are rounded down, so that 15.049 µg/m³ is the largest concentration that is less than, or equal to 15.0 µg/m³. Values at or below 15.0 µg/m³ meet the standard; values equal to or greater than 15.1 µg/m³ exceed the standard. An area is in compliance with the annual PM_{2.5} NAAQS only if every monitoring site in the area meets the NAAQS. An individual site's 3-year average of the annual average concentrations is also called the site's design value. The air quality design value for the area is the highest design value among all sites in the area.

Table 1 shows the monitoring data for 2008-2010 that were retrieved from the U.S. EPA AQS. The air quality design value for the area is the highest design value among all sites in the area.

Demonstration

Table 1 - Monitoring Data for the Huntington-Ashland, OH-KY-WV Area for 2008 – 2010

Site	County	Annual Standard			
		Year			Average 2008-2010
		2008	2009	2010	
39-087-0010 [a]	Lawrence, OH	10.8			11.8
39-087-0012 [b]		13.1	11.3	12.1	
39-145-0013	Scioto, OH	12.1	10.9	11.8	11.6
21-019-0017	Boyd, KY	12.1	10.9	11.2	11.4
54-011-0006	Cabell, WV	14.1	12	13.2	13.1
Less than 75% capture in at least one quarter					

[a] and [b] The monitoring site 39-087-0010 was shut down in 2/2008 due to the demolition of the building that hosted the monitor. The monitor was moved approximately one mile away to a new site (39-087-0012) which began sampling in early 2/2008, making both sites incomplete for 2008 when viewed separately. If the sites at Lawrence County were considered one site and data combined, it would meet the 75% capture requirement. There are no significant industrial sources in Ohio where this monitor is located (Ironton, Ohio). The closest significant source is AK Steel in Ashland, Kentucky. Prior to relocation of this monitor, it was approximately 1.58 miles from AK Steel. The new site is approximately 0.85 miles from AK Steel. Notice that the new site collected data from February 2008 and achieved a 2008 design value of 13.1 µg/m³, significantly lower than previous years design value even though it is now closer to the largest industrial source. Both monitors show attainment of the standard separately and combined.

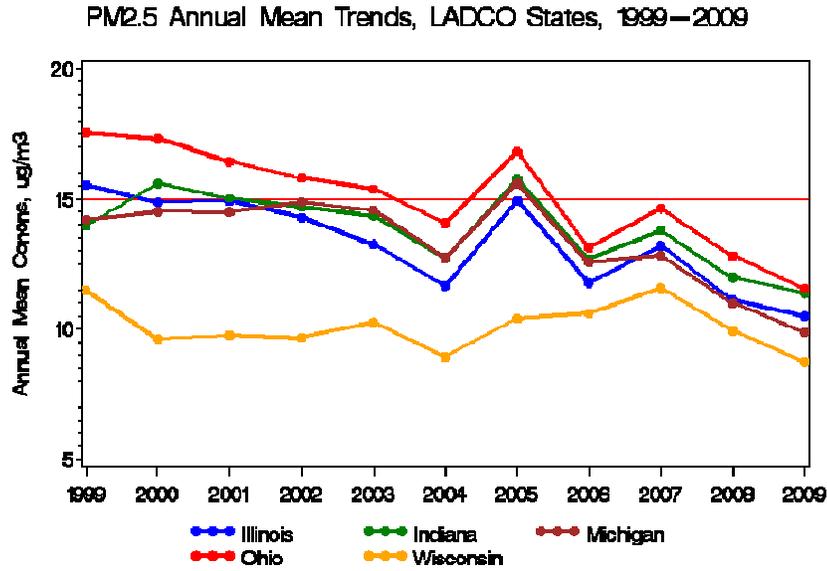
In addition, on 4/1/2010 Ohio EPA submitted a Clean Data Request which included an analysis that supports combining this data.

Source: U.S. EPA Air Quality System (AQS); <http://www.epa.gov/ttn/airs/airsaqs/index.htm>

The design values calculated for the Huntington-Ashland area demonstrate that the annual PM_{2.5} NAAQS has been attained. The area's design values have trended downward as emissions have declined due to such factors as cleaner automobiles and fuels, and controls for EGUs, at the national, regional and local level.

National monitoring for PM_{2.5} began in 1999. With respect to each of the Lake Michigan Air Directors Consortium (LADCO) states, there has been a clear downward trend in design values:

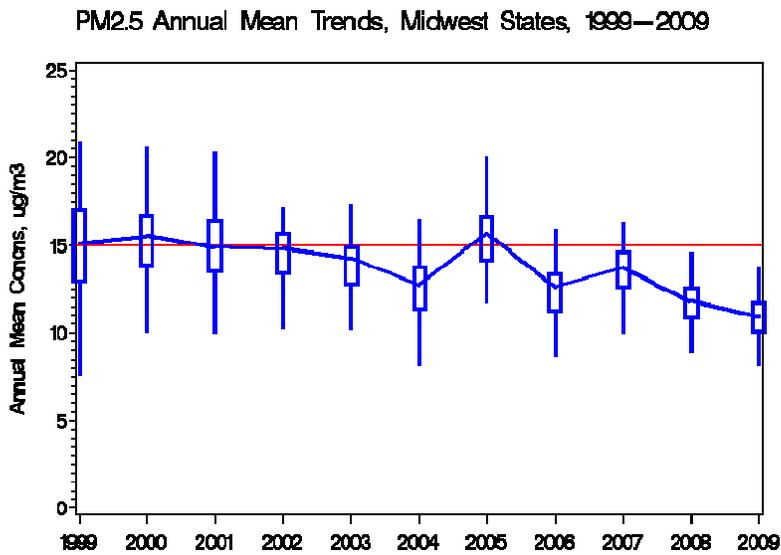
Figure 2 - PM_{2.5} Annual Mean Trends LADCO States



Source: LADCO; Recent Ozone and PM_{2.5} Trends – Aug 26 2010.pptx

The same trend can be seen within the Midwest States as a whole:

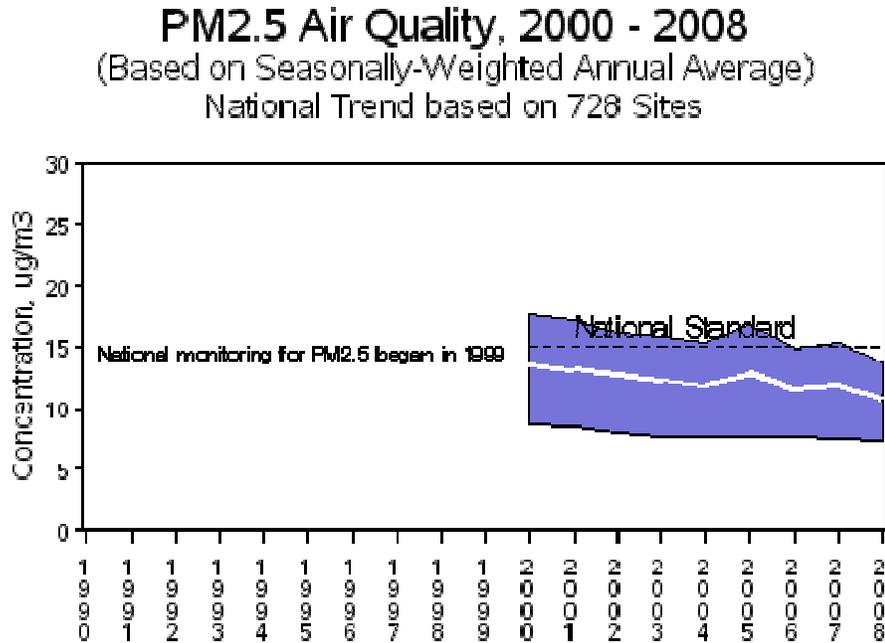
Figure 3 - PM_{2.5} Annual Mean Trends Midwest States



Source: LADCO; Recent Ozone and PM_{2.5} Trends - Aug 26 2010.pptx

Design values have also trended downward nationally:

Figure 4 - PM_{2.5} Annual Mean National Trends



2000 to 2008 : 19% decrease in National Average

Source: <http://www.epa.gov/airtrends/pm.html>

Requirement 4 of 4

A commitment that once redesignated, the state will continue to operate an appropriate monitoring network to verify the maintenance of the attainment status.

Demonstration

Ohio EPA commits to continue monitoring PM_{2.5} levels at the Ohio sites indicated in Figure 1 and Table 1. Ohio EPA will consult with U.S. EPA Region 5 prior to making changes to the existing monitoring network, should changes become necessary in the future. Ohio EPA will continue to quality assure the monitoring data to meet the requirements of 40 CFR 58 and all other federal requirements. Connection to a central station and updates to the Ohio EPA web site⁵ will provide real time availability of the data and knowledge of any exceedances. Ohio EPA will enter all data into AQS on a timely basis in accordance with federal guidelines.

⁵ www.epa.ohio.gov/dapc

CHAPTER FOUR

EMISSION INVENTORY

CAA Section 107(d)(3)(E)(iii)

U.S. EPA's redesignation guidance requires the submittal of a comprehensive inventory of PM_{2.5} precursor emissions (primary particles (organic carbon, crustal matter, and elemental carbon), SO₂ and NO_x⁶) representative of the year when the area achieves attainment of the annual PM_{2.5} air quality standard. Ohio also must 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 emission inventory related requirements include a projection of the emission inventory to a year at least 10 years following redesignation; a demonstration that the projected level of emissions is sufficient to maintain the annual PM_{2.5} standard; and a commitment to provide future updates of the inventory to enable tracking of emission levels during the 10-year maintenance period.

The emissions inventory development and emissions projection discussion below, with the exception of the mobile (on-road) emissions inventory and projections, identifies procedures used by Ohio EPA and the LADCO regarding emissions from Ohio's portion of the counties in the Huntington-Ashland area. Specific emissions data are provided for all counties, including those in Ohio, Kentucky and West Virginia. Kentucky and West Virginia emissions data were also obtained through the LADCO emissions inventory and projections. All of these inventories and emissions projections were prepared using similar methodologies. Ohio recognizes that revisions to the emissions data below may be necessary once Kentucky and West Virginia prepare a redesignation request and maintenance plan for their portion of the nonattainment area. Mobile emissions inventories and projections for all counties were prepared by Kimley-Horn and Associates Inc. on behalf of the Kentucky-Ohio-West Virginia In Interstate Planning Commission (KYOVA), with data provided by KYOVA, Ohio Department of Transportation (ODOT), Ohio EPA, West Virginia Department of Transportation (WVDOT), West Virginia Department of Environmental Protection (WVDEP), Kentucky Transportation Cabinet (KYTC), and Kentucky Division of Air Quality (KDAQ).

Requirement 1 of 5

A comprehensive emission inventory of PM_{2.5}, SO₂ and NO_x completed for the base year.

Background

The point source data are taken from Ohio's annual emissions reporting program. The 2005 periodic inventory has been identified

⁶ VOC and NH₃ are not addressed.

as one of the preferred databases for SIP development and coincides with nonattainment air quality in the Huntington-Ashland area.

Periodic inventories, which include emissions from all sectors - mobile, area, non-road, and point sources - are prepared every three years.

Demonstration

The 2005 inventory is used as the base year for the purpose of this submittal and was submitted to U.S. EPA with Ohio's PM_{2.5} attainment demonstration SIP submitted on July 18, 2008 and revised on June 7, 2010. The detailed emission inventory information for the Ohio portion of the Huntington-Ashland area is provided in Appendix B. Emissions of PM_{2.5}, SO₂ and NO_x for 2005 are identified under Requirement Three of this Chapter.

Requirement 2 of 5

A projection of the emission inventory to a year at least 10 years following redesignation.

Background

Ohio EPA prepared a comprehensive inventory for the Ohio portion of the Huntington-Ashland area including area, mobile, and point sources for PM_{2.5}, SO₂ and NO_x for base year 2005. The 2005 inventory was submitted to U.S. EPA on July 18, 2008 as part of Ohio's PM_{2.5} attainment demonstration SIP for this area. The information below describes the procedures Ohio EPA used to generate the 2005 base year inventory and to develop SIP-ready modeling inventories and future year projections (Pechan Report⁷) based on a 2005 base year inventory. The report by Pechan generated future year estimates of annual emissions for each source sector using accepted growth surrogates. These inventories were provided to the LADCO and have been processed to develop average daily emissions for use in the air quality analyses. These processed modeling inventories have been identified as the correct iteration of the inventory for use in the redesignation. In this document, references to LADCO include the Midwest Regional Planning Organization. Note that the on-road mobile source sector was addressed by specific PM_{2.5} and NO_x modeling as discussed below.

- Area sources were taken from the Ohio 2005 periodic inventory submitted to U.S. EPA. These projections were

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http://www.ladco.org/tech/emis/r5/reports/LADCO%202005%20Base%20Yr%20Growth%20and%20Controls%20Report_Final.pdf

made from the U.S. Department of Commerce Bureau of Economic Analysis (BEA) growth factors, with some updated local information.

- Mobile source emissions were calculated from MOVES2010 produced emission factors. In Ohio's July 16, 2008 PM_{2.5} Attainment Demonstration SIP⁸, Ohio found that the regional highway emissions of PM_{2.5}, NO_x, and SO₂ were insignificant contributors to the nonattainment problems and, therefore, none of the three pollutants (necessitated emissions inventory analysis. As documented in Ohio EPA's attainment demonstration SIP, Ohio EPA in consultation with U.S. EPA determined that the Huntington-Ashland nonattainment area is not significantly impacted by on-road mobile emissions as compared to other source emissions; in addition, mobile source emissions in the area were expected to decrease. Based on the results of mobile source emission projections prepared as a part of this redesignation and maintenance plan, Ohio EPA is again making a finding that the regional highway emissions of PM_{2.5}, NO_x, and SO₂ continue to be insignificant contributors to the nonattainment problems in this area, as discussed below.
- Point source information was compiled from Ohio EPA's 2005 annual emissions inventory database and the 2005 U.S. EPA Air Markets acid rain database⁹.
- Biogenic emissions are not included in these summaries.
- Non-road emissions were generated using U.S. EPA's National Mobile Inventory Model (NMIM) 2002 application. To address concerns about the accuracy of some of the categories in U.S. EPA's non-road emissions model, LADCO contracted with two (2) companies to review the base data and make recommendations. One of the contractors also estimated emissions for three (3) non-road categories not included in U.S. EPA's non-road model. Emissions were estimated for aircraft, commercial marine vessels, and railroads. Recreational motorboat population and spatial surrogates (used to assign emissions to each county) 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 also was updated.

8 http://www.epa.ohio.gov/portals/27/SIP/Attain/PM2_5/PM25Doc.pdf

9 <http://www.epa.gov/airmarkets/acidrain>

Demonstration

On-Road Emission Estimations

The Huntington-Ashland nonattainment area for the on-road emission estimation analysis is divided into a modeled area composed of Cabell, Wayne, and Mason (partial) Counties in West Virginia, Lawrence, Scioto, Adams (partial), and Gallia (partial) Counties in Ohio, and Boyd and Lawrence (partial) Counties in Kentucky. Cabell County, WV, Wayne County, WV, and Lawrence County, OH are represented within the KYOVA Travel Demand Model. Boyd County, KY is represented by the KYTC's Ashland Regional Travel Demand Model. For these areas, information from the travel demand models combined with Highway Performance Monitoring Systems (HPMS) county-level data from each respective area were used in the emissions analysis. For the full or partial counties not encompassed within the available travel demand models, HPMS data was relied upon more heavily for the travel characteristics. Appendix C of this report provides a full description of the data sources and analysis procedures used in this analysis effort.

Overview

U.S.EPA published a Federal Register notice¹⁰ of availability on March 2, 2010, to approve MOVES2010 (Motor Vehicle Emissions Simulator), hereafter referred to as MOVES. Upon publication of the Federal Register notice, MOVES became U.S. EPA's approved motor vehicle emission factor model for estimating VOCs, NO_x, CO, PM₁₀ and PM_{2.5} and other pollutants and precursors from cars, trucks, motorcycles, and buses by state and local agencies. MOVES is a computer program designed by the U.S. EPA to estimate air pollution emissions from mobile sources. MOVES replaces U.S. EPA's previous emissions model for on-road mobile sources, MOBILE6.2. MOVES can be used to estimate exhaust and evaporative emissions as well as brake and tire wear emissions from all types of on-road vehicles.

An updated version of this software, MOVES2010a, was used for the purposes of this analysis. MOVES2010a is a minor update to MOVES2010. MOVES2010a includes general performance improvements from MOVES2010, and also allows users to account for emissions under new car and light truck energy and greenhouse gas standards.

¹⁰ <http://www.regulations.gov/search/Regs/home.html#documentDetail?R=0900006480ab1f98>

The CAA requires U.S. EPA to regularly update its mobile source emission models. U.S. EPA continuously collects data and measures vehicle emissions to make sure the Agency has the best possible understanding of mobile source emissions. This assessment, in turn, informs the development of U.S. EPA's mobile source emission models. MOVES represents the Agency's most up-to-date assessment of on-road mobile source emissions. MOVES also incorporates several changes to the U.S. EPA's approach to mobile source emission modeling based upon recommendations made to the Agency by the National Academy of Sciences.

U.S. EPA believes that MOVES should be used in ozone, CO, PM, and nitrogen dioxide SIP development as expeditiously as possible. The CAA requires that SIP inventories and control measures be based on the most current information and applicable models that are available when a SIP is developed.

Regarding transportation conformity, U.S. EPA and U.S. DOT intend to establish a two-year grace period before MOVES is required for new transportation conformity analyses.

The MOVES more detailed approach (when compared with the previous MOBILE model) to modeling allows U.S. EPA to easily incorporate large amounts of in-use data from a wide variety of sources, such as data from vehicle inspection and maintenance (I/M) programs, remote sensing device (RSD) testing, certification testing, portable emission measurement systems (PEMS), etc. This approach also allows users to incorporate a variety of activity data to better estimate emission differences such as those resulting from changes to vehicle speed and acceleration patterns. MOVES has a graphical user interface which allows users to more easily set up and run the model. MOVES database-centered design provides users much greater flexibility regarding output choices. Unlike earlier models which provided emission factors in grams-per-mile in fixed output formats, MOVES output can be expressed as total mass (in tons, pounds, kilograms, or grams) or as emission factors (grams-per-mile and in some cases grams-per-vehicle). Output can be easily aggregated or disaggregated to examine emissions in a range of scales, from national emissions impacts down to the emissions impacts of individual transportation projects. The database-centered design also allows U.S. EPA to update emissions data incorporated in MOVES more easily and will allow users to incorporate a much wider array of activity data to improve estimation of local emissions. For example, the

improvements in MOVES will allow project-level PM2.5 emissions to be estimated.

The latest planning assumptions available for the Huntington-Ashland non-attainment area were used. Both the KYOVA Travel Demand Model and the KYTC Ashland Regional Travel Demand Model are the most recent and approved regional travel demand models for their respective areas. For each travel demand model, model validation is a joint process between KYOVA and the appropriate state review agencies.

The KYOVA Travel Demand Model is a three step model. Trip generation, trip distribution, and trip assignment components are included in the model. Mode choice is not an element of the current model. The Travel Demand Model covers Cabell County, WV, Wayne County, WV, and Lawrence County, OH. The current base year for the travel demand model is 2000. Socioeconomic data was forecasted to the year 2035 as a part of the most recent regional metropolitan transportation plan. The QRS II modeling platform was used to develop this model. The KYOVA Interstate Planning Commission's currently adopted transportation plan, titled *Huntington-Ironton Area Transportation Study (HIATS), The Year 2035 Long-Range Transportation Plan* was prepared in May 2009. Appendix C of this document contains the assumptions and methodology used to develop the Travel Demand Model.

Similar to the KYOVA Travel Demand Model, the Ashland Regional Travel Demand Model is a traditional three-step model. The model includes trip generation, trip distribution, and trip assignment components. Transit operations are not included in the model; as a result, there is no mode choice component. The Travel Demand Model covers Boyd and Greenup Counties in Kentucky. Updated in 2007, this model has a base year of 2007 and a final horizon year of 2040. 2010, 2020, and 2030 forecast years were also incorporated into the model. The TransCAD modeling platform was used to develop this model. The document titled *Ashland Regional Travel Demand Model, Model Update Report* was developed in January 2008 for the Kentucky Transportation Cabinet. This document contains the assumptions and methodology used to develop the current Travel Demand Model.

For areas of our modeling region within a county with a travel demand model, information from this model was applied for the analysis. Specifically, VMT data in the HPMS vehicle class format and ramp fractions for rural and urban restricted roadways were obtained from the travel demand models. For areas outside of the

travel demand model extents, ramp fractions were assumed to mirror those seen in their respective states. HPMS vehicle class VMTs for areas outside the travel demand model limits were derived and forecasted from current HPMS traffic data in those areas.

In addition to the information above, numerous additional data sources were consulted to obtain the needed information for the MOVES software. Source type population and vehicle age distribution data were obtained from ODOT, WVDEP, and KYTC for their respective states. ODOT and KYTC provided data about hourly vehicle distributions. Guidance and data for meteorological, fuel supply, and fuel formulation data was obtained from ODOT and KDAQ. The KYOVA supplied information on the transit vehicle population for the region.

The analysis was performed using the emission rates method. As a result, post-processing of the data was required to arrive at the overall emissions output. To do this, the rate per distance and rate per vehicle output data were matched with the appropriate geographic area, analysis year, source types, pollutant types, road types, modeling hours, and speed classes and then aggregated with the corresponding source type population and vehicle miles traveled information. The resulting information was summarized by pollutant type for each full or partial county being analyzed to generate the overall emissions in tons per year. Appendix C provides additional detail on the data sources gathered, modeling assumptions, and post-processing steps.

On-Road Mobile Emission Estimations

Tables 2 through 12 contain the results of the emissions analysis for the appropriate years. All emissions estimations are expressed in tons per year (tpy).

Table 2 - Adams County (partial), Ohio Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	122.49	103.66	54.82	26.21
SO2 (tpy)	2.10	0.71	0.32	0.32
PM2.5 (tpy)	4.20	3.69	2.17	1.39
Annual VMT	34,049,176	35,647,156	39,080,671	42,602,717

Table 3 – Gallia County (partial), Ohio Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	59.34	50.43	26.89	12.94
SO2 (tpy)	1.02	0.34	0.16	0.16
PM2.5 (tpy)	2.03	1.81	1.06	0.68
Annual VMT	16,493,759	17,341,207	19,175,027	21,051,915

Table 4 – Lawrence County, Ohio Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	1,692.81	1,403.49	759.82	397.98
SO2 (tpy)	28.08	9.16	4.14	4.48
PM2.5 (tpy)	57.15	48.87	28.76	20.08
Annual VMT	449,711,752	457,366,121	503,049,909	595,949,049

Table 5 – Scioto County, Ohio Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	2,081.20	1,761.97	983.09	486.95
SO2 (tpy)	34.53	11.52	5.39	5.47
PM2.5 (tpy)	70.26	61.40	37.35	24.56
Annual VMT	552,962,632	575,354,151	655,158,989	728,816,580

Table 6 – Summary of Ohio Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NO _x (tpy)	3,955.84	3,319.55	1,824.62	924.08
SO ₂ (tpy)	65.73	21.73	10.01	10.43
PM _{2.5} (tpy)	133.64	115.77	69.34	46.71
Annual VMT	1,053,217,319	1,085,708,635	1,216,464,596	1,388,420,261

Table 7 – Boyd County, Kentucky Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	2,673.25	2,172.59	1,154.59	647.64
SO2 (tpy)	11.89	11.62	11.89	12.12
PM2.5 (tpy)	114.31	97.91	51.16	29.08
Annual VMT	488,758,339	473,274,668	510,947,840	560,930,984

Table 8 – Lawrence County (partial), Kentucky Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	170.69	139.16	70.54	37.96
SO2 (tpy)	0.76	0.74	0.73	0.71
PM2.5 (tpy)	7.30	6.27	3.12	1.69
Annual VMT	31,232,092	30,348,132	31,171,751	32,686,140

Table 9 – Summary of Kentucky Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NO _x (tpy)	2,843.94	2,311.75	1,225.13	685.60
SO ₂ (tpy)	12.65	12.36	12.62	12.83
PM _{2.5} (tpy)	121.61	104.18	54.28	30.77
Annual VMT	519,990,431	503,622,800	542,119,591	593,617,124

Table 10 – Cabell County, West Virginia Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	4,262.48	3,504.59	1,702.34	847.76
SO2 (tpy)	81.13	21.95	9.39	9.13
PM2.5 (tpy)	173.92	151.98	80.07	43.32
Annual VMT	960,538,915	989,243,546	1,059,033,672	1,140,870,563

Table 11 – Mason County (partial), West Virginia Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	31.12	27.36	15.33	8.72
SO2 (tpy)	0.54	0.16	0.07	0.08
PM2.5 (tpy)	1.19	1.09	0.64	0.38
Annual VMT	6,176,333	6,741,932	8,005,850	9,286,512

Table 12 – Wayne County, West Virginia Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NOx (tpy)	1,720.01	1,432.79	676.93	386.80
SO2 (tpy)	32.87	9.02	3.76	4.26
PM2.5 (tpy)	70.36	62.37	32.03	20.13
Annual VMT	389,577,827	407,030,689	424,609,965	533,508,781

Table 13 – Summary of West Virginia Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2022
NO _x (tpy)	6,013.61	4,964.74	2,394.60	1,243.28
SO ₂ (tpy)	114.54	31.13	13.22	13.47
PM _{2.5} (tpy)	245.47	215.44	112.74	63.83
Annual VMT	1,356,293,075	1,403,016,167	1,491,649,487	1,683,665,856

Table 14 – Emissions Estimations Totals for On-Road Mobile Sources for the Huntington-Ashland Area

	2005	2008	2015	2022
NO _x (tpy)	12,813.39	10,596.04	5,444.35	2,852.96
SO ₂ (tpy)	192.92	65.22	35.85	36.73
PM _{2.5} (tpy)	500.72	435.39	236.36	141.31
Annual VMT	2,929,500,825	2,992,347,602	3,250,233,674	3,665,703,241

The following table identifies the percentage of mobile emissions of all emissions, as identified under Appendix E, for each pollutant in the entire Huntington-Ashland area and Ohio's portion of this area for 2015 and 2022.

Table 15 – Percent of Mobile Emissions for the Huntington-Ashland Area in 2015 and 2022 – With Apportionment Analysis for partial nonattainment areas

		NO _x		SO ₂		PM _{2.5}	
		2015	2022	2015	2022	2015	2022
Huntington-Ashland Area	Total (tpy)	91,143.28	67,259.54	149,334.67	113,368.65	9,328.97	9,183.65
	Mobile (tpy)	5,444.35	2,852.96	35.85	36.73	236.36	141.31
	% Mobile	5.97%	4.24%	0.02%	0.03%	2.53%	1.54%
Ohio Portion	Total (tpy)	54,804.31	35,561.33	70,174.55	44,625.35	5,379.15	5,313.53
	Mobile (tpy)	1,824.62	924.08	10.01	10.43	69.34	46.71
	% Mobile	3.33%	2.60%	0.01%	0.02%	1.29%	0.88%

SO₂ constitutes less than one percent (<1%) of the area's total SO₂ emissions in the 2015 and 2022 horizon years.

NO_x constitutes less than six percent (<6%) of the area's total NO_x emissions in the 2015 and 2022 horizon years.

PM_{2.5} constitutes less than three percent (<3%) of the area's total PM_{2.5} emissions in the 2015 and 2022 horizon years.

Therefore, the Ohio EPA is herein making a finding that the area's highway emissions for PM_{2.5}, NO_x, and SO₂ continue to be insignificant contributors to the nonattainment problem of the Huntington-Ashland area, as agreed upon as a part of the interagency consultation process. Moreover, the results from Table 15 show emissions adjusted for partial nonattainment areas and does not include Non-EGU emission sources in partial areas (refer to Appendix E), providing higher percentages of mobile emissions (for all three pollutants) and showing a conservative (overestimated) percentage of mobile emissions. Because of this finding it is not necessary to establish mobile emission budgets for this area in the 2015 and 2022 horizon years.

Requirement 3 of 5

A demonstration that the projected level of emissions is sufficient to maintain the PM_{2.5} standard.

Background

In consultation with U.S. EPA, Ohio EPA selected the year 2022 as the maintenance year for this redesignation request. This document contains projected emissions inventories for 2015 and 2022.

Emission projections for the Huntington-Ashland area were performed using the following approaches:

- As performed by Kimley-Horn and Associates Inc., mobile source emission projections are based on the U.S. EPA MOVES model. The analysis is described in more detail in Appendix C. All projections were made in accordance with "Procedures for Preparing Emissions Projections" U.S. EPA-45/4-91-019. As discussed above, it was determined

that the mobile emission contribution as a percent of the total emission inventory from the area is not significant.

- Emissions inventories are required to be projected to future dates to assess the influence growth and future controls will have. LADCO has developed growth and control files for point, area, and non-road categories. These files were used to develop the future-year emissions estimates used in this document. This was done so the inventories used for redesignation are consistent with modeling performed in the future. Appendix D contains LADCO's technical support document detailing the analysis used to project emissions (Base M¹¹).
- For the Ohio portion of the Huntington-Ashland area, for the 2008 attainment year, emissions were grown from the 2005 LADCO modeling inventory, using LADCO's growth factors, for all sectors except point sources (electrical generating units and non-electrical generating units). Point source emissions for 2008 were compiled from Ohio EPA's 2008 annual emissions inventory database. The 2015 interim year emissions were estimated based on the 2009 and 2018 LADCO modeling inventory, using LADCO's growth factors, for all sectors. The 2022 maintenance year is based on emissions estimates from the 2018 LADCO modeling.

The detailed inventory information for the Ohio portion of the Huntington-Ashland area for 2005 is in Appendix B. Emission trends are an important gauge for continued compliance with the PM_{2.5} standard. Therefore, Ohio EPA performed an initial comparison of the inventories for the base year and maintenance years. Mobile source emission inventories are described in Section 5 of Appendix B.

Sectors included in the following tables are: Electrical Generating Unit (EGU-Point); Non-Electrical Generating Unit (Non-EGU); Non-road Mobile (Non-road); Other Area (Other); Marine; Aircraft; Rail (MAR); and On-road Mobile (On-road).

Ohio EPA is identifying emissions projections for 2015 and 2022 for EGUs with implementation of the CAIR program. U.S. EPA has raised concerns regarding the CAIR program and its remand. However, as discussed below, with the proposed CAIR

¹¹ <http://www.ladco.org/tech/emis/current/index.php>

replacement, the Transport Rule, Ohio EPA believes these are the most appropriate and accurate future projections.

On March 10, 2004, the U.S. EPA promulgated the CAIR. Beginning in 2009, U.S. EPA's CAIR rule requires EGUs in 28 eastern states and the District of Columbia to significantly reduce emissions of NO_x and SO₂. CAIR replaced the NO_x SIP Call for EGUs. The intent of the CAIR program is for national NO_x emissions to be cut from 4.5 million tons in 2004, to a cap of 1.5 million tons by 2009, and 1.3 million tons in 2018 in 28 states. States were required to submit a CAIR SIP as part of this effort. Ohio submitted a CAIR SIP which was approved by U.S. EPA on February 1, 2007. Revisions to the CAIR SIP were again submitted on July 15, 2009. The revised CAIR SIP was approved as a direct final action on September 25, 2009 (74 FR 48857). As a result of CAIR, U.S. EPA projects that in 2009 emissions of NO_x will decrease from a baseline of 264,000 tons per year to 93,000 tons per year while in 2010 emissions of SO₂ will decrease from a baseline of 1,373,000 tons per year to 298,000 tons per year, within Ohio. And by 2015 U.S. EPA projects emissions of NO_x will decrease to 83,000 tons per year while emissions of SO₂ will decrease to 208,000 tons per year, within Ohio¹².

On December 23, 2008, U.S. EPA's CAIR program was remanded without vacatur by the D.C. Circuit Court. As mentioned above, Ohio EPA has not incorporated these expected CAIR reductions into this redesignation request. It should also be noted that Ohio's SIP-approved NO_x SIP Call program and regulations are still in place. Ohio EPA is currently in the process of revising these regulations to provide a "back stop" for the reinstatement of the NO_x SIP Call program in the event the CAIR program, or an equivalent, is no longer implemented by U.S. EPA.

As can be seen in Table 15 below, Ohio has seen a significant decline in the 264,000 tons of NO_x and 1,373,000 tons of SO₂ emitted in 2005. In 2008 and 2009 facilities began preparing for and implementing control programs to address CAIR¹³ and consent decrees.

Table 16 - Reductions in SO₂ and NO_x EGU Emissions Between 2008 and 2009

SO ₂			NO _x		
2008	2009	Change	2008	2009	Change

12 <http://www.epa.gov/CAIR/oh.html>

13 Under CAIR, NO_x reductions are to occur beginning in 2009 while SO₂ reductions are to occur beginning in 2010.

Ohio	709,444	601,101	15%	235,018	96,351	59%
LADCO States	2,019,036	1,620,071	20%	702,384	393,930	44%
National	7,616,262	5,747,353	25%	2,996,287	1,990,385	34%

Source: Clean Air Markets Quarterly Emissions Tracking¹⁴

Significant reductions also occurred regionally and nationally as can be seen from the above table. Data is also available for the first two quarters of 2010, the year SO₂ reductions are to be implemented under CAIR:

Table 17 – Reductions in SO₂ and NO_x EGU Emissions Between the First Half of 2008 and 2010

	SO ₂			NO _x		
	2008 (1 st half)	2010 (1 st half)	Change	2008 (1 st half)	2010 (1 st half)	Change
Ohio	373,798	279,854	25%	130,598	53,187	59%
LADCO States	1,190,497	854,282	28%	419,114	220,907	47%
National	3,895,472	2,502,965	36%	1,487,179	930,148	37%

Source: Clean Air Markets Quarterly Emissions Tracking¹⁵

The following was reported by U.S. EPA's Clean Markets Division:

“Based on emissions monitoring data, EPA has observed substantial reductions in SO₂ emissions from 2005 to 2009 and in the first two quarters of 2010 as companies installed more controls, electric demand declined, and low natural gas prices made combined-cycle gas-fired units more competitive in several parts of the country. Thus, even after CAIR's vacatur and subsequent remand in late 2008, the controls in place generally have continued to operate, helping to drive continued progress in reducing emissions.¹⁶”

On July 6, 2010, U.S. EPA proposed a replacement to the CAIR program, the Transport Rule. [75 FR 45210] U.S. EPA intends to finalize the Transport Rule in time for reductions to begin in 2012. As proposed, the Transport Rule will preserve those initial reductions achieved under CAIR and provide more reductions in NO_x and SO₂ emissions in 2012 and 2014, ahead of the 2015 CAIR Phase 2.

Ohio EPA is in agreement with the analysis by U.S.EPA that the CAIR program is providing real reductions at this time, Ohio believes these reductions have assisted with PM_{2.5} attainment in

14 <http://www.epa.gov/airmarkets/quarterlytracking.html>

15 <http://www.epa.gov/airmarkets/quarterlytracking.html>

16 <http://www.epa.gov/airmarkets/background.htm>

this nonattainment area and throughout Ohio. It is also Ohio EPA's belief that the Transport Rule, when finalized, will continue to provide the necessary reductions, and likely even greater reductions, that will be necessary for maintenance of the annual PM_{2.5} standard to occur. As stated by U.S. EPA regarding the proposed Transport Rule, "the results of the air quality modeling indicate that all but one site¹⁷ is projected to be in attainment and only one site¹⁸ is projected to have a maintenance problem for annual PM_{2.5} in 2014 with the emissions reductions expected from this proposal." [75 FR 45345] Therefore, it is Ohio EPA's belief it is most appropriate to evaluate Ohio EPA's demonstration that the projected level of emissions is sufficient to maintain the annual PM_{2.5} standard by assessing future year emissions that include the CAIR program. Furthermore, modeling conducted as part of the Transport Rule projects the Counties within this area will not have maintenance issues in 2014 even without the Transport Rule (or CAIR).

Maintenance is demonstrated when the future-year (2022) projected emission totals are below the 2008 attainment year totals.

The Ohio emissions data in the tables below are based on the following data sources:

- All On-Road data source: Kimley-Horn and Associates Inc.
- 2008 EGU and non-EGU for Ohio: Ohio EPA's 2008 annual emissions inventory database.
- All other data source: Lake Michigan Air Directors Consortium (LADCO).

Demonstration

PM_{2.5}

The 2005 and 2008 actual PM_{2.5} emissions data below generally contains particulate fraction emissions only and not the condensable fractions as Ohio EPA did not have a consistent reporting requirement for those years. U.S. EPA IPM modeling 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 significant PM_{2.5} emissions growth. Modeling performed by LADCO,

17 Allegheny, PA
18 Birmingham, AL

without CAIR, did not incorporate added condensable fraction emissions. Although Ohio EPA has stated that it is most appropriate to evaluate future year emissions that include the CAIR program, because of this flaw it will be more accurate and appropriate for the purposes of PM_{2.5} to evaluate future year emissions without the CAIR program.

Table 18 - Adams County, Ohio PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	3344.63	3585.29	3569.95	3544.65	40.64
Non-EGU	6.90	7.28	13.13	15.64	-8.36
Non-road	15.62	13.28	8.70	4.04	9.24
Area	247.97	278.00	285.55	282.69	-4.69
MAR	7.39	6.79	4.21	1.74	5.05
On-road	4.20	3.69	2.17	1.39	2.30
TOTAL	3,626.71	3,894.33	3,883.71	3,850.15	44.18

Table 19 - Gallia County, Ohio PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	1,011.49	1,031.94	1,073.20	1,100.12	-68.18
Non-EGU	0.00	0.00	0.00	0.00	0.00
Non-road	11.87	10.33	7.22	4.07	6.26
Area	132.22	168.24	181.29	182.52	-14.28
MAR	7.50	6.91	4.32	1.84	5.07
On-road	2.03	1.81	1.06	0.68	1.13
TOTAL	1,165.11	1,219.23	1,267.09	1,289.23	-70.00

Table 20 - Lawrence County, Ohio PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.94	0.69	0.14	0.80
Non-EGU	1.21	1.39	1.75	1.90	-0.51
Non-road	13.78	11.67	7.90	4.02	7.65
Area	134.89	134.73	131.79	129.08	5.65
MAR	20.16	17.97	10.67	3.57	14.40

On-road	57.15	48.87	28.76	20.08	28.79
TOTAL	227.19	215.57	181.56	158.79	56.78

Table 21 - Scioto County, Ohio PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	84.20	138.92	111.08	102.50	36.42
Non-road	37.43	33.07	22.69	12.33	20.74
Area	199.12	290.87	327.40	330.38	-39.51
MAR	37.29	32.74	18.94	5.44	27.30
On-road	70.26	61.40	37.35	24.56	36.84
TOTAL	428.30	557.00	517.46	475.21	81.79

Table 22 - Boyd County, Kentucky PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.05	0.01	0.00	0.00	0.01
Non-EGU	1,200.70	1,449.68	1,455.23	1,458.01	-8.33
Non-road	11.15	9.92	7.18	4.42	5.50
Area	345.58	355.57	377.29	386.49	-30.92
MAR	113.42	110.64	86.34	63.71	46.93
On-road	114.31	97.91	51.16	29.08	68.83
TOTAL	1,785.21	2,023.73	1,977.20	1,941.71	82.02

Table 23 - Lawrence County, Kentucky PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	400.00	407.67	422.88	433.23	-25.56
Non-EGU	22.49	22.70	24.86	25.79	-3.09
Non-road	9.68	9.77	7.21	4.91	4.86
Area	88.84	90.74	91.70	92.09	-1.35
MAR	18.79	17.82	13.33	9.05	8.77
On-road	7.30	6.27	3.12	1.69	4.58
TOTAL	547.10	554.97	563.10	566.76	11.79

**Table 24 - Cabell County, West Virginia PM_{2.5} Emission Inventory
Total for Base Year 2005, Estimated 2008, and Projected
2015 and 2022 (tpy) – Without CAIR**

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	316.84	345.42	408.05	440.72	-95.30
Non-road	31.58	30.57	22.72	15.39	15.18
Area	356.40	353.80	357.80	360.85	-7.05
MAR	44.99	42.41	31.61	21.25	21.16
On-road	173.92	151.98	80.07	43.32	108.66
TOTAL	923.73	924.18	900.25	881.53	42.65

**Table 25 - Mason County, West Virginia PM_{2.5} Emission Inventory
Totals for Base Year 2005, Estimated 2008, and
Projected 2015 and 2022 (tpy) – Without CAIR**

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	245.67	244.58	259.80	266.33	-21.75
Non-EGU	5.80	5.73	6.49	6.81	-1.08
Non-road	16.45	13.94	9.38	4.70	9.24
Area	135.88	136.83	139.42	141.99	-5.16
MAR	47.73	46.01	35.53	25.66	20.35
On-road	1.19	1.09	0.64	0.38	0.71
TOTAL	452.72	448.18	451.26	445.87	2.31

**Table 26 - Wayne County, West Virginia PM_{2.5} Emission Inventory
Totals for Base Year 2005, Estimated 2008, and
Projected 2015 and 2022 (tpy) – Without CAIR**

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	3.36	3.85	1.16	0.01	3.84
Non-EGU	48.01	51.14	54.62	56.11	-4.97
Non-road	11.09	9.62	6.97	4.24	5.38
Area	188.18	185.27	182.15	178.69	6.58
MAR	107.34	104.45	81.73	60.51	43.94
On-road	70.36	62.37	32.03	20.13	42.24
TOTAL	428.34	416.70	358.66	319.69	97.01

Table 27 – Huntington-Ashland Area PM_{2.5} Emission Inventory Totals for Base Year 2005, Estimated 2008, and projected 2015 and 2022 (tpy) – Without CAIR

PM _{2.5}	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
Adams, OH	3,626.71	3,894.33	3,883.71	3,850.15	44.18
Gallia, OH	1,165.11	1,219.23	1,267.09	1,289.23	-70.00
Lawrence, OH	227.19	215.57	181.56	158.79	56.78
Scioto, OH	428.30	557.00	517.46	475.21	81.79
Boyd, KY	1,785.21	2,023.73	1,977.20	1,941.71	82.02
Lawrence, KY	547.10	554.97	563.10	566.76	-11.79
Cabell, WV	923.73	924.18	900.25	881.53	42.65
Mason, WV	452.72	448.18	451.26	445.87	2.31
Wayne, WV	428.34	416.70	358.66	319.69	97.01
COMBINED PM_{2.5} TOTAL	9,584.41	10,253.89	10,100.29	9,928.94	324.95

NO_x

Table 28 - Adams County, Ohio NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	30,205.82	31,258.94	25,671.39	23,276.73	7,982.21
Non-EGU	665.42	703.45	1,266.52	1,770.27	-1,066.82
Non-road	142.28	128.52	92.82	57.47	71.05
Area	127.85	132.58	134.84	137.93	-5.35
MAR	325.30	307.93	199.67	97.77	210.16
On-road	122.49	103.66	54.82	26.21	77.45
TOTAL	31,589.16	32,635.08	27,420.06	25,366.38	7,268.70

Table 29 - Gallia County, Ohio NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	57,523.60	59,688.25	24,476.65	9,385.96	50,302.29
Non-EGU	0.00	0.00	0.00	0.00	0.00
Non-road	110.23	96.65	67.88	38.85	57.80
Area	122.81	128.27	131.45	135.53	-7.26
MAR	316.92	299.78	194.41	95.18	204.60
On-road	59.34	50.43	26.89	12.94	37.49

TOTAL	58,132.90	60,263.38	24,897.28	9,668.46	50,594.92
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Table 30 - Lawrence County, Ohio NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	96.19	105.90	110.06	-13.87
Non-EGU	68.51	77.46	97.06	154.65	-77.19
Non-road	165.50	142.30	92.01	41.36	100.94
Area	232.73	235.97	238.92	242.31	-6.34
MAR	785.48	736.28	477.77	232.77	503.51
On-road	1,692.81	1,403.49	759.82	397.98	1,005.51
TOTAL	2,945.03	2,691.69	1,771.48	1,179.13	1,512.56

Table 31 - Scioto County, Ohio NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	570.12	659.89	512.83	407.21	252.68
Non-road	324.89	281.37	185.85	89.77	191.60
Area	240.86	254.58	262.42	272.52	-17.94
MAR	1,337.52	1,245.14	805.82	387.53	857.61
On-road	2,081.20	1,761.97	983.09	486.95	1,275.02
TOTAL	4,554.59	4,202.95	2,750.01	1,643.98	2,558.97

Table 32 - Boyd County, Kentucky NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	39.41	9.85	2.96	0.00	9.85
Non-EGU	6,943.93	7,116.32	7,453.89	7,803.35	-687.03
Non-road	171.09	150.58	100.47	50.57	100.01
Area	41.22	43.92	50.02	56.14	-12.22
MAR	3,035.45	2,966.48	2,213.06	1,515.33	1,451.15
On-road	2,673.25	2,172.59	1,154.59	647.64	1,524.95
TOTAL	12,904.35	12,459.74	10,974.99	10,073.03	2,386.71

**Table 33 - Lawrence County, Kentucky NO_x Emission Inventory
Totals for Base Year 2005, Estimated 2008, and
Projected 2015 and 2022 (tpy) – With CAIR**

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	12,468.19	4,735.62	2,997.63	2,252.78	2,482.84
Non-EGU	2.72	1.95	1.85	1.43	0.52
Non-road	57.97	54.40	41.05	28.16	26.24
Area	85.89	88.43	92.45	96.64	-8.21
MAR	635.31	613.37	444.15	286.03	327.34
On-road	170.69	139.16	70.54	37.96	101.20
TOTAL	13,420.77	5,632.93	3,647.67	2,703.00	2,929.93

**Table 34 – Cabell County, West Virginia NO_x Emission Inventory
Total for Base Year 2005, Estimated 2008, and
Projected 2015 and 2022 (tpy) – With CAIR**

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	244.27	246.61	278.40	305.36	-58.75
Non-road	316.80	284.81	202.59	121.07	163.74
Area	669.93	678.75	757.21	830.23	-151.48
MAR	1,578.63	1,566.32	1,205.55	875.99	690.33
On-road	4,262.48	3,504.59	1,702.34	847.76	2,656.83
TOTAL	7,072.11	6,281.08	4,146.09	2,980.41	3,300.67

**Table 35 – Mason County, West Virginia NO_x Emission Inventory
Totals for Base Year 2005, Estimated 2008, and
Projected 2015 and 2022 (tpy) – With CAIR**

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	21,694.07	13,490.21	11,957.32	11,300.37	2,189.84
Non-EGU	80.53	82.91	91.22	99.02	-16.11
Non-road	160.56	153.38	124.24	96.26	57.12
Area	356.63	368.52	391.32	414.58	-46.06
MAR	1,334.41	1,303.31	971.05	663.19	640.12
On-road	31.12	27.36	15.33	8.72	18.64
TOTAL	23,657.32	15,425.69	13,550.48	12,582.14	2,843.55

Table 36 – Wayne County, West Virginia NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	60.51	15.13	7.32	3.97	11.16
Non-EGU	3,279.16	2,817.34	2,847.64	2,674.22	143.12
Non-road	117.56	109.12	87.13	65.37	43.75
Area	156.84	159.33	175.43	190.56	-31.23
MAR	2,872.80	2,846.00	2,184.79	1,579.84	1,266.16
On-road	1,720.01	1,432.79	676.93	386.80	1,045.99
TOTAL	8,206.88	7,379.71	5,979.24	4,900.76	2,478.95

Table 37 - Huntington-Ashland Area NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

NO _x	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
Adams, OH	31,589.16	32,635.08	27,420.06	25,366.38	7,268.70
Gallia, OH	58,132.90	60,263.38	24,897.28	9,668.46	50,594.92
Lawrence, OH	2,945.03	2,691.69	1,771.48	1,179.13	1,512.56
Scioto, OH	4,554.59	4,202.95	2,750.01	1,643.98	2,558.97
Boyd, KY	12,904.35	12,459.74	10,974.99	10,073.03	2,386.71
Lawrence, KY	13,420.77	5,632.93	3,647.67	2,703.00	2,929.93
Cabell, WV	7,072.11	6,281.08	4,146.09	2,980.41	3,300.67
Mason, WV	23,657.32	15,425.69	13,550.48	12,582.14	2,843.55
Wayne, WV	8,206.88	7,379.71	5,979.24	4,900.76	2,478.95
COMBINED NO_x TOTAL	162,483.11	146,972.25	95,137.30	71,097.29	75,874.96

SO₂

Table 38 - Adams County, Ohio SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	125,070.34	35,946.20	27,077.57	23,276.73	12,669.47
Non-EGU	4.37	3.73	8.04	11.62	-7.89
Non-road	15.33	5.67	0.91	0.14	5.53
Area	33.56	33.54	31.73	30.08	3.46
MAR	28.54	19.33	6.61	1.79	17.54
On-road	2.10	0.71	0.32	0.32	0.39

TOTAL	125,154.24	36,009.18	27,125.18	23,320.68	12,688.50
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Table 39 - Gallia County, Ohio SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	100,102.91	91,889.46	41,924.16	20,510.45	71,379.01
Non-EGU	0.00	0.00	0.00	0.00	0.00
Non-road	10.76	3.98	0.67	0.15	3.83
Area	16.36	16.60	15.91	15.35	1.25
MAR	27.78	19.07	6.90	2.26	16.81
On-road	1.02	0.34	0.16	0.16	0.18
TOTAL	100,158.83	91,929.45	41,947.80	20,528.37	71,401.08

Table 40 - Lawrence County, Ohio SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.69	0.21	0.00	0.69
Non-EGU	0.24	0.05	0.35	0.55	-0.50
Non-road	18.98	6.95	1.11	0.19	6.76
Area	30.33	29.94	28.93	27.94	2.00
MAR	68.18	53.99	29.93	5.03	48.96
On-road	28.08	9.16	4.14	4.48	4.68
TOTAL	145.81	100.78	64.67	38.19	62.59

Table 41 - Scioto County, Ohio SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	977.12	1,477.24	993.09	723.09	754.15
Non-road	36.15	13.28	2.17	0.42	12.86
Area	36.63	37.53	35.89	34.61	2.92
MAR	116.50	100.91	66.76	32.41	68.50
On-road	34.53	11.52	5.39	5.47	6.05
TOTAL	1,200.93	1,640.48	1,103.30	796.00	844.48

Table 42 - Boyd County, Kentucky SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	1.14	0.29	0.09	0.00	0.29
Non-EGU	9,650.25	10,188.42	11,065.41	12,012.04	-1,823.62
Non-road	8.46	3.67	0.85	0.24	3.43
Area	554.34	569.78	594.03	619.38	-49.60
MAR*	426.27	387.85	292.02	196.77	191.08
On-road	11.89	11.62	11.89	12.12	-0.50
TOTAL	10,652.35	11,161.63	11,964.29	12,840.55	-1,678.92

Table 43 - Lawrence County, Kentucky SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	49,858.09	40,717.49	20,475.34	11,800.13	28,917.36
Non-EGU	1.55	1.49	1.45	1.40	0.09
Non-road	4.06	1.76	0.41	0.12	1.64
Area	96.74	99.37	98.36	98.02	1.35
MAR	66.03	54.52	38.28	21.04	33.48
On-road	0.76	0.74	0.73	0.71	0.03
TOTAL	50,027.23	40,875.37	20,614.57	11,921.42	28,953.95

Table 44 - Cabell County, West Virginia SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	118.63	118.03	141.50	160.39	-42.36
Non-road	16.75	7.30	1.75	0.56	6.74
Area	1,457.65	1,503.71	1,598.18	1,693.86	-190.15
MAR	53.52	23.87	5.55	1.33	22.54
On-road	81.13	21.95	9.39	9.13	12.82
TOTAL	1,727.68	1,674.86	1,756.37	1,865.27	-190.41

Table 45 - Mason County, West Virginia SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	82,132.82	50,518.10	44,094.05	41,340.89	9,177.21
Non-EGU	1.91	1.90	2.13	2.32	-0.42
Non-road	10.40	4.53	1.03	0.25	4.28
Area	119.53	120.73	123.14	125.60	-4.87
MAR	42.13	18.81	4.38	1.06	17.75
On-road	0.54	0.16	0.07	0.08	0.08
TOTAL	82,307.33	50,664.23	44,224.80	41,470.20	9,194.03

Table 46 - Wayne County, West Virginia SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU Point	0.53	0.13	0.04	0.00	0.13
Non-EGU	285.67	277.75	281.84	281.79	-4.04
Non-road	6.96	2.99	0.68	0.19	2.80
Area	490.95	507.00	540.51	574.39	-67.39
MAR	98.34	48.22	19.46	13.44	34.78
On-road	32.87	9.02	3.76	4.26	4.76
TOTAL	915.32	845.11	846.29	874.07	-28.96

Table 47 - Huntington-Ashland Area SO₂ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2022 (tpy) – With CAIR

SO ₂	2005 Base	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
Adams, OH	125,154.24	36,009.18	27,125.18	23,320.68	12,688.50
Gallia, OH	100,158.83	91,929.45	41,947.80	20,528.37	71,401.08
Lawrence, OH	145.81	100.78	64.67	38.19	62.59
Scioto, OH	1,200.93	1,640.48	1,103.30	796.00	844.48
Boyd, KY	10,652.35	11,161.63	11,964.29	12,840.55	-1,678.92
Lawrence, KY	50,027.23	40,875.37	20,614.57	11,921.42	28,953.95
Cabell, WV	1,727.68	1,674.86	1,756.37	1,865.27	-190.41
Mason, WV	82,307.33	50,664.23	44,224.80	41,470.20	9,194.03
Wayne, WV	915.32	845.11	846.29	874.07	-28.96
COMBINED SO₂ TOTAL	372,289.72	234,901.09	149,647.27	113,654.75	121,246.34

PM_{2.5}, NO_x, and SO₂

Table 48 - Huntington-Ashland Area Comparison of 2008 Attainment Year and 2015 and 2022 Projected Emission Estimates (tpy)

	2008 Base	2015 Interim	2015 Projected Decrease	2022 Maintenance	2022 Projected Decrease
PM_{2.5}	10,253.89	10,100.29	153.60	9,928.94	324.95
NO_x	146,972.25	95,137.30	51,834.95	71,097.29	75,874.96
SO₂	234,901.09	149,647.27	85,253.82	113,654.75	121,246.34

As shown in the table above (Table 48), PM_{2.5} emissions in the nonattainment area are projected to decrease by 153.60 tpy in 2015 and 324.95 tpy in 2022. NO_x emissions in the nonattainment area are projected to decrease by 51,834.95 tpy in 2015 and 75,874.96 tpy in 2022. SO₂ emissions in the nonattainment area are projected to decline by 85,253.82 tpy in 2015 and 121,246.34 in 2022.

Area source emissions and, to a lesser extent, point sources show an increase due to expectations that the population will grow in this area; however, cleaner vehicles and fuels are expected to be in place in 2009 and 2018, and the Transport Rule will be implemented in 2012 and 2014 and these programs should cause an overall drop in all three pollutants emissions. Decreases from U.S. EPA rules covering Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements¹⁹, Highway Heavy-Duty Engine Rule²⁰, and the Non-Road Diesel Engine Rule²¹ are factored into the changes.

In addition to the above, the General J.M. Gavin Station (AEP) in Gallia County implemented changes in 2009. The two units, #1 and #2 (each 1300 megawatt) were required by a federally enforceable consent decree to operate their SNCRs continuously, to control and reduce NO_x emissions, by December 2009. Also the Kyger Creek Station in Gallia County (units #1, #2, #3, #4, and #5) has installed SNCRs (to reduce NO_x emission) which they have been running continuously since January 2009. In addition, Kyger Creek Station has plans underway for installation of FGDs (to reduce SO₂ emissions). They are expecting the FGDs to be operational in 2012. Finally, the J.M. Stuart DP&L

19 <http://www.epa.gov/fedrgstr/EPA-AIR/2000/February/Day-10/a19a.htm>

20 <http://www.epa.gov/fedrgstr/EPA-AIR/1997/October/Day-21/a27494.htm>

21 <http://www.epa.gov/fedrgstr/EPA-AIR/1998/October/Day-23/a24836.htm>

Station in Adams County incorporated (in units #1, #2, #3, and #4) through a federally enforceable consent decree, year around operation of SNCR controls in 2009 to reduce NOx emissions.

Requirement 4 of 5

A demonstration that improvement in air quality between the year violations occurred and the year attainment was achieved is based on permanent and enforceable emission reductions and not on temporary adverse economic conditions or unusually favorable meteorology.

Background

Ambient air quality data from all monitoring sites indicate that air quality met the NAAQS for PM_{2.5} in 2008-2010. U.S. EPA’s redesignation guidance (p 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.”

Demonstration

Permanent and enforceable reductions of PM_{2.5}, NO_x, and SO₂ emissions have contributed to the attainment of the annual PM_{2.5} standard. Some of these reductions were realized due to the application of tighter federal standards on non-road diesel vehicles (Clean Air Non-road Diesel Rule), the application of tighter federal standards on new vehicles, Title IV of the CAA, the NO_x SIP Call, CAIR, and federal consent decrees requiring the reductions of SO₂ and NO_x emissions from utility sources. Reductions achieved are discussed in greater detail under Chapter Five.

Table 49 - Huntington-Ashland Area Combined Comparison of 2005 base year and 2008 attainment year on-road, non-road and EGU reductions

	2005	2008
On-road PM _{2.5}	500.72	435.39
On-road NO _x	12,813.39	10,596.04
On-road SO ₂	192.92	65.22
Non-road PM _{2.5}	158.65	142.17
Non-road NO _x	1,566.88	1,401.13
Non-road SO ₂	127.85	50.13
EGU PM _{2.5}	5,005.20	5,274.28
EGU NO _x	121,991.60	109,294.19
EGU SO ₂	357,165.83	219,072.36

Requirement 5 of 5

Provisions for future annual updates of the inventory to enable tracking of the emission levels, including an annual emission statement from major sources.

Demonstration

In Ohio, major point sources in all counties are required to submit air emissions information annually, in accordance with U.S. EPA's Consolidated Emissions Reporting Rule (CERR). Ohio EPA prepares a new periodic inventory for all PM_{2.5} precursor emission sectors every three years. These PM_{2.5} precursor inventories will be prepared for future years as necessary to comply with the inventory reporting requirements established in the CFR. Emissions information will be compared to the 2005 base year and the 2022 projected maintenance year inventories to assess emission trends, as necessary, and to assure continued compliance with the annual PM_{2.5} standard.

CHAPTER FIVE

CONTROL MEASURES AND REGULATIONS

CAA Section 107(d)(3)(E)(ii), 107(d)(3)(iv), and 107(d)(3)(E)(v)

Requirement 1 of 6

Section 172(c)(1) of the 1990 Clean Air Act Amendments requires states with nonattainment areas to implement RACM and RACT.

Background

Section 172(c)(1) of the 1990 Clean Air Act Amendments requires states with nonattainment areas to submit a SIP providing for implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonable available control technology).

U.S. EPA's Implementation Rule interprets this requirement in great detail. Under U.S. EPA's approach, RACT is determined as part of the broader RACM analysis and identification of all measures (for stationary, mobile, and area sources) that are technically and economically feasible, and that would collectively contribute to advancing the attainment date (i.e. by one year or more). States are required to use a combined approach to RACT and RACM, that (1) identifies potential measures that are reasonable, (2) uses modeling to identify the attainment date that is as expeditious as practicable, and (3) selects the appropriate RACT and RACM.

The Implementation Rule also provides for a presumption that in States that fulfill their CAIR emission reduction requirements, EGU compliance with CAIR is equivalent to RACM/RACT.

Demonstration

In 1972, 1980, and 1991, Ohio promulgated rules requiring reasonably available controls measures for particulate emissions from stationary sources.

Statewide RACT rules have been applied to all new sources locating in Ohio since that time. RACT requirements are incorporated into permits along with monitoring, recordkeeping, and reporting necessary to ensure ongoing compliance. Ohio EPA also has an active enforcement program to address violations

discovered by field office staff. The Ohio RACT rules for particulate matter are found in OAC Chapter 3745-17²².

In addition, Ohio EPA promulgated NO_x SIP Call rules (OAC Chapter 3745-14²³), CAIR (OAC Chapter 3745-109²⁴), and NO_x Reasonably Available Control Technology rules (OAC Chapter 3745-110²⁵) over the past five years. Emissions from EGUs make up a significant contribution to Ohio's inventory. Beginning in 2009, Ohio implemented CAIR which has, and will, provide for significant reductions in NO_x, PM_{2.5}, and SO₂ until such time it is replaced by U.S. EPA's proposed Transport Rule. Then the Transport Rule will provide for even greater reductions.

As part of a larger initiative, LADCO, in consultation with two contractors, performed a series of studies exploring control measures for reducing both ozone precursors and PM_{2.5} precursors in Ohio, Illinois, Indiana, Michigan, and Wisconsin area. The first consultant, MACTEC, prepared a series of white papers²⁶ researching different stationary source categories. The results were compiled into two reports²⁷. The second consultant, Environ, investigated control options for mobile sources. The results were compiled into two reports²⁸. The stationary and mobile source sectors (and associated control measures) were selected by the LADCO States based on several factors presented in the report (See Chapter 2).

Photochemical modeling was then conducted (as part of LADCO Round 4 modeling) to assess the air quality benefit of the candidate control measures and a modeling report was developed²⁹. Based on the results, the LADCO project team felt it would not be possible to advance the attainment date for PM_{2.5}. Ohio EPA, in its attainment demonstration submitted on July 18, 2008, demonstrated (using a weight of evidence approach) that

22 http://www.epa.ohio.gov/dapc/regs/3745_17.aspx

23 http://www.epa.ohio.gov/dapc/regs/3745_14.aspx

24 http://www.epa.ohio.gov/dapc/regs/3745_109.aspx

25 http://www.epa.ohio.gov/dapc/regs/3745_110.aspx

26 http://www.ladco.org/reports/control/white_papers

27

http://www.ladco.org/reports/control/final_reports/identification_and_evaluation_of_candidate_control_measures_i_april_2005.pdf;

http://www.ladco.org/reports/control/final_reports/identification_and_evaluation_of_candidate_control_measures_ii_june_2006.pdf

28

http://www.ladco.org/reports/control/final_reports/final_report_evaluation_of_candidate_mobile_source_control_measures_february_2006.pdf;

http://www.ladco.org/reports/control/final_reports/final_report_evaluation_of_candidate_mobile_source_control_measures_for_ladco_states_in_2009_and_2012_march_2007.pdf

29 http://www.ladco.org/reports/control/modeling/round4_modeling.pdf

attainment would be achieved in this area by 2009. Because of a projected 2009 attainment date, it would not have been reasonably possible or practicable for Ohio to develop RACT/RACM requirements, promulgate regulations and implement a control program prior to the projected attainment date.

Requirement 2 of 6

Section 172(c)(2) of the 1990 CAA Amendments requires attainment demonstration SIPs for nonattainment areas to show reasonable further progress (RFP).

Background

U.S. EPA's Implementation Rule requires RFP only for any area which a State projects an attainment date beyond 2010. The RFP would provide emission reductions showing linear progress between 2002 and 2009. If a State demonstrates attainment will occur by 2010 or earlier, U.S. EPA considers the attainment demonstration to demonstrate achievement of RFP.

Demonstration

In Ohio's attainment demonstration submitted on July 18, 2008, Ohio demonstrated (using a weight of evidence approach) that attainment would be achieved in this area by 2009; and therefore, it was not necessary to submit a separate RFP plan.

Requirement 3 of 6

Section 172(c)(3) requires states to submit a comprehensive inventory of actual emissions.

Background

Section 172(c)(3) requires states to submit a comprehensive inventory of actual emissions in the area, including the requirement for periodic revisions as determined necessary. 40 CFR 51.1008 requires such inventory to be submitted within three years of designation and requires a baseline emission inventory for calendar year 2002 or other suitable year to be used for attainment planning.

Demonstration

The 2005 comprehensive inventory was submitted to U.S. EPA with Ohio's PM_{2.5} attainment demonstration SIP submitted on July 18, 2008. It was then subsequently revised and resubmitted on June 7, 2010.

Ohio also updates its inventory in accordance with U.S. EPA's CERR rule (i.e. emissions statements). Ohio EPA submitted its

emissions statement SIP on March 18, 1994 which was approved by U.S. EPA on October 13, 1995 (59 FR 51863). As discussed in Chapter 4 (Requirement 4), Ohio EPA submits, and commits to submit, emission inventories (statements) every three years.

Requirement 4 of 6

Evidence that control measures required in past PM_{2.5} SIP revisions have been fully implemented.

Background

In addition to the historic RACT requirements for PM, the U.S. EPA NO_x SIP Call required 22 states to pass rules that would result in significant emission reductions from large EGUs, industrial boilers, and cement kilns in the eastern United States. Ohio passed this rule in 2001. NO_x SIP Call requirements are incorporated into permits along with monitoring, recordkeeping, and reporting necessary to ensure ongoing compliance. Ohio EPA also has an active enforcement program to address violations discovered by field office staff. Compliance is tracked through the Clean Air Markets data monitoring program. Beginning in 2004, this rule accounts for a reduction of approximately 31 percent of all NO_x emissions statewide compared to previous uncontrolled years. The other 21 states also have adopted these rules.

On March 10, 2004, the U.S. EPA promulgated the CAIR. Beginning in 2009, U.S. EPA's CAIR rule requires EGUs in 28 eastern states and the District of Columbia to significantly reduce emissions of NO_x and SO₂. CAIR replaced the NO_x SIP Call for EGUs. National NO_x emissions will be cut from 4.5 million tons in 2004, to a cap of 1.5 million tons by 2009, and 1.3 million tons in 2018 in 28 states. States were required to submit a CAIR SIP as part of this effort. Ohio submitted a CAIR SIP which was approved by U.S. EPA on February 1, 2007. Revisions to the CAIR SIP were again submitted on July 15, 2009. The revised CAIR SIP was approved as a direct final action on September 25, 2009 (74 FR 48857).

Demonstration

Controls for EGUs under the NO_x SIP Call formally commenced May 31, 2004. Emissions covered by this program have been generally trending downward since 1998 with larger reductions occurring in 2002 and 2003. Data taken from the U.S. EPA Clean Air Markets web site, quantify the gradual NO_x reductions that have occurred in Ohio as a result of Title IV of the 1990 CAA Amendments and the beginning of the NO_x SIP Call Rule. Ohio developed the NO_x Budget Trading Program rules in OAC Chapter

3745-14³⁰ in response to the SIP Call. OAC Chapter 3745-14 regulates EGUs and certain non-EGUs under a cap and trade program based on an 85 percent reduction of NO_x emissions from EGUs and a 60 percent reduction of NO_x emissions from non-EGUs, compared to historical levels. This cap was in place through 2008, at which time the CAIR program superseded it as discussed above. Requirement 3 of 5 under Chapter 4 above discussed the reductions Ohio has seen as a result of CAIR.

On April 21, 2004, U.S. EPA published Phase II of the NO_x SIP Call that establishes a budget for large (greater than 1 ton per day emissions) stationary internal combustion engines. Ohio EPA's OAC rule 3745-14-12 addresses stationary internal combustion engines, all used in natural gas pipeline transmissions. U.S. EPA approved this revision to the SIP on April 4, 2008. An 82 percent NO_x reduction from 1995 levels is anticipated. Completion of the compliance plan occurred by May 1, 2006, and the compliance demonstration began May 1, 2007.

Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards

In February 2000, U.S. EPA finalized a federal rule to significantly reduce emissions from cars and light trucks, including sport utility vehicles (SUVs). Under this proposal, automakers will be required to sell cleaner cars, and refineries will be required to make cleaner, lower sulfur gasoline. This rule will apply nationwide. The federal rules will phase in between 2004 and 2009. U.S. EPA has estimated that NO_x emission reductions will be approximately 77 percent for passenger cars, 86 percent for smaller SUVs, light trucks, and minivans, and 65 to 95 percent reductions for larger SUVs, vans, and heavier trucks. The sulfur content of gasoline is estimated to be reduced by up to 90 percent. VOC emission reductions will be approximately 12 percent for passenger cars, 18 percent for smaller SUVs, light trucks, and minivans, and 15 percent for larger SUVs, vans, and heavier trucks.

Heavy-Duty Diesel Engines

In July 2000, U.S. EPA issued a final rule for Highway Heavy Duty Engines, a program which includes low-sulfur diesel fuel standards, which will be phased in from 2004 through 2007. This rule applies to heavy-duty gasoline and diesel trucks and buses. This rule will result in a 40 percent reduction in NO_x from diesel trucks and buses, a large sector of the mobile sources NO_x

30 http://www.epa.ohio.gov/dapc/regs/3745_14.aspx

inventory. It also estimated the level of sulfur in highway diesel fuel will be reduced by 97 percent by mid-2006.

Clean Air Non-road Diesel Rule

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 new standards will cut emissions from non-road diesel engines by more than 90 percent. Non-road diesel equipment, as described in this rule, currently accounts for 47 percent of diesel particulate matter (PM) and 25 percent of NO_x from mobile sources nationwide. Sulfur levels will be reduced in non-road diesel fuel by 99 percent from current levels, from approximately 3,000 parts per million (ppm) now to 15 ppm in 2009. New engine standards take effect, based on engine horsepower, starting in 2008. Together, these rules will substantially reduce local and regional sources of PM_{2.5} precursors.

Requirement 5 of 6

Acceptable provisions to provide for new source review.

Background

Ohio has a longstanding and fully implemented New Source Review (NSR) program. This is addressed in OAC Chapter 3745-31³¹. The Chapter includes provisions for the Prevention of Significant Deterioration (PSD) permitting program in OAC rules 3745-31-01 to 3745-31-20. Ohio's PSD program was conditionally approved on October 10, 2001 (66 FR 51570) and received final approval on January 22, 2003 (68FR 2909) by U.S. EPA as part of the SIP.

Demonstration

Any facility that is not listed in the 2005 emission inventory, or for the closing of which credit was taken in demonstrating attainment, will not be allowed to construct, reopen, modify, or reconstruct without meeting all applicable NSR requirements. Once the area is redesignated, Ohio EPA will implement NSR through the PSD program.

Requirement 6 of 6

31 http://www.epa.ohio.gov/dapc/regs/3745_31.aspx

Assure that all existing control measures will remain in effect after redesignation unless the State demonstrates through modeling that the standard can be maintained without one or more control measures.

Demonstration

Ohio commits to maintaining the aforementioned control measures after redesignation. Ohio hereby commits that any changes to its rules or emission limits applicable to PM_{2.5}, SO₂, and NO_x as required for maintenance of the annual PM_{2.5} standard in the Huntington-Ashland area, will be submitted to U.S. EPA for approval as a SIP revision.

Ohio, through Ohio EPA's Legal office, has the legal authority and necessary resources to actively enforce any violations of its rules or permit provisions. After redesignation, it intends to continue enforcing all rules that relate to the emission of PM_{2.5} precursors in the Huntington-Ashland area.

CHAPTER SIX

CONTINGENCY MEASURES

CAA Section 107(d)(3)(E)(v)

Requirement 1 of 4

A commitment to submit a revised plan eight years after redesignation.

Demonstration

Ohio hereby commits to review its maintenance plan eight years after redesignation, as required by Section 175(A) of the CAA.

Requirement 2 of 4

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 standard occur.

Demonstration

Ohio hereby commits to adopt and expeditiously implement necessary corrective actions in the following circumstances:

Warning Level Response:

A warning level response shall be prompted whenever the PM_{2.5} average of the weighted annual mean of 15.5 µg/m³ occurs in a single calendar year within the maintenance area. A warning level response will consist of a study to determine whether the PM_{2.5} value indicates a trend toward higher PM_{2.5} values or whether emissions appear to be increasing. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measures necessary to reverse the trend taking into consideration ease and timing for implementation as well as economic and social considerations. Implementation of necessary controls in response to a warning level response trigger will take place as expeditiously as possible, but in no event later than 12 months from the conclusion of the most recent calendar year.

Should it be determined through the warning level study that action is necessary to reverse the noted trend, the procedures for control selection and implementation outlined under “action level response” shall be followed.

Action Level Response:

An action level response shall be prompted whenever a two-year average of the weighted annual means of 15.0 µg/m³ or greater occurs within the maintenance area. A violation of the standard

(three-year average of the weighted annual means of 15.0 $\mu\text{g}/\text{m}^3$ or greater) shall also prompt an action level response. In the event that the action level is triggered and is not found to be due to an exceptional event, malfunction, or noncompliance with a permit condition or rule requirement, Ohio EPA in conjunction with the metropolitan planning organization or regional council of governments, will determine additional control measures needed to assure future attainment of the NAAQS for annual $\text{PM}_{2.5}$. In this case, measures that can be implemented in a short time will be selected in order to be in place within 18 months from the close of the calendar year that prompted the action level. Ohio EPA will also consider the timing of an action level trigger and determine if additional, significant new regulations not currently included as part of the maintenance provisions will be implemented in a timely manner and will constitute our response.

Control Measure Selection and Implementation

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

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

Requirement 3 of 4

A list of potential contingency measures that would be implemented in such an event.

Demonstration

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. The selection of measures will be based on cost-effectiveness, emission reduction potential, economic and social considerations or other factors that Ohio EPA deems appropriate. Ohio EPA will solicit input from all interested and affected persons in the maintenance area prior to selecting appropriate contingency measures. Because it is not possible at this time to determine what control measures will be appropriate at an unspecified time in the future, the list of contingency measures outlined below is not exhaustive.

- 1) Diesel reduction emission strategies.
- 2) Alternative fuel (e.g., liquid propane and compressed natural gas) and diesel retrofit programs for fleet vehicle operations.
- 3) Tighter PM_{2.5}, SO₂, and NO_x emissions offsets for new and modified major sources.
- 4) Impact crushers located at recycle scrap yards – upgrade wet suppression.
- 5) Concrete manufacturing – upgrade wet suppression.
- 6) Additional NO_x RACT statewide.

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

Requirement 4 of 4

A list of PM_{2.5}, SO₂, and NO_x sources potentially subject to future additional control requirements.

Demonstration

The following is a list of PM_{2.5}, SO₂, and NO_x sources potentially subject to future controls.

- ICI Boilers - SO₂ and NO_x controls;
- EGUs;
- process heaters;
- internal combustion engines;
- combustion turbines;
- other sources greater than 100 tons per year;
- fleet vehicles;
- concrete manufacturers;
- aggregate processing plants;

CHAPTER SEVEN

PUBLIC PARTICIPATION

Ohio published notification for a public hearing and solicitation for public comment concerning the draft redesignation petition and maintenance plan in the widely distributed county publications on March 17, 2011.

The public hearing to receive comments on the redesignation request was held on April 21, 2011, at the Portsmouth City Health Department, Portsmouth, Ohio. The public comment period closed on April 21, 2011. Appendix F includes a copy of the public notice, certification of publication, and the transcript from the public hearing.

CHAPTER EIGHT

CONCLUSIONS

The Huntington-Ashland annual PM_{2.5} nonattainment area has attained the 1997 annual NAAQS for PM_{2.5} and complied with the applicable provisions of the 1990 Amendments to the CAA regarding redesignations of PM_{2.5} nonattainment areas.

Documentation to that effect is contained herein. Ohio EPA has prepared a redesignation request and maintenance plan that meet the requirements of Section 110 (a)(1) of the 1990 CAA.

Based on this presentation, the Huntington-Ashland annual PM_{2.5} nonattainment area meets the requirements for redesignation under the CAA and U.S. EPA guidance. Ohio has performed an analysis that shows the air quality improvements are due to permanent and enforceable measures. Furthermore, because this area is subject to significant transport of pollutants, significant regional SO₂ and NO_x reductions will ensure continued compliance (maintenance) with the standard with an increasing margin of safety.

The State of Ohio hereby requests that the Huntington-Ashland annual PM_{2.5} nonattainment area be redesignated to attainment simultaneously with U.S. EPA approval of the maintenance plan provisions contained herein.

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