REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE OHIO PORTION OF THE STEUBENVILLE-WEIRTON OH-WV 24-HOUR $PM_{2.5}$ NONATTAINMENT AREA

Jefferson County, Ohio

Prepared by:
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Division of Air Pollution Control

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TABLE OF CONTENTS

Chapter One
Introduction 1
Geographical description and background 2
Status of air quality 3

Chapter Two
Requirements for redesignation 4

Chapter Three
$PM_{2.5}$ monitoring 10
24-Hour $PM_{2.5}$ NAAQS 10
Ambient data quality assured 11
Three complete years of data 11
Commitment to continue monitoring 16

Chapter Four
Emission inventory 17
Base year inventory 17
Emission projections 18
Demonstration of maintenance 26
Permanent and enforceable emissions reductions 36
Provisions for future update 37

Chapter Five
Control measures and regulations 38
Nonattainment areas to implement RACM and RACT 38
Show Reasonable Further Progress (RFP) 40
Emission inventories 40
Implementation of past SIP revisions 41
New source review provisions 43
Assurance of continued controls 44

Chapter Six
Contingency measures 45
Commitment to revise plan 45
Commitment for contingency measures 46
Potential contingency measures 47
List of $PM_{2.5}$, SO_2, and NO_x sources 47

Chapter Seven
Public participation 48

Chapter Eight
Conclusions 49

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FIGURES

Figure 1 Steubenville- Weirton 24-Hour $PM_{2.5}$ Exceedances……9
Figure 2 Map of the Steubenville-Weirton, OH-WV, nonattainment area and monitor locations 11
Figure 3 Ohio 24-Hour $PM_{2.5}$: Design Values 1999-2001 Through 2008-2010 14
Figure 4 West Virginia 24-Hour $PM_{2.5}$ Design Values 1999-2001 Through 2008-2010.... 15
Figure 5 $PM_{2.5}$ 24- Hour Mean National Trends..... 15

TABLES

Table 1 Monitoring Data for Steubenville-Weirton, OH-WV area for 2008 – 2010 13
Table 2 Jefferson County, Ohio Emission Estimations for On-road Mobile Sources 24
Table 3 Summary of Ohio Emissions Estimations for On-road Mobile Sources 24
Table 4 Brooke County, West Virginia Emission Estimations for On-road Mobile Sources 24
Table 5 Hancock County, West Virginia Emission Estimations for On-road Mobile Sources 24
Table 6 Summary of West Virginia Emission Estimations for On-Road Mobile Sources . 25
Table 7 Emission Estimations Totals for On-road Mobile Sources for the Steubenville-Weirton Area 25
Table 8 Percent of Mobile Emissions for the Steubenville-Weirton Area in 2015 and 2025 …..... 25
Table 9 Reductions in SO_2 and NO_x EGU Emissions Between 2008 and 2009..... 28
Table 10 Reductions in SO_2 and NO_x EGU Emissions Between the First Half of 2008 and 2010…..... 29
Table 11 Jefferson County, Ohio $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – Without CAIR. 31
Table 12 Brooke County, West Virginia $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR..... 31
Table 13 Hancock County, West Virginia $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR..... 31
Table 14 Steubenville-Weirton Area $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – Without CAIR (Ohio) and With CSAPR (West Virginia). 32
Table 15 Jefferson County, Ohio NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR 32
Table 16 Brooke County, West Virginia NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR..... 32
Table 17 Hancock County, West Virginia NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR..... 33
Table 18 Steubenville-Weirton Area NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR (Ohio) and With CSAPR (West Virginia). 33
Table 19 Jefferson County, Ohio SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR 33
Table 20 Brooke County, West Virginia SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR..... 34

DRAFT

Table 21 Hancock County, West Virginia SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR..... 34
Table 22 Steubenville-Weirton Area SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR (Ohio) and With CSAPR (West Virginia) 34
Table 23 Steubenville-Weirton Area Comparison of 2008 attainment year and 2015 and 2025 Projected Emission Estimates (tpy)..... 35
Table 24 Steubenville-Weirton Area Combined Comparison of 2005 Base Year and 2008 Attainment Year On-Road and EGU Reductions 37

APPENDICES

A Air Quality System (AQS) Data
B Ohio 2005 SIP Base Year Inventory Discussion
C Mobile Source Emissions Inventory for the Steubenville-Weirton $PM_{2.5}$ Nonattainment Area
D LADCO Technical Support Document and WVDAQ Nonroad Modeling
E Public Participation Documentation

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REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE OHIO PORTION OF THE STEUBENVILLE-WEIRTON OH-WV 24-HOUR $PM_{2.5}$ NONATTAINMENT AREA

Jefferson County, Ohio

CHAPTER ONE

Introduction

The Clean Air Act (CAA), as amended, requires each State with areas failing to meet the 24-hour $PM_{2.5}$[1] National Ambient Air Quality Standard (NAAQS) to develop State Implementation Plans (SIPs) to expeditiously attain and maintain the standard. The United States Environmental Protection Agency (U.S. EPA) revised the NAAQS for particulate matter in 2006. In 2006, U.S. EPA strengthened the primary 24-hour $PM_{2.5}$ NAAQS from 65 µg/m^3 to 35 µg/m^3, and retained the current primary annual $PM_{2.5}$ NAAQS at 15.0 µg/m^3. The revised 24-hour $PM_{2.5}$ standard was published on October 17, 2006 (71 FR 61144) and became effective on December 18, 2006. The standard is based on the 3-year average of the 98th percentile of 24-hour concentrations.

On November 13, 2009, U.S. EPA promulgated (74 FR 58688) the initial $PM_{2.5}$ nonattainment areas designations for the 24-hour $PM_{2.5}$ standard across the country (effective December 14, 2009). 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 (December 14, 2012) detailing how the $PM_{2.5}$ standard will be attained by December 14, 2014. However, areas that attain before the required date for submitting a plan may be exempt from certain otherwise applicable requirements.

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

---

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.

redesignated from nonattainment to attainment:

- A determination that the area has attained the $PM_{2.5}$ standard.
- An approved State Implementation Plan (SIP) for the area under Section 110(k).
- 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.
- A fully approved maintenance plan under Section 175(A).
- 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 24-hour $PM_{2.5}$ standard.

On October 4, 2011, U.S. EPA proposed (76 FR 61291) to determine that the Steubenville-Weirton nonattainment area has clean data for the 24-hour $PM_{2.5}$ standard[2]. The proposed determination is based upon quality assured, quality controlled, and certified ambient air monitoring data showing the area has monitored attainment based on 2008 through 2010 data.

The Steubenville-Weirton area has previously been subject to nonattainment area rulemakings for the 1997 fine particle NAAQS. Ohio was only subject to requirements to address the annual standard under the 1997 fine particle NAAQS as there were no monitors in Ohio that violated the 1997 24-hour $PM_{2.5}$ standard of 65 µg/m3. In April, 2012, Ohio EPA submitted a redesignation request and maintenance plan for the Steubenville-Weirton 1997 annual standard nonattainment area.

<u>Geographical Description and Background</u>

The current Steubenville-Weirton nonattainment area is located on the eastern border of Ohio and includes the following counties: Jefferson in Ohio and Hancock and Brooke in West Virginia. This area is shown in Figure 2 under Chapter Three.

As a result of the 2009 $PM_{2.5}$ designations, U.S. EPA designated the Steubenville-Weirton area nonattainment for the 35 µg/m^3 24-hour standard, and Ohio EPA is required to develop a plan to reduce oxides of nitrogen (NO_x), sulfur dioxide (SO_2) and direct $PM_{2.5}$ emissions and to demonstrate that the area will meet the federal 24-hour air quality standard by December

[2] This proposal was based on a February 14, 2011 request submitted by the West Virginia Division of Air Quality.

14, 2014. Ohio's main $PM_{2.5}$ components are primary particles (organic carbon, crustal material, and elemental carbon), SO_2 and NO_x, which were included in the attainment demonstration analysis for the 1997 annual $PM_{2.5}$ NAAQS submitted to U.S. EPA on July 16, 2008. Volatile organic compounds (VOCs) and ammonia (NH3) were not included in the analysis since they were not part of Ohio's 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" [74 FR 20856] (hereafter referred to as "1997 Implementation Rule"). In the 1997 Implementation Rule U.S. EPA presumes NH_3 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 $PM_{2.5}$ standard. This is also consistent with U.S. EPA's "Implementation Guidance for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS)" memorandum issued on March 2, 2012 (hereafter referred to as "2006 Implementation Memo"). In this memorandum, U.S. EPA recommends that "the projected attainment inventory for the nonattainment area includes direct $PM_{2.5}$, SO_2, presumptively NO_x, as well as other precursors that have been determined to be significant through the area's SIP development process." Furthermore, the 2006 Implementation Memo indicates that U.S. EPA believes the overall framework and policy approach of the 1997 Implementation Rule "continues to provide effective and appropriate guidance on the EPA's interpretation of the general statutory requirements that states should address in their SIPs" and that they are "relevant to the statutory requirements" for the 2006 24-hour $PM_{2.5}$ standard.

This document is intended to support Ohio's request that the Ohio portions of the Steubenville-Weirton area be redesignated from nonattainment to attainment for the 24-hour $PM_{2.5}$ standard. In addition, the State of West Virginia may also submit a request for their respective portions of the Steubenville-Weirton area.

Status of Air Quality

$PM_{2.5}$ complete quality-assured ambient air quality monitoring data for the three (3) years, 2008 through 2010, demonstrate that the air quality has met the NAAQS for 24-hour $PM_{2.5}$ in this nonattainment area. The NAAQS attainment, accompanied by decreases in emission levels discussed in Chapter Four, supports a redesignation to attainment for the Steubenville-Weirton area based on the requirements in Section 107(d)(3)(E) of the CAA as amended.

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 Steubenville-Weirton 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

Ohio was also subject to a Federal Implementation Plan under the CAIR replacement rule, the Cross-State Air Pollution Rule (CSAPR) that could have resulted in even greater reductions than the CAIR program. However, on December 30, 2011, the D.C. Circuit Court stayed CSAPR and ordered U.S. EPA to continue administering CAIR pending the court's resolution.

In addition, since the initial designations were made federally enforceable consent decrees have resulted in reductions in emissions from utilities within Jefferson County and across the state, including this area.

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 PM_{10}). However, for the purpose of implementing the $PM_{2.5}$ standard, U.S. EPA's 1997 Implementation Rule stated Subpart 1, rather than Subpart 4, is appropriate for the purpose of implementing $PM_{2.5}$.[72 FR 20589]

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 SO_2 and NO_x emissions from large electric generating units (EGU). Ohio has met the requirements of the federal CAIR to reduce NO_x and SO_2 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 3745-109[3]. On July 6, 2011, U.S. EPA finalized a replacement to the CAIR program, the CSAPR. CSAPR could further assist States in addressing their obligations regarding regionally transported pollution by providing reductions in NO_x and SO_2 emissions in 2012 and 2014. However, on December 30, 2011, the D.C. Circuit Court stayed CSAPR and ordered U.S. EPA to continue administering CAIR pending the court's resolution.

iv.) <u>Section 172(c) requirements</u>

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

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

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.

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

vi.) 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.

U.S. EPA's 2006 Implementation Memo states:

> As mentioned earlier in this memorandum, statewide annual emission inventories are required under 40 CFR Part 51,

> Subpart A. We expect that for many nonattainment areas, these annual inventories will serve as an appropriate starting point for the emission inventories used for SIP development. In contrast with the 1997 annual $PM_{2.5}$ NAAQS, where states rely only on annual inventories in the implementation process, the 2006 24-hour $PM_{2.5}$ NAAQS is designed to protect against peak exposures. Thus, for the 2006 24-hour $PM_{2.5}$ NAAQS, there are some circumstances in which EPA believes that seasonal inventories may be useful for SIP planning purposes. For example, we have observed that in some nonattainment areas, all of the highest fine particle concentrations over the course of a year occur in one season.
>
> If exceedances occur during only one season for each of the years on which the nonattainment designation is based, and this is the case for all subsequent years, we recommend that states develop a seasonal inventory and that they use this inventory for SIP planning purposes….

Ohio EPA analyzed the $PM_{2.5}$ monitoring data for the Steubenville-Weirton area to determine whether the exceedances occurred in only one season. As can be seen in Figure 2 below, exceedances between 2006 and 2008, the years on which the nonattainment designation is based, occurred in the first, second, third and fourth quarters. During subsequent years, 2009 through 2010, exceedances have occurred in the first, third and fourth quarters. Based on this analysis and in consultation with U.S. EPA and the West Virginia Division of Air Quality (WVDAQ), it was determined that an annual inventory would be sufficient for SIP planning, and that a seasonal inventory would not be required.

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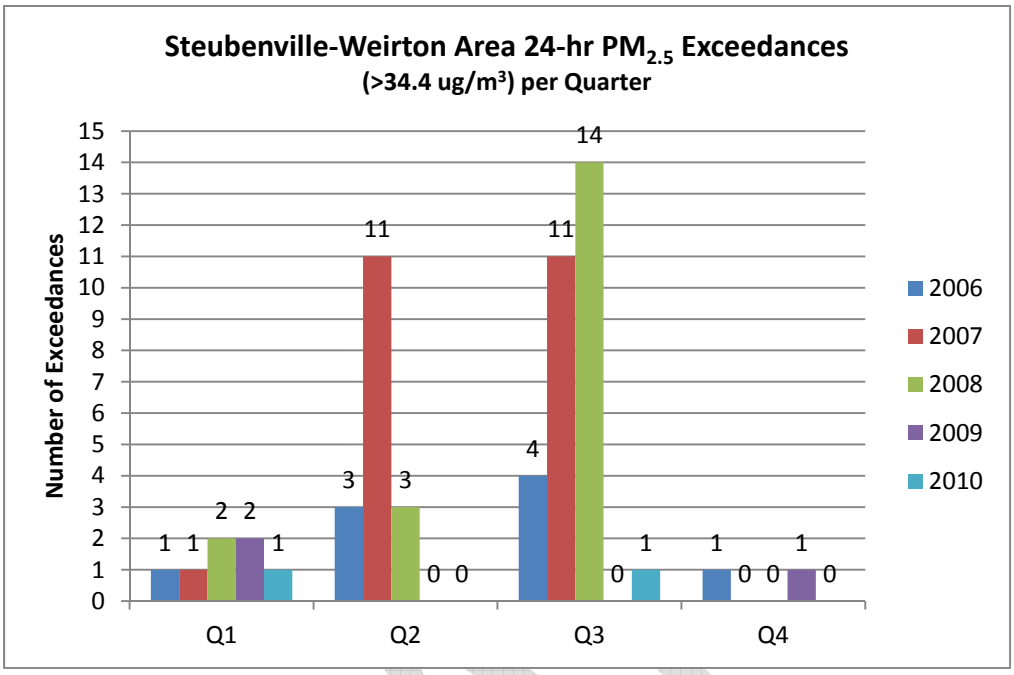
Figure 1 – Steubenville-Weirton 24-hour $PM_{2.5}$ Exceedances



Chapter Six discusses this requirement in more detail.

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CHAPTER THREE

$PM_{2.5}$ MONITORING

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

Requirement 1 of 4

A demonstration that the NAAQS for 24-hour $PM_{2.5}$, as published in 40 CFR 50.7, has been attained.

Background

There are 5 monitors measuring $PM_{2.5}$ concentrations in this nonattainment area. Two monitors in Jefferson County, Ohio[4], two in Brooke County, WV and one in Hancock County, WV. A listing of the design values based on the three-year average of the annual mean concentrations from 2008 through 2010 and a listing of the design values based on the three-year average of the 98th percentile are shown in Table 1. The locations of the monitoring sites for this nonattainment area are shown on Figure 2.

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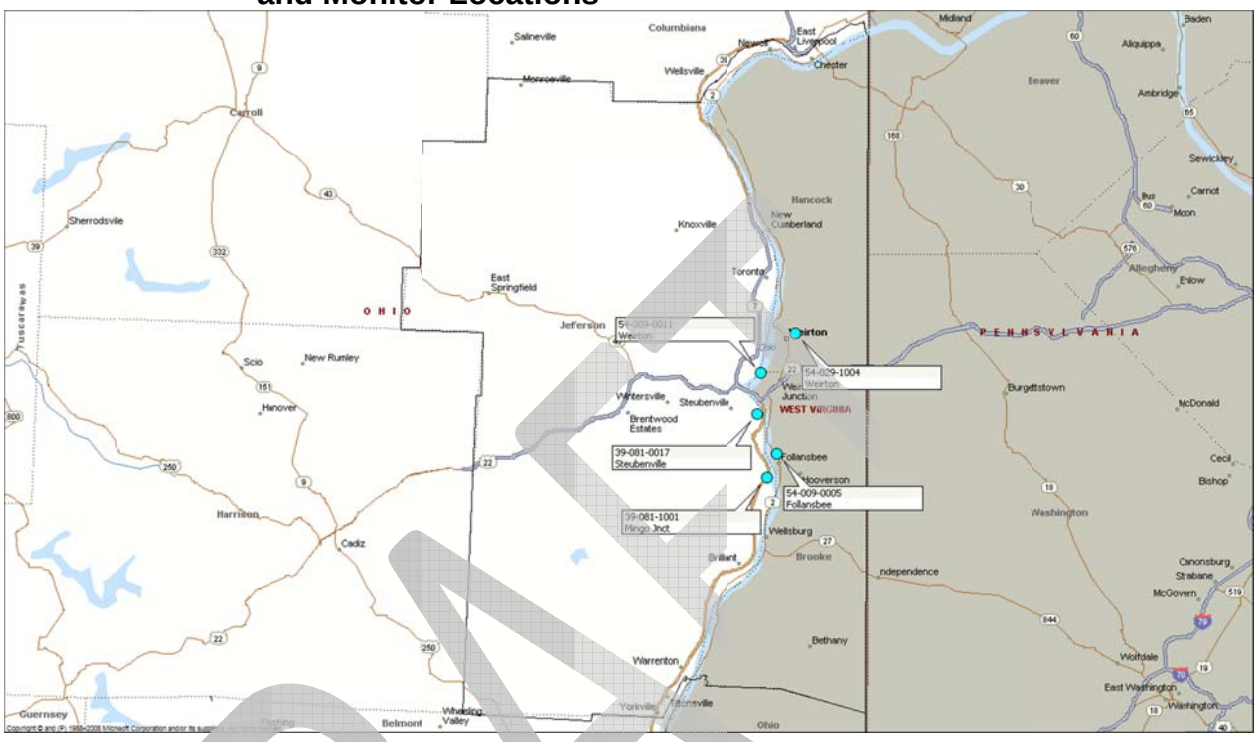
4 Operated by Ohio EPA Division of Air Pollution Control, Southeast District Office.

Demonstration

Figure 2 - Map of the Steubenville-Weirton, OH-WV Nonattainment Area and Monitor Locations



Requirement 2 of 4

Ambient monitoring data quality assured in accordance with 40 CFR 58.10, recorded in the U.S. EPA air quality system (AQS) database, and available for public view.

Demonstration

Ohio EPA has quality assured all data shown in Appendix A in accordance with 40 CFR 58.10 and all other federal requirements. Ohio EPA has recorded the data in the AQS database and, therefore, the data are available to the public.

Requirement 3 of 4

A showing that the three-year average of the 98th percentile of 24-hour concentrations, based on data from all monitoring sites in the area or its affected downwind environs, are below 35 µg/m^3. (This showing must rely on three complete, consecutive calendar years of quality assured data.)

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Background

The following information is taken from U.S. EPA's "Guideline on Data Handling Conventions for the PM NAAQS," U.S. EPA-454/R-99-008, April 1999.

In accordance with the CAA Amendments, three complete years of monitoring data are required to demonstrate attainment at a monitoring site. The 24-hour $PM_{2.5}$ primary and secondary ambient air quality standards are met at an ambient air quality monitoring site when the three-year average of the 24-hour 98th percentile values are less than or equal to 35 $\mu g/m^3$. While calculating design values, one decimal place must be carried in the computations, with final values rounded to the nearest 1 $\mu g/m^3$. Decimals 0. 5 or greater are rounded up, and those less than 0. 5 are rounded down, so that 35.349 $\mu g/m^3$ is the largest concentration that is less than, or equal to 35 $\mu g/m^3$. Values at or below 35 $\mu g/m^3$ meet the standard; values greater than 35 $\mu g/m^3$ exceed the standard. An area is in compliance with the 24-hour $PM_{2.5}$ NAAQS only if every monitoring site in the area meets the NAAQS. An individual site's 3-year average of the 24-hour 98th percentile 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.

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Demonstration

Table 1 - Monitoring Data for the Steubenville-Weirton, OH-WV area for 2008 – 2010

		Annual Standard				24-Hour Standard			
		Year			Average	Year			Average
Site	County	2008	2009	2010	2008-2010	2008	2009	2010	2008-2010
39-081-0017 (a)	Jefferson, OH	14.3	12.1	12.7	13.0	35.2	24.7	29.8	30
39-081-1001		14.1	11.2	12.7	12.7	35.0	23.3	25.1	28
54-009-0005	Brooke, WV	14.7	12.2	14.1	13.7	38.9	23.2	29.8	31
54-009-0011		13.8	11.9	13.5	13.1	34.9	26.3	31.6	31
54-029-1004	Hancock, WV	13.3	11.2	12.6	12.4	35.8	25.2	31.2	31
	Less than 75% capture in at least one quarter								

(a) This site has a 73% capture, resulting in one day of missed data. Based on the data from previous years, this site shows a decreasing tren in monitor readings. Ohio believes that had the missing data been collected it would not have resulted in a design value that would exceed the standard.

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

The design value calculated for the Steubenville-Weirton area demonstrates that the 24-hour $PM_{2.5}$ NAAQS has been attained. However, one monitor site in Jefferson County (site 39-081-0017), did not comply with the 75% data capture requirement for the 2008-2010 period. Specifically, the fourth quarter (October, November, and December) of 2008 has only 73% capture. This monitoring site experienced instrument malfunction during the low percentage capture missing a total of 8 missing 1-in-3 day PM2.5 FRM runs.

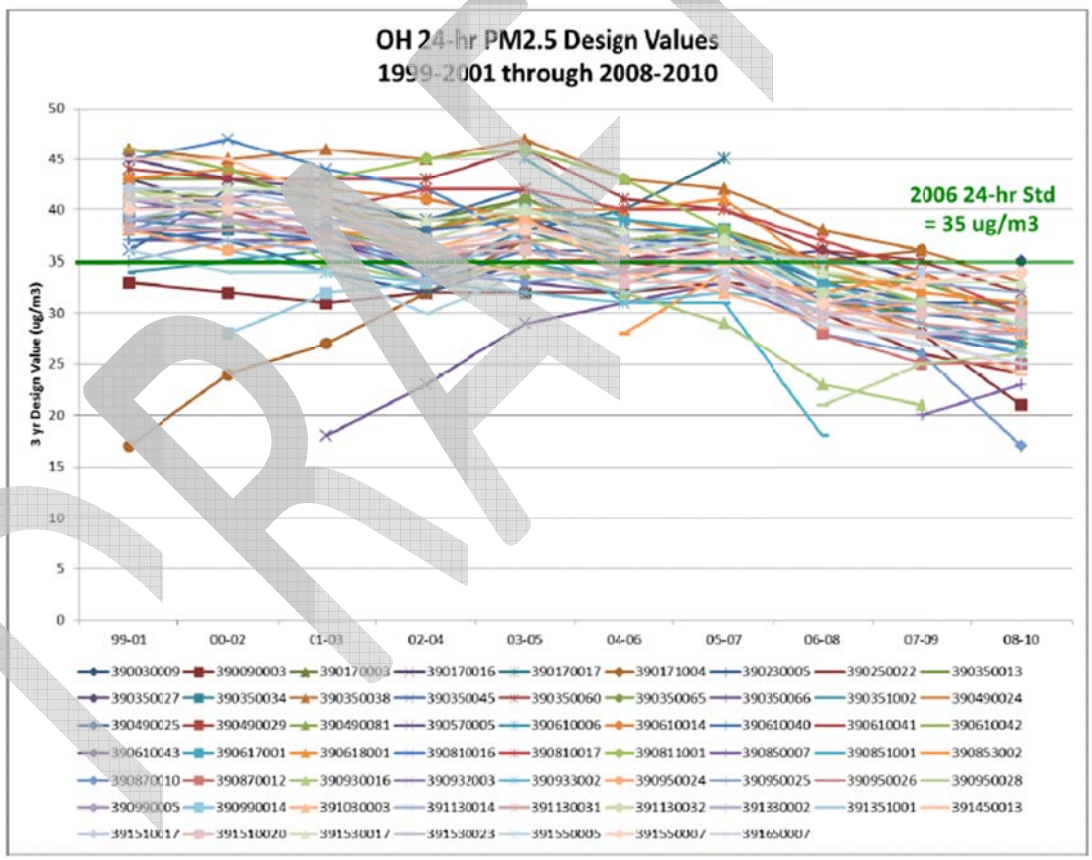
Under 40 CFR Part 50, Appendix N, the use of less than complete data may be approved by U.S. EPA considering such factors as monitoring site closures/moves, monitoring diligence, and nearby concentrations in determining whether to use such data. The maximum 24-hour concentration at this location for 2008 through 2010 was 45.6 µg /m^3. Computing a 2008 through 2010 design value using the maximum concentration would still show the area was in attainment (33 µg /m^3). In addition, Ohio EPA prepared a statistical analysis using multiple imputations to demonstrate attainment of the annual standard (see Ohio EPA's April 2012 submittal to U.S. EPA). Ohio EPA imputed missing values for this site and then performed an ordinary analysis as if the imputed values were real measurements. This statistical analyses performed showed that the three-year average (2008 to 2010) of the mean value based on missing data imputations was also below the annual standard of 15.0 µg/m^3. Therefore, Ohio EPA

believes requirement 3 of 4 has been met.

The area's design values have trended downward as emissions have declined due to cleaner automobiles and fuels, and controls for EGUs.

National monitoring for $PM_{2.5}$ began in 1999. There has been a clear downward trend in design values for all monitors in Ohio and West Virginia, as shown in Figures 3 and 4. Design values have also trended downward nationally, as show in Figure 5.

Figure 3 - Ohio 24-Hour $PM_{2.5}$: Design Values 1999-2001 through 2008-2010



Source: WVDEP: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25dv20082010Final.xls

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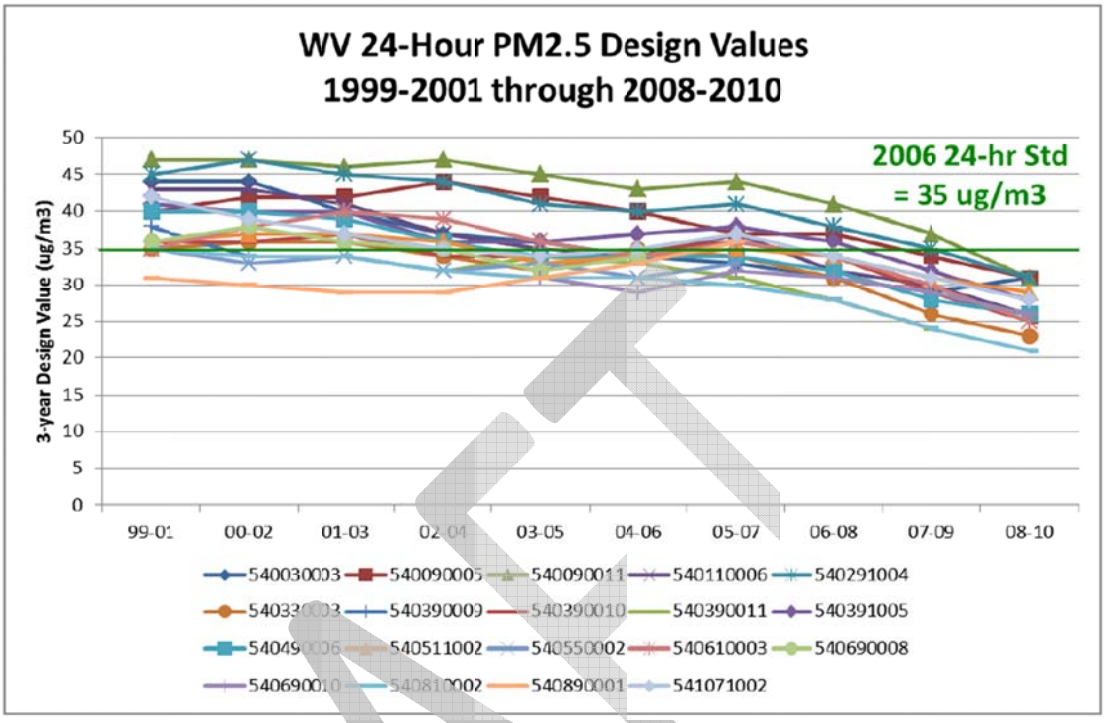
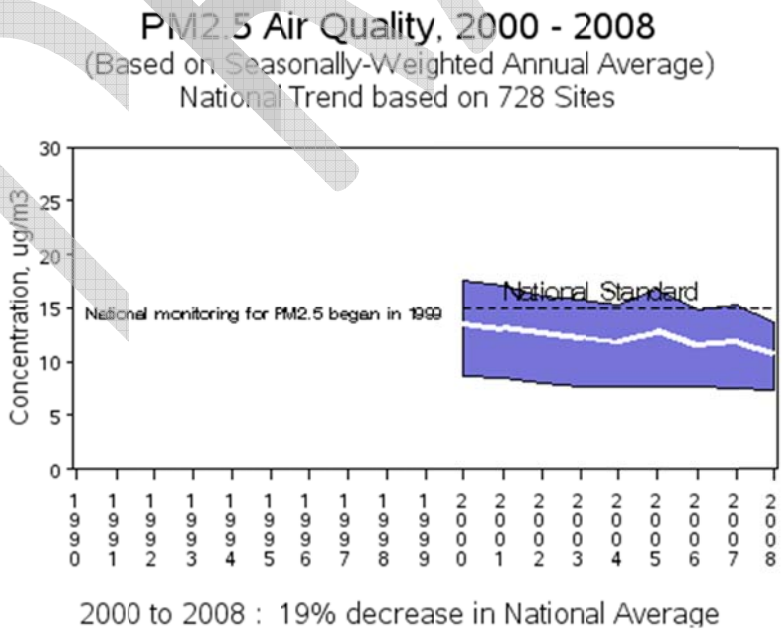
Figure 4 - West Virginia 24-Hour PM2.5 Design Values: 1999-2001 Through 2008-2010



Source: WVDEP: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25dv20082010Final.xls

Figure 5 - $PM_{2.5}$ Mean National Trends



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

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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 2 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 site[5] 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.

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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), SO_2 and NO_x[6]) representative of the year when the area achieves attainment of the 24-hour $PM_{2.5}$ 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 24-hour $PM_{2.5}$ 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 Steubenville-Weirton area. Specific emissions data are provided for all counties, including those in Ohio and West Virginia. West Virginia emissions data were obtained though the West Virginia Department of Environmental Protection (WVDEP). All of these inventories and emissions projections were prepared using similar methodologies, unless otherwise noted. Mobile emissions inventories and projections for all counties were prepared by the Brooke-Hancock-Jefferson Metropolitan Planning Commission (BHJ) and the Ohio Department of Transportation (ODOT), with data provided by Ohio EPA, West Virginia Department of Transportation (WVDOT), and WVDEP.

Requirement 1 of 5

A comprehensive emission inventory of $PM_{2.5}$, SO_2 and NO_x completed for the base year.

Background

The 2005 periodic inventory has been identified as one of the preferred databases for SIP development and coincides with nonattainment air quality in the Steubenville-Weirton area.

Periodic inventories, which include emissions from all sectors are prepared every three years by Ohio EPA. Ohio's 2005

6 VOC and NH_3 are not addressed.

emissions data for all sources (Electrical Generating Unit (EGU-Point); Non-Electrical Generating Unit (Non-EGU); Non-road Mobile (Non-road); Other Area (Area); and Marine; Aircraft; Rail (MAR)) are derived from this inventory. Ohio's point source data derived from this periodic inventory is actual source reported emissions under Ohio's annual emissions reporting program.

West Virginia's point source data are taken from U.S. EPA's CSAPR estimates (EGU) and actual reported data under West Virginia's emissions reporting program (non-EGUs). West Virginia's emissions data for MAR and Area is derived from the 2005 National Emissions Inventory (NEI) while Non-road emissions are derived from NONROAD modeling conducted by WVDAQ.

Demonstration

Ohio's 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 Ohio's portion of the Steubenville-Weirton area is provided in Appendix B. Emissions of $PM_{2.5}$, SO_2 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 Steubenville-Weirton area including area, mobile, and point sources for $PM_{2.5}$, SO_2 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 Report[7]) 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

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

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 source and MAR emissions were taken from the Ohio 2005 periodic inventory submitted to U.S. EPA. These projections were 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. Only $PM_{2.5}$ and NO_x necessitate an emissions inventory analysis. Ohio EPA in consultation with U.S. EPA determined mobile sources are insignificant contributors for SO_2. Consistent with Ohio EPA's attainment demonstration, Ohio EPA continues to consider mobile source SO_2 to be an insignificant contributor to fine particles for this nonattainment area. Based on the results of mobile source emissions projections prepared as part of this redesignation and maintenance plan, Ohio EPA is also making a finding that the regional highway emissions $PM_{2.5}$ and NO_x are insignificant contributors to the nonattainment problem 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 database[8].
- Biogenic emissions are not included in these summaries.
- Non-road emissions were derived from NONROAD modeling conducted by WVDAQ, as found in Appendix D.

West Virginia emission projections were provided by the WVDAQ as summarized below.

- Area source and MAR emissions were compiled from the 2008 NEI and 2015 and 2025 projections were grown using Workforce data.
- Mobile source emissions were calculated using the same methodology as described above for Ohio's portion.
- EGU point source information was compiled from U.S. EPA's CSAPR inventories.

8 http://www.epa.gov/airmarkets/acidrain

- Non-EGU point source information was compiled from West Virginia's 2008 actual emissions inventory and 2015 and 2025 projections were grown using Workforce data.
- Non-road emissions were derived from NONROAD modeling conducted by WVDAQ, as found in Appendix D.

Demonstration

On-Road Emission Estimations

The ODOT, Division of Transportation System Development-Modeling and Forecasting Section and the Brooke-Hancock-Jefferson Metropolitan Planning Commission (BHJ) defined the underlying planning assumptions for the annual $PM_{2.5}$ on-road mobile source emission inventories for the Steubenville-Weirton, OH-WV nonattainment area.

In coordination with the ODOT, BHJ utilizes a regional travel demand forecast model to simulate traffic in the area and to forecast traffic flows for given growth expectations. The model is primarily used as a long range planning tool to evaluate the transportation system including determination of locations where additional travel capacity may be needed and to determine the infrastructure requirements necessary to meet that need. It is also used as a tool for air quality purposes to estimate the total emissions of pollution caused by vehicles in the area. The travel demand forecasting model is used to predict traffic volumes vehicle miles traveled (VMT), travel speeds, and a U.S. EPA computer program called MOVES is used to calculate emissions per mile. The product of these is the total amount of pollution emitted by the on-road vehicles for the area.

Overview

U.S.EPA published a Federal Register notice[9] 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, PM_{10} 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

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

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.

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.

BHJ utilized U.S.EPA's emissions model MOVES to develop emissions factors for SO_2, NO_x and $PM_{2.5}$. Further details on the use of MOVES are found on Appendix C. BHJ maintains a validated region wide Travel Demand Model (TDM) that employs a four-step modeling process consisting of trip generation, trip distribution, mode choice, and route assignment. The current BHJ TMD validation year is 2000. The model uses comparable average daily traffic count data, updated social-economic variables for each of the analysis years by either updating existing or known land use commitment for 2008, 2009, and 2014, or projected 2014 and 2020 variables based on a straight line extrapolation between 2009 set of variables and the Horizon Year 2030 variables. These networks represent all planned federal-aid projects as well as any regionally significant projects found in the BHJ TIP and LRTP expected to be open for traffic by the end of each respective analysis year.

Identifying projected growth centers and understanding urban and rural population changes are essential to determine future transportation needs in a given study area. Travel forecasting procedures require the user delineates the TDM study area into geographic areas called Traffic Analysis Zones. Typically, these Zones are based on factors such as land use, area types (urban, suburban or rural), or political government units such as cities, villages, or townships. The BHJ collects and reviews the TDM independent variables that characterize current and future estimates of the metropolitan area's social and economic activities that may influence land use development patterns.
The following categories of planning data are utilized:

- Population.
- Households.
- Household vehicles.
- Employment.
- Labor force participation.
- Area type.

The principal data requirements of the BHJ travel demand

forecasting model are population and employment, from these variables other characteristics including household, labor force, and personal vehicles may be derived.

BHJ utilizes both base year (2005) and future year data (2010, 2020 and 2030) in the planning process. Planning data are maintained at the Traffic Analysis Zone (TAZ) level, and originate in the 2000 Census of Population and Housing. Base year 2005 and future yare data for each variable are developed through various methods. The MOVES model generated the emissions factor files for base year 2005 and attainment year 2008 representing transportation improvement programs implemented in the BHJ Region. The model also generated emission factors for two future year scenarios 2015 and 2025.

The single season approach for temperature and relative humidity uses weather data collected by the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC). The data used in this report, taken from the Pittsburgh International Airport collection center, is representative of 12 months in 2009.

BHJ and ODOT incorporates a variety of sources of local data to both improve and confirm the accuracy of VMT, as well as other travel-related parameters. Free flow speeds used on the highway and transit networks are based on travel time studies performed locally. A BHJ post-processing program uses the loaded highway network to generate VMT by hour, VMT by speed distribution, and VMT by facility type. These tables are then included as input into MOVES.

<u>On-Road Mobile Emission Estimations</u>

Tables 2 through 8 contain the results of the emissions analysis for the appropriate years. All emissions estimations are expressed in tons per year (tpy).

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Table 2 - Jefferson County, OH, Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2025
$PM_{2.5}$ (tpy)	73.17	60.97	31.88	16.49
NO_x (tpy)	2105.85	1758.04	870.17	322.71
SO_2 (tpy)	18.18	5.65	3.93	3.56
Annual VMT	562,071,084	557,286,295	544,597,475	572,657,778

Table 3 – Summary of Ohio Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2025
$PM_{2.5}$ (tpy)	73.17	60.97	31.88	16.49
NO_x (tpy)	2105.85	1758.04	870.17	322.71
SO_2 (tpy)	18.18	5.65	3.93	3.56
Annual VMT	562,071,084	557,286,295	544,597,475	572,657,778

Table 4 – Brooke County, WV, Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2025
$PM_{2.5}$ (tpy)	19.41	14.42	6.97	4.34
NO_x (tpy)	540.40	412.02	174.71	62.47
SO_2 (tpy)	7.01	2.11	1.51	1.26
Annual VMT	212,244,639	212,778,859	219,881,355	216,619,184

Table 5 – Hancock County, WV, Emissions Estimations for On-Road Mobile Sources

	2005	2008	2015	2025
$PM_{2.5}$ (tpy)	18.63	13.51	6.53	4.10
NO_x (tpy)	482.75	360.25	149.00	52.09
SO_2 (tpy)	6.58	1.92	1.36	1.10
Annual VMT	180,767,718	177,219,697	180,298,107	174,534,361

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

	2005	2008	2015	2025
$PM_{2.5}$ (tpy)	38.04	27.93	13.5	8.44
NO_x (tpy)	1023.15	772.27	323.71	114.56
SO_2 (tpy)	13.59	4.03	2.87	2.36
Annual VMT	393,012,357	389,998,556	400,179,462	390,998,315

Table 7 – Emissions Estimations Totals for On-Road Mobile Sources for the Steubenville-Weirton Area

	2005	2008	2015	2025
$PM_{2.5}$ (tpy)	111.21	88.9	45.38	24.93
NO_x (tpy)	3129	2530.31	1193.88	437.27
SO_2 (tpy)	31.77	9.68	6.80	5.92
Annual VMT	955,083,441	947,284,851	944,776,937	963,656,093

The following table identifies the percentage of mobile emissions of all emissions, for each pollutant in the entire Steubenville-Weirton area and Ohio's portion of this area for 2015 and 2025.

Table 8 – Percent of Mobile Emissions for the Steubenville-Weirton Area in 2015 and 2025

		NO_x		SO_2		$PM_{2.5}$	
		2015	2025	2015	2025	2015	2025
Steubenville-Weirton Area	Total (tpy)	25,563.36	17,533.17	74,806.60	47,445.13	2,740.52	2,698.00
	Mobile (tpy)	1,193.88	437.27	6.80	5.92	45.38	24.93
	% Mobile	4.67%	2.49%	0.009%	0.012%	1.66%	0.92%
Ohio Portion	Total (tpy)	22,883.61	15,237.65	73,080.25	45,861.72	2,005.04	1,997.72
	Mobile (tpy)	870.17	322.71	3.93	3.56	31.88	16.49
	% Mobile	3.80%	2.12%	0.005%	0.008%	1.59%	0.83%

NO_x constitutes less than five percent (4.67%) of the area's total NO_x emissions in the 2015 horizon year and less than three percent (2.49%) of the area's total NO_x emissions in the 2025 horizon year.

SO_2 constitutes less than one percent (<1%) of the area's total SO_2 emissions in the 2015 and 2025 horizon years.

$PM_{2.5}$ constitutes less than two percent (1.66%) of the area's total $PM_{2.5}$ emissions in the 2015 horizon year and

less than one percent (0.92%) of the area's total $PM_{2.5}$ emissions in the 2025 horizon year.

Therefore, the Ohio EPA is herein making a finding that the area's highway emissions for $PM_{2.5}$, NO_x, and SO_2 are insignificant contributors to the nonattainment problem of the Steubenville-Weirton area, as agreed upon as a part of the interagency consultation process. Because of this finding it is not necessary to establish mobile emission budgets for this area in the 2015 and 2025 horizon years. The nonattainment area meets the 40 CFR 93.109(m) criteria for PM2.5, NO_x, and SO_2. Throughout this document, Ohio EPA demonstrates that it would be unreasonable to expect that the Steubenville-Weirton area would experience enough motor vehicle emissions growth in PM2.5, NO_x, and SO_2 for a $PM_{2.5}$ NAAQS violation to occur. Moreover, Ohio EPA demonstrates that the percentage of motor vehicle emissions in the context of the total SIP inventory, the current state of air quality as determined by monitoring data, the absence of SIP motor vehicle control measures, and historical trends and future projections of the growth of motor vehicle emissions, are evidence enough to consider mobile source PM2.5, NO_x, and SO_2 insignificant contributors to fine particles.

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 2025 as the maintenance year for this redesignation request. This document contains projected emissions inventories for 2015 and 2025.

Emission projections for the Steubenville-Weirton area were performed using the following approaches:

- As performed by ODOT and BHJ, 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 and area categories. These files were used to develop Ohio's portion of this nonattainment area 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 M[10]).

- 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 except non-EGU $PM_{2.5}$. The 2025 maintenance year is based on emissions estimates from the 2018 LADCO modeling, for all sectors except non-EGU $PM_{2.5}$. Non-EGU $PM_{2.5}$ emissions for 2015 and 2025 were grown from 2005 and 2009 emissions estimates.

Ohio EPA is identifying emissions projections for 2015 and 2025 for EGUs with implementation of the CAIR program. U.S. EPA has raised concerns regarding the CAIR program and its remand. However, Ohio EPA believes these are the most appropriate and accurate future projections. Although CSAPR has been stayed by the D.C. Circuit Court (December 30, 2011), the Court has ordered U.S. EPA to continue administering CAIR pending the court's resolution. It is believed that CSAPR will provide even greater reductions in emissions than the CAIR program once resolved; therefore, these emissions projections will be conservative.

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 SO_2. CAIR replaced the NOx SIP Call for EGUs. The intent of the CAIR program is for national

[10] http://www.ladco.org/tech/emis/current/index.php

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 SO_2 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 SO_2 will decrease to 208,000 tons per year, within Ohio[11]. On December 23, 2008, U.S. EPA's CAIR program was remanded without vacatur by the D.C. Circuit Court.

As can be seen in Table 9 below, Ohio has seen a significant decline in the 264,000 tons of NO_x and 1,373,000 tons of SO_2 emitted in 2005. In 2008 and 2009 facilities began preparing for and implementing control programs to address CAIR[12] and consent decrees.

Table 9 - Reductions in SO_2 and NO_x EGU Emissions Between 2008 and 2009

	SO_2			NO_x		
	2008	**2009**	**Change**	**2008**	**2009**	**Change**
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 Tracking[13]

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 SO_2 reductions are to be implemented under CAIR:

11 http://www.epa.gov/CAIR/oh.html
12 Under CAIR, NOx reductions are to occur beginning in 2009 while SO2 reductions are to occur beginning in 2010.
13 http://www.epa.gov/airmarkets/quarterlytracking.html

Table 10 – Reductions in SO_2 and NO_x EGU Emissions Between the First Half of 2008 and 2010

	SO_2			NO_x		
	2008 (1st half)	2010 (1st half)	Change	2008 (1st half)	2010 (1st 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 Tracking[14]

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

"Based on emissions monitoring data, EPA has observed substantial reductions in SO_2 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.[15]"

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 this nonattainment area and throughout Ohio.

On July 6, 2011, U.S. EPA finalized a replacement to the CAIR program, the CSAPR. CSAPR would preserve those initial reductions achieved under CAIR and provide even greater reductions in NO_x and SO_2 emissions in 2012 and 2014, ahead of the 2015 CAIR Phase 2. As a result of CSAPR, U.S. EPA projected that in 2012 emissions of NO_x will decrease to 90,842 tons per year and in 2014 to 85,744 tons per year while SO_2 will decrease to 304,022 tons per year in 2012 and 134,333 tons per year in 2014, within Ohio. In addition, U.S. EPA projections indicated that as a result of implementation of CSAPR, there will be no maintenance issues within this entire nonattainment area. However, on December 30, 2011, the D.C. Circuit Court stayed CSAPR and ordered U.S. EPA to continue administering CAIR pending the court's resolution.

Therefore, it is Ohio EPA's belief it is most appropriate to evaluate Ohio EPA's demonstration that the projected level of

14 http://www.epa.gov/airmarkets/quarterlytracking.html
15 http://www.epa.gov/airmarkets/background.htm

emissions is sufficient to maintain the 24-hour $PM_{2.5}$ standard by assessing future year emissions that include the CAIR program.

The detailed inventory information for the Ohio portion of the Steubenville-Weirton 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 Appendix C.

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 (Area); Marine, Aircraft, Rail (MAR); and On-road Mobile (On-road).

Maintenance is demonstrated when the future-year (2025) projected emission totals are below the 2008 attainment year totals.

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 during 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, 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.

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Table 11 - Jefferson County, Ohio $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – Without CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	1,307.90	1,372.80	1,405.39	1,449.64	-76.84
Non-EGU	461.57	461.42	437.63	413.69	47.73
Non-road	24.30	22.50	17.15	11.25	11.25
Area	110.12	110.60	108.49	105.97	4.63
MAR	8.07	7.25	4.50	0.68	6.57
On-road	73.17	60.97	31.88	16.49	44.48
TOTAL	1,985.13	2,035.54	2,005.04	1,997.72	37.82

Table 12 - Brooke County, West Virginia $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	155.12	166.68	155.84	141.59	25.09
Non-road	11.04	9.46	6.47	3.76	5.70
Area	208.48	219.93	217.55	216.00	3.93
MAR	17.07	3.85	3.87	3.91	-0.06
On-road	19.41	14.42	6.97	4.34	10.08
TOTAL	411.12	414.34	390.70	369.60	44.74

Table 13 - Hancock County, West Virginia $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	182.02	90.97	83.84	74.81	16.16
Non-road	9.61	8.20	5.57	3.10	5.10
Area	313.70	232.96	230.26	229.92	3.04
MAR	26.18	18.46	18.58	18.75	-0.29
On-road	18.63	13.51	6.53	4.10	9.41
TOTAL	550.14	364.10	344.78	330.68	33.42

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Table 14 – Steubenville-Weirton Area $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, Estimated 2008, and projected 2015 and 2025 (tpy) – Without CAIR (Ohio) and With CSAPR (West Virginia)

PM2.5	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
Jefferson	1,985.13	2,035.54	2,005.04	1,997.72	37.82
Hancock, WV	550.14	364.10	344.78	330.68	33.42
Brooke, WV	411.12	414.34	390.70	369.60	44.74
COMBINED $PM_{2.5}$ TOTAL	2,946.39	2,813.98	2,740.52	2,698.00	115.98

<u>NO_x</u>

Table 15 - Jefferson County, Ohio NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	41,046.61	35,486.86	19,488.27	12,631.73	22,855.13
Non-EGU	1,991.85	1,991.96	1,938.71	1,863.75	128.21
Non-road	234.30	207.68	131.49	96.59	111.09
Area	251.38	253.45	252.46	251.93	1.52
MAR	317.3	300.96	202.51	70.94	230.02
On-road	2,105.85	1,758.04	870.17	322.71	1,435.33
TOTAL	45,947.29	39,998.95	22,883.61	15,237.65	24,761.30

Table 16 - Brooke County, West Virginia NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	692.76	789.79	742.21	679.29	110.50
Non-road	204.75	169.37	88.18	59.17	110.20
Area	311.36	119.10	117.87	116.12	2.98
MAR	444.99	112.83	113.54	114.56	-1.73
On-road	540.40	412.02	174.71	62.47	349.55
TOTAL	2,194.26	1,603.11	1,236.51	1,031.61	571.50

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Table 17 - Hancock County, West Virginia NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	1,181.15	574.68	524.80	462.67	112.01
Non-road	135.47	119.41	74.58	51.49	67.92
Area	1,446.78	158.02	156.60	154.58	3.44
MAR	695.36	534.89	538.26	543.08	-8.19
On-road	482.75	360.25	149.00	52.09	308.16
TOTAL	3,941.51	1,747.25	1,443.24	1,263.91	483.34

Table 18 - Steubenville-Weirton Area NO_x Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR (Ohio) and With CSAPR (West Virginia)

NOx	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
Jefferson	45,947.29	39,998.95	22,883.61	15,237.65	24,761.30
Hancock, WV	3,941.51	1,747.25	1,443.24	1,263.91	483.34
Brooke, WV	2,194.26	1,603.11	1,236.51	1,031.61	571.50
COMBINED NOx TOTAL	52,083.06	43,349.31	25,563.36	17,533.17	25,816.14

SO_2

Table 19 - Jefferson County, Ohio SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	225,594.94	135,506.74	72,203.22	45,073.14	90,433.60
Non-EGU	849.92	782.87	757.91	692.85	90.02
Non-road	17.31	3.09	0.40	0.45	2.64
Area	110.89	109.15	101.75	91.69	17.46
MAR	26.16	21.61	13.04	0.48	21.13
On-road	18.18	5.65	3.93	3.56	2.09
TOTAL	226,617.40	136,429.11	73,080.25	45,862.17	90,566.94

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Table 20 - Brooke County, West Virginia SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	620.55	766.54	718.43	654.91	111.63
Non-road	12.13	2.17	0.27	0.30	1.87
Area	167.98	163.76	156.62	146.42	17.34
MAR	20.32	6.34	6.38	6.44	-0.10
On-road	7.01	2.11	1.51	1.26	0.85
TOTAL	827.99	940.92	883.21	809.33	131.59

Table 21 - Hancock County, West Virginia SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CSAPR

Sector	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
EGU Point	0.00	0.00	0.00	0.00	0.00
Non-EGU	1,480.85	613.04	572.55	519.57	93.47
Non-road	9.72	1.73	0.21	0.23	1.50
Area	728.92	248.63	237.35	221.22	27.41
MAR	32.27	31.47	31.67	31.96	-0.49
On-road	6.58	1.92	1.36	1.10	0.82
TOTAL	2,258.34	896.79	843.14	774.08	122.71

Table 22 - Steubenville-Weirton Area SO_2 Emission Inventory Totals for Base Year 2005, Estimated 2008, and Projected 2015 and 2025 (tpy) – With CAIR (Ohio) and With CSAPR (West Virginia)

SO2	2005 Base	2008 Attainment	2015 Interim	2025 Maintenance	Safety Margin
Jefferson	226,617.40	136,429.11	73,080.25	45,862.17	90,566.94
Hancock, WV	2,258.34	896.79	843.14	774.08	122.71
Brooke, WV	827.99	940.92	883.21	809.33	131.59
COMBINED SO2 TOTAL	229,703.73	138,266.82	74,806.60	47,445.58	90,821.24

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$PM_{2.5}$, NO_x, and SO_2

Table 23 - Steubenville-Weirton Area Comparison of 2008 Attainment Year and 2015 and 2025 Projected Emission Estimates (tpy)

	2008 Base	2015 Interim	2015 Projected Decrease	2025 Maintenance	2025 Projected Decrease
$PM_{2.5}$	2,813.98	2,740.52	73.46	2,698.00	115.98
NO_x	43,349.31	25,563.36	17,785.95	17,533.17	25,816.14
SO_2	138,266.82	74,806.60	63,460.22	47,445.58	90,821.24

As shown in the table above (Table 23), $PM_{2.5}$ emissions in the nonattainment area are projected to decrease by 73.46 tpy in 2015 and 115.98 tpy in 2025. NO_x emissions in the nonattainment area are projected to decrease by 17,785.95 tpy in 2015 and 25,816.14 tpy in 2025. SO_2 emissions in the nonattainment area are projected to decline by 63,460.22 tpy in 2015 and 90,821.24 tpy in 2025.

In general, EGU source emissions, and to a lesser extent, area source emissions and Non-EGU source emissions show a decrease. Cleaner vehicles and fuels are expected to be in place in 2009 and 2018, and the CSAPR 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 EGUs, Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements[16], Highway Heavy-Duty Engine Rule[17], and the Non-Road Diesel Engine Rule[18] are factored into the changes.

In addition to the above, the Cardinal Station (AEP) in Jefferson County implemented changes in late 2007 and early 2008. Two units, #1 and #2 (each 600 megawatt) installed and began continuously operating scrubbers, and a restricted SO_2 allowable emission rate was incorporated into a federally enforceable permit demonstrating they will not cause or contribute to a violation of a NAAQS and/or Prevention of Significant Deterioration increment violation based upon air dispersion modeling. These scrubbers began operating in December 2007 and March 2008.[19] Also these two units were required by a federally enforceable consent decree to operate

16 http://www.epa.gov/fedrgstr/EPA-AIR/2000/February/Day-10/a19a.htm
17 http://www.epa.gov/fedrgstr/EPA-AIR/1997/October/Day-21/a27494.htm
18 http://www.epa.gov/fedrgstr/EPA-AIR/1998/October/Day-23/a24836.htm
19 The lower rates will be incorporated into the facility's Title V operating permit at renewal.

their SNCR continuously to control and reduce NOx emissions by January 2009. Moreover, unit #3 (630 megawatt) is undergoing construction for the installation of a scrubber, to control SO_2 emissions in the future. The permit-to-install these scrubbers will require a restricted SO_2 allowable emission rate. The scrubbers will begin operating by January 2012 in accordance with their federally enforceable consent decree. Similar to unit #1 and #2, unit #3 was required by a federally enforceable consent decree to operate SNCR continuously to control and reduce NOx emissions by January 2009.

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 SO_2 emissions have contributed to the attainment of the 24-hour $PM_{2.5}$ 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) and the application of tighter federal standards on new vehicles. Also Title IV of the CAA, the NO_x SIP Call, CAIR, and federal consent decrees required the reductions of SO_2 and NO_x emissions from utility sources. Reductions achieved are discussed in greater detail under Chapter Five.

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Table 24 - Steubenville-Weirton Area Comparison of 2005 Base Year and 2008 Attainment Year On-Road, Non-Road and EGU Reductions

	2005	2008
On-road $PM_{2.5}$	111.21	88.90
On-road NO_x	3,129.00	2,530.31
On-road SO_2	31.77	9.68
Non-road $PM_{2.5}$	44.95	40.16
Non-road NO_x	574.51	496.47
Non-road SO_2	39.16	6.99
EGU $PM_{2.5}$	1,307.90	1,372.80
EGU NO_x	41,046.61	35,486.86
EGU SO_2	225,594.94	135,506.74

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 2025 projected maintenance year inventories to assess emission trends, as necessary, and to assure continued compliance with the 24-hour $PM_{2.5}$ standard.

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CHAPTER FIVE

CONTROL MEASURES AND REGULATIONS

CAA Section107 (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 and 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 3745-17[20].

In addition, Ohio EPA promulgated NO_x SIP Call rules (OAC Chapter 3745-14[21]), CAIR (OAC Chapter 3745-109[22]), and NO_x Reasonably Available Control Technology rules (OAC Chapter 3745-110[23]) 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 SO_2 until such time CSAPR is implemented. Then the CSAPR 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 papers[24] researching different stationary source categories. The results were compiled into two reports[25]. The second consultant, Environ, investigated control options for mobile sources. The results were compiled into two reports[26]. 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 developed[27]. 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

20 http://www.epa.ohio.gov/dapc/regs/3745_17.aspx
21 http://www.epa.ohio.gov/dapc/regs/3745_14.aspx
22 http://www.epa.ohio.gov/dapc/regs/3745_109.aspx
23 http://www.epa.ohio.gov/dapc/regs/3745_110.aspx
24 http://www.ladco.org/reports/control/white_papers
25 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
26 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
27 http://www.ladco.org/reports/control/modeling/round4_modeling.pdf

approach) that 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 2014. If a State demonstrates attainment will occur by 2014 or earlier, U.S. EPA considers the attainment demonstration to demonstrate achievement of RFP. However, if a State attains the standard prior to the requirement to submit an attainment demonstration, 2012, an attainment demonstration is not required.

Demonstration

The Steubenville-Weirton area has attained the standard prior to the deadline for submitting an attainment demonstration; 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 2005 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. NOx 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 SO_2. CAIR replaced the NOx 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 3745-14[28] 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 NOx 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.

<u>Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards</u>

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.

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

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 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 3745-31[29]. 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

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

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

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 $PM_{2.5}$, SO_2, and NO_x as required for maintenance of the 24-hour $PM_{2.5}$ standard in the Steubenville-Weirton 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 Steubenville-Weirton area.

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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 98th percentile 24-hour $PM_{2.5}$ concentration of 35.5 µg/m^3 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 98th percentile 24-hour $PM_{2.5}$ concentration of 35.0 µg/m^3 or greater occurs within the maintenance area. A

violation of the standard (three-year average of the 98th percentile 24-hour $PM_{2.5}$ concentration of 35.0 µg/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 24-hour $PM_{2.5}$. 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 $PM_{2.5}$, SO_2, 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 $PM_{2.5}$, SO_2, and NO_x sources potentially subject to future additional control requirements.

Demonstration

The following is a list of $PM_{2.5}$, SO_2, and NO_x sources potentially subject to future controls.

- ICI Boilers - SO_2 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;

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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.

The public hearing to receive comments on the redesignation request was held on _____, at the _____, Ohio. The public comment period closed on _____. Appendix E includes a copy of the comment received, public notice, certification of publication, and the transcript from the public hearing.

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CHAPTER EIGHT

CONCLUSIONS

The Steubenville-Weirton 24-hour $PM_{2.5}$ nonattainment area has attained the 2006 24-hour 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 Steubenville-Weirton 24-hour $PM_{2.5}$ 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 SO_2 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 Steubenville-Weirton 24-hour $PM_{2.5}$ nonattainment area be redesignated to attainment simultaneously with U.S. EPA approval of the maintenance plan provisions contained herein.

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