west virginia department of environmental protection

REDESIGNATION REQUEST
AND
MAINTENANCE PLAN
FOR THE
WEST VIRGINIA PORTION
OF THE
HUNTINGTON-ASHLAND, WV-KY-OH
1997 $PM_{2.5}$ NONATTAINMENT AREA

PROPOSED
May 2011

Promoting a healthy environment.

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REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE WEST VIRGINIA PORTION OF THE HUNTINGTON-ASHLAND, KY-OH-WV 1997 $PM_{2.5}$ NONATTAINMENT AREA

CHAPTER ONE

Summary
The State of West Virginia is requesting that the U.S. Environmental Protection Agency (EPA) redesignate the West Virginia Portion of the Huntington-Ashland (WV-KY-OH) 1997 $PM_{2.5}$ Nonattainment Area to attainment pursuant to the provisions of the Clean Air Act, section 107. The State is asking that EPA concurrently approve, as a revision to the State Implementation Plan (SIP), the related Clean Air Act, section 175A maintenance plan which demonstrates that the area will continue to meet the $PM_{2.5}$ air quality standards for at least ten more years.

Introduction
The Clean Air Act (CAA) requires areas failing to meet a National Ambient Air Quality Standard (NAAQS) to develop State Implementation Plans (SIP's) to expeditiously attain and maintain the standard. The United States Environmental Protection Agency (EPA) revised the NAAQS for particulate matter in July 1997. It replaced the existing PM_{10} standard with a health based $PM_{2.5}$ standard and retained the PM_{10} standard as a "coarse" standard protecting welfare. The 1997 $PM_{2.5}$ standards include an annual standard set at 15.0 micrograms per cubic meter ($\mu g/m^3$), based on the 3-year average of annual mean $PM_{2.5}$ concentrations and a 24-hour standard of 65 $\mu g/m^3$, based on the 3-year average of the 98^{th} percentile of 24-hour concentrations.

The revised NAAQS were legally challenged in the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit). On May 14, 1999, the D.C. Circuit remanded, without vacatur, the standard back to EPA. The remand did not question the level at which EPA set the standards but rather the constitutionality of the CAA provision that authorizes EPA to set national air quality standards. EPA requested a rehearing which the D.C. Circuit denied. Therefore, in December 1999, EPA appealed the D.C. Circuit decision to the U.S. Supreme Court. The U.S. Supreme Court issued a decision on February 27, 2001 that unanimously affirmed the constitutionality of the CAA provision but did remand several other issues back to the D.C. Circuit, including the issue of whether EPA acted arbitrarily and capriciously in establishing the specific levels of the standards.

The D.C. Circuit heard arguments in this remanded case in December 2001, and issued its decision on March 26, 2002. The D.C. Circuit rejected the claims that the EPA had acted arbitrarily and capriciously in setting the levels of the standards.

On December 17, 2004, EPA promulgated the initial $PM_{2.5}$ nonattainment areas designations for the $PM_{2.5}$ standards across the country. Modifications to those designations were made and an effective date was set at April 5, 2005. Unlike Subpart 2 of the CAA Amendments of 1990 which defined five ozone nonattainment classifications for the areas that exceed the NAAQS based on the severity of the ozone levels, $PM_{2.5}$ nonattainment designations are simply labeled "nonattainment." The CAA Amendments require states with $PM_{2.5}$ nonattainment areas to submit a plan within three years of the effective date of the designations (April 5, 2008) detailing how the $PM_{2.5}$ standards would be attained

by April 5, 2010. The West Virginia Department of Environmental Protection (DEP) submitted its attainment demonstration for the Huntington-Ashland area on May 28, 2009. EPA notified the DEP that the SIP submittal was technically and administratively complete by letter dated November 10, 2009.

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

I. A determination that the area has attained the $PM_{2.5}$ standard.
II. An approved State Implementation Plan (SIP) for the area under Section 110(k).
III. A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and other federal requirements.
IV. A fully approved maintenance plan under Section 175(A).
V. A determination that all Section 110 and Part D requirements have been met.

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

Geographical Description and Background

The Huntington-Ashland, WV-KY-OH $PM_{2.5}$ nonattainment area (Huntington-Ashland area) is a multi-state nonattainment area, comprising Cabell and Wayne Counties and the Graham tax district in Mason County, West Virginia; Boyd County and the portion of Lawrence County described by U.S. Census 2000 block group identifier 21-127-9901-6 in Kentucky; along with Lawrence and Scioto Counties, Monroe and Sprigg Townships in Adams County, and Addison and Cheshire Townships in Gallia County in Ohio. This area is shown in Figure 1 under Chapter Three. The Huntington-Ashland area has not previously been subject to nonattainment area rulemakings for fine particles.

As a result of the 2005 $PM_{2.5}$ designations, EPA designated the Huntington-Ashland area nonattainment for the 15.0 $\mu g/m^3$ annual standard, and West Virginia DEP was 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 would meet the federal annual air quality standard by April 5, 2010. West Virginia'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. Volatile organic compounds (VOCs) and ammonia (NH_3) were not included in the analysis since they were not part of West Virginia's current attainment strategy for $PM_{2.5}$ (although controls for VOCs have been implemented for ozone nonattainment). This is consistent with EPA's "Clean Air Particle Implementation Rule" [74FR 20856] (hereafter referred to as "Implementation Rule"). In the Implementation Rule 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 EPA makes a technical demonstration that emissions of VOCs significantly contribute to nonattainment.

This document is intended to support West Virginia's request that the West Virginia portions of the Huntington-Ashland area be redesignated from nonattainment to attainment for the1997 $PM_{2.5}$ standard. In addition, the States of Kentucky and Ohio also intend to submit requests for their respective portions of the Huntington-Ashland area.

Status of Air Quality

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

CHAPTER TWO

Requirements for Redesignation

EPA has published detailed guidance in a memorandum from John Calcagni, Director, Air Quality Management Division, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment* (redesignation guidance), issued September 4, 1992, to Regional Air Directors. This redesignation request and maintenance plan are based on the redesignation guidance, supplemented with additional guidance received from staff of EPA Region III.

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

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

This demonstration 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.

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 West Virginia to adopt or implement control measures for these counties beyond the federal measures.

West Virginia DEP has adopted two federal rules recently that will have a significant impact Statewide on $PM_{2.5}$ emissions in the future:

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

In addition, since the initial designations were made, federally enforceable consent decrees have resulted in reductions in emissions from utilities across the state, 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 1997 $PM_{2.5}$ standard, EPA's Implementation Rule stated Subpart 1, rather than Subpart 4, is appropriate for the purpose of implementing $PM_{2.5}$.[72 FR 20589]

i.) Section 110(a) requirements

Section 110(a) of Title I of the CAA contains the general requirements for a SIP. Section 110(a)(2) provides that the implementation plan submitted by a state must have been adopted by the state after reasonable public notice and hearing, and that, among other things, it must include enforceable emission limitations and other control measures, means or techniques necessary to meet the requirements of the CAA; provide for establishment and operation of appropriate devices, methods, systems and procedures necessary to monitor ambient air quality; provide for implementation of a source permit program to regulate the modification and construction of any stationary source within the areas covered by the plan; include provisions for the implementation of Part C, prevention of significant deterioration (PSD) and Part D, NSR permit programs; include criteria for stationary source emission control measures, monitoring, and reporting; include provisions for air quality modeling; and provides for public and local agency participation in planning and emission control rule development. In West Virginia's December 11, 2007, October 1, 2009 infrastructure SIP submissions and March 18, 2010 certification, West Virginia 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, EPA finalized CAIR to reduce SO_2 and NO_x emissions from large electric generating units (EGU). West Virginia has met the requirements of the federal CAIR to reduce NO_x and SO_2 emissions contributing to downwind states. On August 4, 2009, EPA approved West Virginia's CAIR program [74FR38536] , which can be found in West Virginia's Code of State Rules at 45 CSR39, 45CSR40, and 45CSR41. On July 6, 2010, EPA proposed a replacement to the CAIR program, the Transport Rule [75 FR 45210]. Upon finalization, it will further assist States in addressing their obligations regarding regionally transported pollution by providing reductions in NO_x and SO_2 emissions in 2012 and 2014.

ii.) Section 172(c) requirements

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

iii.) Conformity

The state must work with 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 EPA's conformity regulation upon issuance, as applicable.

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

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

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

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

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

Chapter Six discusses this requirement in more detail.

CHAPTER THREE

$PM_{2.5}$ MONITORING

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

Requirement 1 of 4

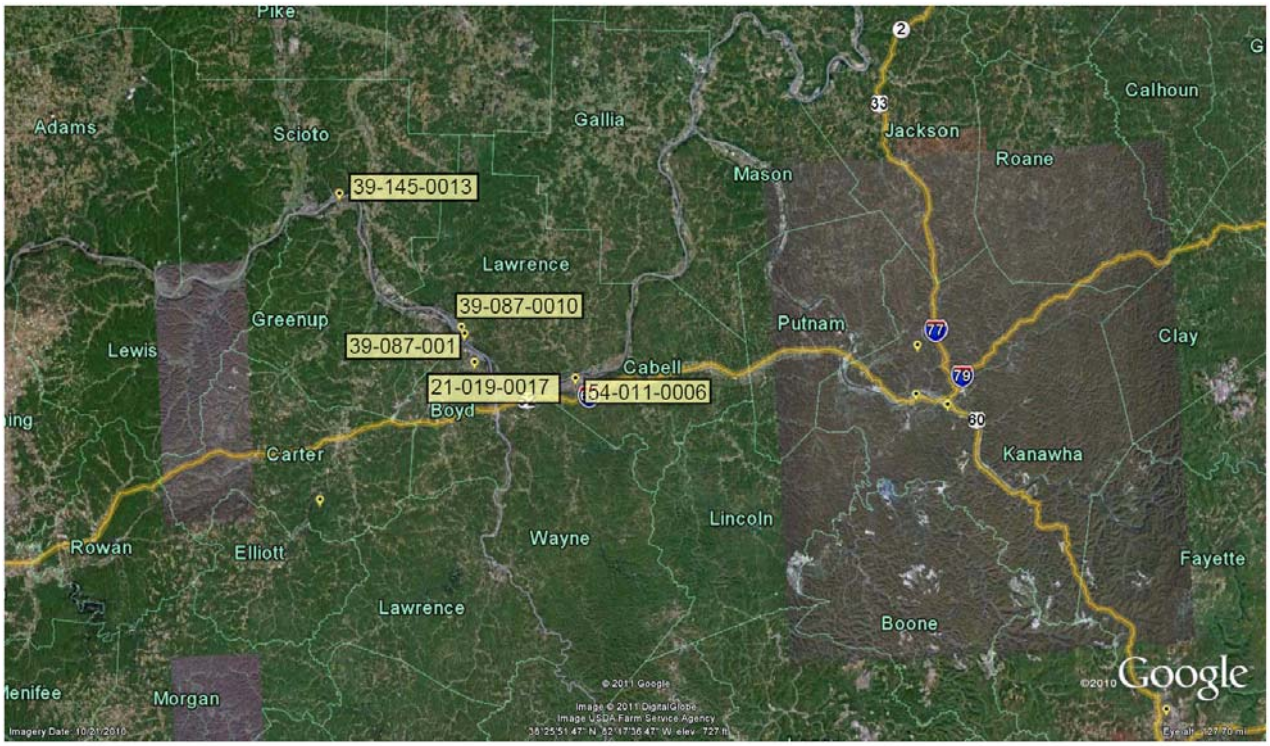
A demonstration that the NAAQS for annual $PM_{2.5}$, as published in 40 CFR 50.7, has been attained.

Background

There are 4 monitors measuring $PM_{2.5}$ concentrations in this nonattainment area. 1 of the 4 monitors is located in West Virginia and is operated by the West Virginia Division of Air Quality. Two of the remaining monitors are located in Ohio, and one monitor is located in Kentucky. The locations of the monitoring sites for this nonattainment area are shown on Figure 1. A listing of the design values based on the three-year average of the annual mean concentrations from 2007 through 2009 is shown in Table 1.

Demonstration

Figure 1 - Map of the Huntington-Ashland, WV-KY-OH nonattainment area and monitor locations



Requirement 2 of 4

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

Demonstration

The West Virginia DAQ has quality assured all data shown in Appendix A in accordance with 40 CFR 58.10 and all other federal requirements. West Virginia DAQ 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 annual mean values, based on data from all monitoring sites in the area or its affected downwind environs, are below 15.0 µg/m3 . (This showing must rely on three complete, consecutive calendar years of quality assured data.)

Background

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

Tables 1A-1D show the monitoring data for 2000- 2010 that were retrieved from the EPA AQS. The air quality design value for the area is the highest design value among all sites in the area.

Demonstration

Tables 1A-1D - Monitoring Data for the Huntington-Ashland, WV-KY-OH area for 2000 - 2010

Table 1A: 98th Percentile 24 hr $PM_{2.5}$ Concentration (µg/m³)

FRM Site County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
54-011-0006 Cabell, WV	39.6	44.6	45.7	33.0	30.9	40.5	30.1	39.4	27.4	22.5	28.0
21-019-0017 Boyd, KY	34.1	37.7	39.4	33.8	30.3	36.1	28.6	38.5	24.3	23.5	26.2
39-145-0013 Scioto, OH	43.5	49.2	42.1	32.8	29.4	40.3	30.5	37.5	24.4	21.8	24.4
39-087-0010[a] Lawrence, OH	40.2	41.0	42.4	29.3	31.2	38.5	30.8	35.2	25.9	----	----
39-087-0012[b] Lawrence, OH	----	----	----	----	----	----	----	----		21.4	25.1

[a, b] The monitoring site 39-087-0010 was shutdown as of 2/9/2008 due to the demolition of the building that hosted the monitor. The monitor was moved approximately one mile to a new site (39-087-0012) which began sampling 2/12/2008, making both sites incomplete for 2008 when viewed separately. If the sites at Lawrence County were considered one site and data combined, it would meet the 75% data capture requirement. There are no significant industrial sources where this monitor is located (Ironton, OH). The closest significant source is AK Steel in Ashland, KY. Prior to relocation, this monitor was approximately 1.58 miles from AK Steel. The new site is approximately 0.85 miles from AK Steel. Notice, data collected from the new site beginning in February 2008 achieved a 2008 design value of 13.1 µg/m³, significantly lower than the previous year design value, even though it is now closer to the largest industrial source. Both monitors show attainment of the standard separately and combined. In addition, on 4/21/2010 Ohio EPA submitted a Clean Data Request to EPA which included a detailed analysis which supports combining this data.

Table 1B: $PM_{2.5}$ 24-hr Design Values
(1997 NAAQS 24 hr std 3 yr 98th Percentile = 65 µg/m³)

Site – County	00-02	01-03	02-04	03-05	04-06	05-07	06-08	07-09	08-10
54-011-0006 Cabell, WV	43	41	37	35	34	37	32	30	26
21-019-0017 Boyd, KY	37	37	35	33	32	34	30	29	25
39-145-0013 Scioto, OH	45	41	35	34	33	36	31	28	24
39-087-0010[a] Lawrence, OH	41	38	34	33	34	35	31	28	24
39-087-0012[b] Lawrence, OH	----	----	----	----	----	----			

[a, b] The monitoring site 39-087-0010 was shutdown as of 2/9/2008 due to the demolition of the building that hosted the monitor. The monitor was moved approximately one mile to a new site (39-087-0012) which began sampling 2/12/2008, making both sites incomplete for 2008 when viewed separately. If the sites at Lawrence County were considered one site and data combined, it would meet the 75% data capture requirement. There are no significant industrial sources where this monitor is located (Ironton, OH). The closest significant source is AK Steel in Ashland, KY. Prior to relocation, this monitor was approximately 1.58 miles from AK Steel. The new site is approximately 0.85 miles from AK Steel. Notice, data collected from the new site beginning in February 2008 achieved a 2008 design value of 13.1 µg/m³, significantly lower than the previous year design value, even though it is now closer to the largest industrial source. Both monitors show attainment of the standard separately and combined. In addition, on 4/21/2010 Ohio EPA submitted a Clean Data Request to EPA which included a detailed analysis which supports combining this data.

Table 1C: $PM_{2.5}$ Annual Average Concentrations ($\mu g/m^3$)											
Site County	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
54-011-0006 Cabell, WV	17.60	17.50	16.73	15.45	15.18	18.13	14.97	16.62	14.14	12.03	13.18
21-019-0017 Boyd, KY	16.01	15.49	15.54	13.93	13.29	16.01	13.76	14.34	12.06	10.94	11.23
39-145-0013 Scioto, OH	21.11	20.32	16.65	14.69	12.95	16.24	14.32	13.99	12.14	10.86	11.80
39-087-0010[a] Lawrence, OH	17.35	17.67	15.48	14.25	13.71	16.97	14.39	14.97	12.88	----	----
39-087-0012[b] Lawrence, OH	----	----	----	----	----	----	----	----		11.33	12.09

[a, b] The monitoring site 39-087-0010 was shutdown as of 2/9/2008 due to the demolition of the building that hosted the monitor. The monitor was moved approximately one mile to a new site (39-087-0012) which began sampling 2/12/2008, making both sites incomplete for 2008 when viewed separately. If the sites at Lawrence County were considered one site and data combined, it would meet the 75% data capture requirement. There are no significant industrial sources where this monitor is located (Ironton, OH). The closest significant source is AK Steel in Ashland, KY. Prior to relocation, this monitor was approximately 1.58 miles from AK Steel. The new site is approximately 0.85 miles from AK Steel. Notice, data collected from the new site beginning in February 2008 achieved a 2008 design value of 13.1 $\mu g/m^3$, significantly lower than the previous year design value, even though it is now closer to the largest industrial source. Both monitors show attainment of the standard separately and combined. In addition, on 4/21/2010 Ohio EPA submitted a Clean Data Request to EPA which included a detailed analysis which supports combining this data.

Table 1D: Annual Design Value (1997 NAAQS std 3 yr annual average = 15 $\mu g/m^3$)									
Site County	**00-02**	**01-03**	**02-04**	**03-05**	**04-06**	**05-07**	**06-08**	**07-09**	**08-10**
54-011-0006 Cabell, WV	17.3	16.6	15.8	16.3	16.1	16.6	15.2	14.3	13.1
21-019-0017 Boyd, KY	15.7	15.0	14.3	14.4	14.4	14.7	13.4	12.4	11.4
39-145-0013 Scioto, OH	19.4	17.2	14.8	14.6	14.5	14.8	13.5	12.3	11.6
39-087-0010[a] Lawrence, OH	16.8	15.8	14.5	15.0	15.0	15.4	14.1	13.3	12.2
39-087-0012[b] Lawrence, OH	----	----	----	----	----	----			

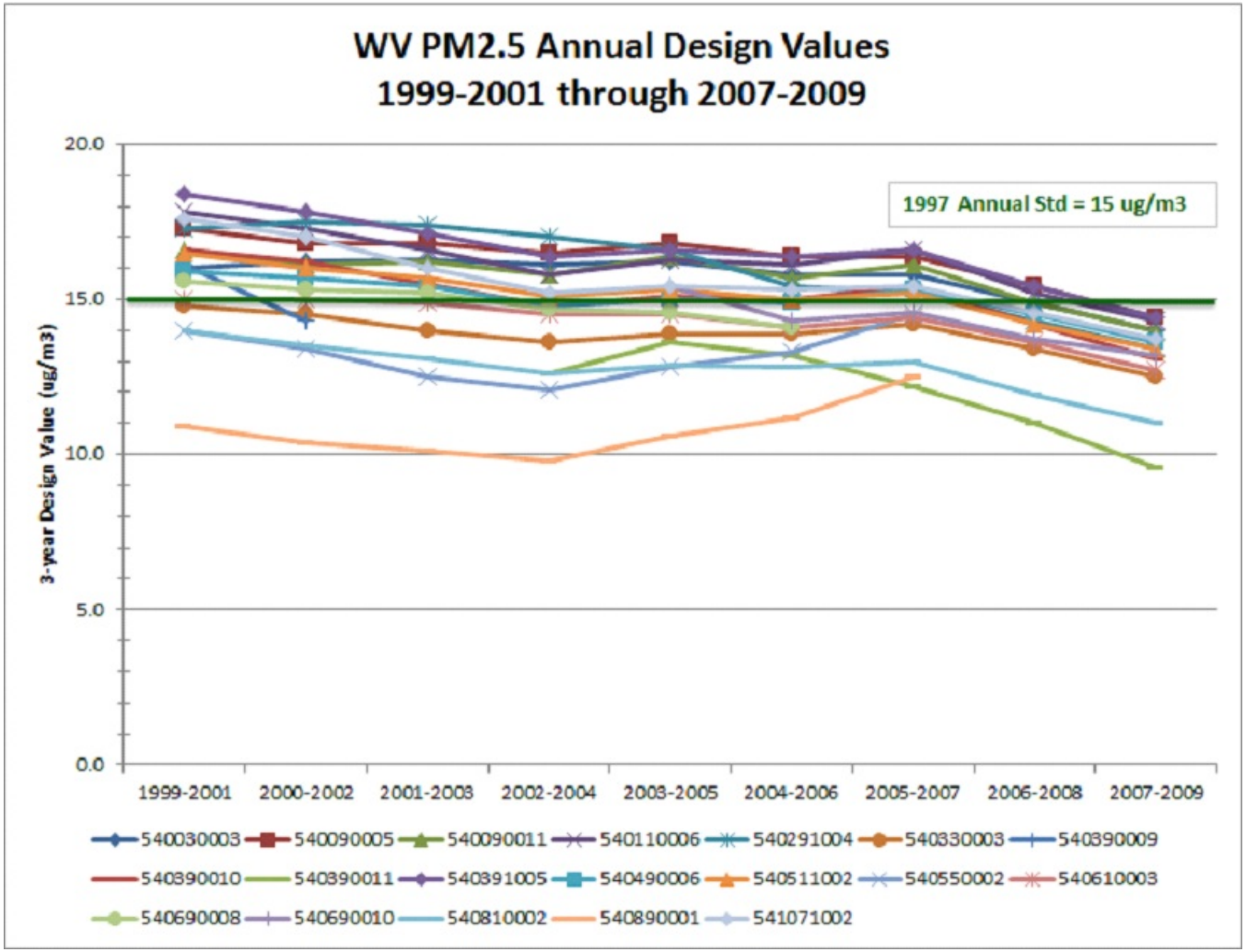
[a, b] The monitoring site 39-087-0010 was shutdown as of 2/9/2008 due to the demolition of the building that hosted the monitor. The monitor was moved approximately one mile to a new site (39-087-0012) which began sampling 2/12/2008, making both sites incomplete for 2008 when viewed separately. If the sites at Lawrence County were considered one site and data combined, it would meet the 75% data capture requirement. There are no significant industrial sources where this monitor is located (Ironton, OH). The closest significant source is AK Steel in Ashland, KY. Prior to relocation, this monitor was approximately 1.58 miles from AK Steel. The new site is approximately 0.85 miles from AK Steel. Notice, data collected from the new site beginning in February 2008 achieved a 2008 design value of 13.1 $\mu g/m^3$, significantly lower than the previous year design value, even though it is now closer to the largest industrial source. Both monitors show attainment of the standard separately and combined. In addition, on 4/21/2010 Ohio EPA submitted a Clean Data Request to EPA which included a detailed analysis which supports combining this data.

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

The design values calculated for the Huntington-Ashland area demonstrate that the 1997 $PM_{2.5}$ NAAQS has been attained. The area's design values have trended downward as emissions have declined due to such factors as cleaner automobiles and fuels, and controls for EGUs, at the national, regional and local level.

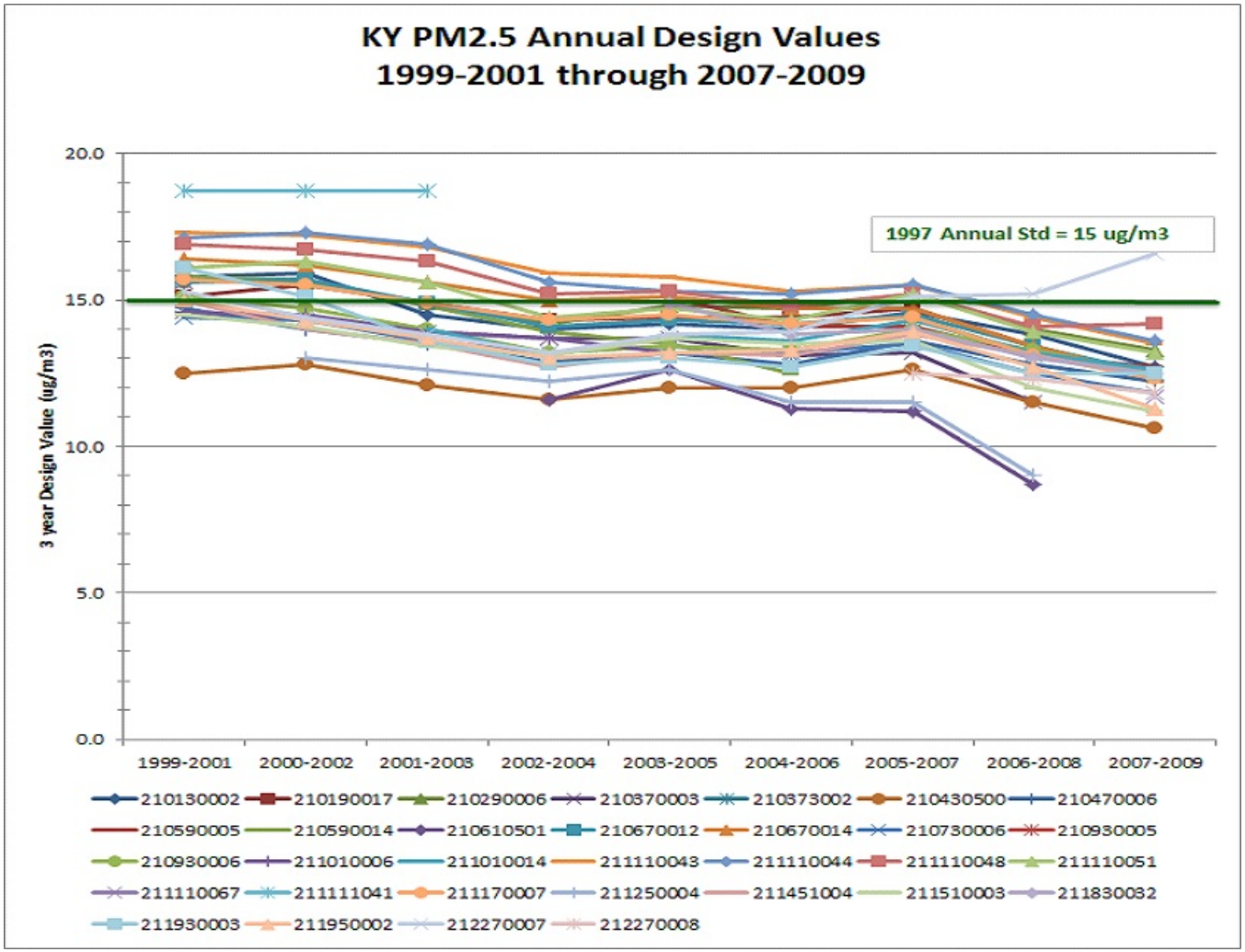
National monitoring for $PM_{2.5}$ began in 1999. There has been a clear downward trend in design values for all monitors in West Virginia, Kentucky and Ohio, as shown in Figures 2 - 4. Design values have also trended downward nationally, as shown in Figure 5.

Figure 2: West Virginia $PM_{2.5}$ Annual Design Values, 1999-2001 through 2007-2009.



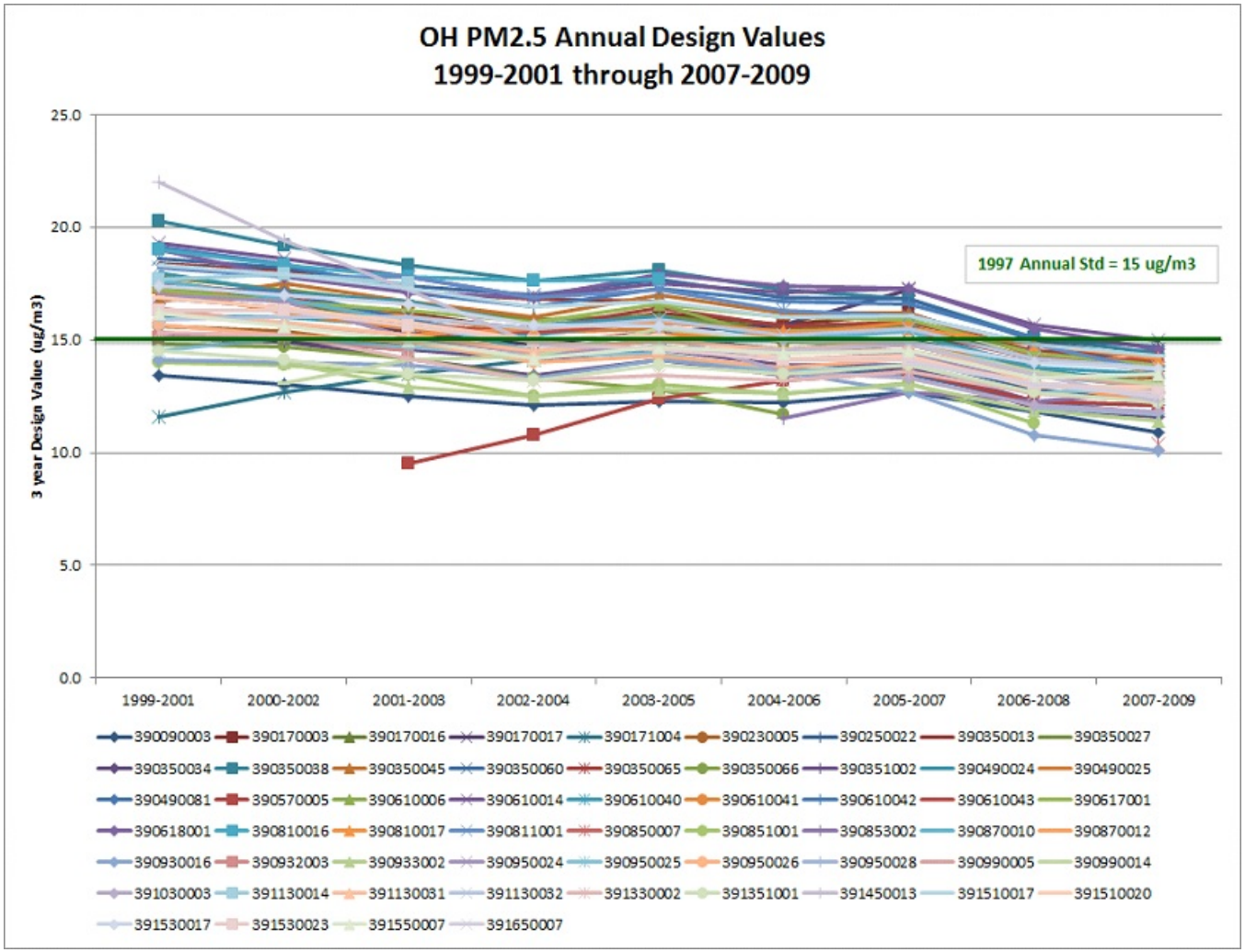
Data Source: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25dv20072009FinalRevised.xls

Figure 3: Kentucky $PM_{2.5}$ Annual Design Values, 1999-2001 through 2007-2009.



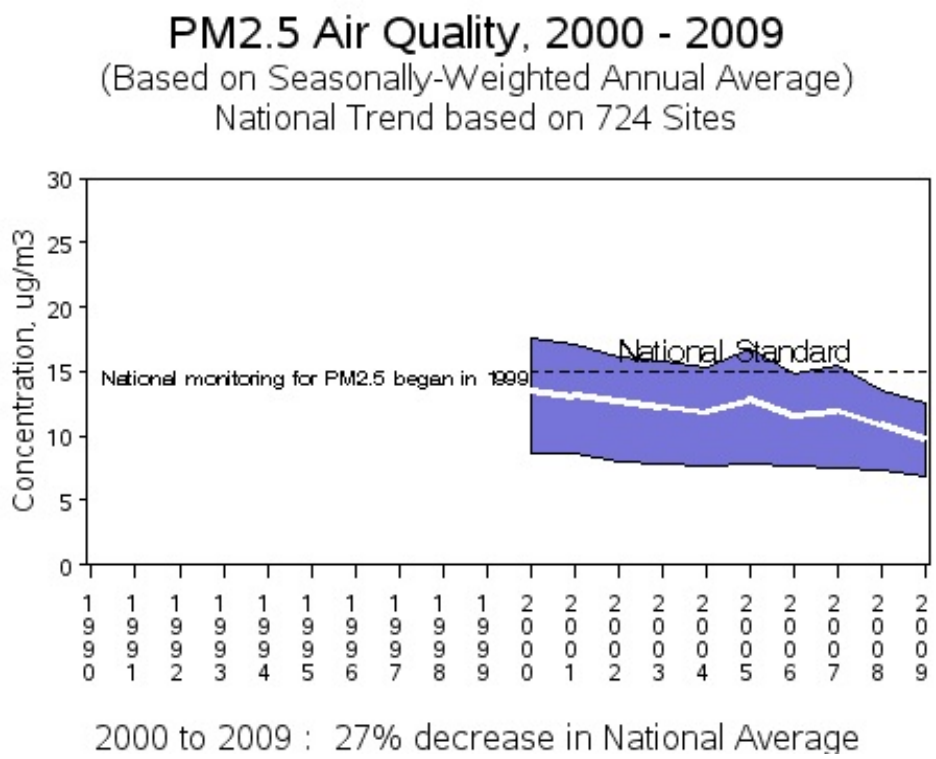
Data Source: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25dv20072009FinalRevised.xls

Figure 4: Ohio $PM_{2.5}$ Annual Design Values, 1999-2001 through 2007-2009.



Data Source: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25dv20072009FinalRevised.xls

Figure 5: $PM_{2.5}$ Annual Mean National Trends



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

Requirement 4 of 4

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

Demonstration

West Virginia DAQ commits to continue monitoring $PM_{2.5}$ levels at the West Virginia site indicated in Figure 1 and Tables 1A-1D. West Virginia DAQ will consult with EPA Region III prior to making changes to the existing monitoring network, should changes become necessary in the future. West Virginia DAQ 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 West Virginia DAQ web site will provide real time availability of the data and knowledge of any exceedances. West Virginia DAQ will enter all data into AQS on a timely basis in accordance with federal guidelines.

CHAPTER FOUR

EMISSION INVENTORY

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

EPA's redesignation guidance requires the submittal of a comprehensive inventory of $PM_{2.5}$ precursor emissions (SO_2 NO_x and primary particles – organic carbon, crustal matter, and elemental carbon) representative of the year when the area achieves attainment of the annual $PM_{2.5}$ air quality standard. States must also demonstrate that the improvement in air quality between the year that violations occurred and the year that attainment was achieved is based on permanent and enforceable emission reductions. Other 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 1997 $PM_{2.5}$ standard; and a commitment to provide future updates of the inventory to enable tracking of emission levels during the 10-year maintenance period.

The base year and projection emissions inventory development discussion below identifies procedures used by the West Virginia Division of Air Quality (DAQ) to develop emissions estimates for West Virginia's portion of the counties in the Huntington-Ashland area. Emissions data are provided for all West Virginia counties as well as those in Ohio and Kentucky.

West Virginia is a member agency of the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) a Regional Planning Organization (RPO). VISTAS contractors prepared 2009 and 2018 inventories for its member agencies using the 2002 periodic inventory as the base year. The 2002 periodic inventory has been identified as one of the preferred databases for SIP development and coincides with nonattainment air quality in the Huntington-Ashland area. The inventories were submitted to EPA with West Virginia's $PM_{2.5}$ Attainment Demonstration SIP for the West Virginia Portion of the Huntington-Ashland nonattainment area, on May 28, 2009. The detailed emissions inventory information for the West Virginia portion of the Huntington-Ashland area is provided in Appendix B of this submittal.

Projections for West Virginia's 2012 Huntington-Ashland area counties were prepared by contractors for the Association for Southeastern Integrated Planning (ASIP) which was an outgrowth of the VISTAS effort. Procedures used were similar to those used for the VISTAS 2009 and 2018 emission inventories.

Ohio and Kentucky base year and projections emissions data were obtained through the Lake Michigan Air Directors Consortium (LADCO). LADCO is an RPO which provides technical support to Ohio and the other Lake Michigan states. All of these inventories and emissions projections were prepared using similar methodologies to those used by VISTAS/ASIP.

Onroad mobile base year and projections emissions inventories for all WV, KY, and OH counties were prepared by Kimley-Horn and Associates Inc. on behalf of the KYOVA Interstate Planning Commission, with data provided by KYOVA, Ohio Department of Transportation (ODOT), Ohio EPA, West Virginia Department of Transportation (WVDOT), West Virginia DAQ, Kentucky Transportation Cabinet (KYTC), and Kentucky DAQ.

Requirement 1 of 5

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

Background

Periodic inventories, which include emissions from all sectors - Mobile, Area, Nonroad, and Point sources - are prepared every three years. For the purpose of this submittal the 2005 periodic inventory is used as the base year.

VISTAS/ASIP used the 2002 inventory as the basis for 2009 and 2018 projections. Those projections served as a basis for interpolations discussed in more detail below. Emissions of $PM_{2.5}$, SO_2 and NO_x for 2005 are identified under Requirement 3 of this Chapter.

- Area Source inventories for 2002 and 2009 came from the VISTAS inventories. The 2005 Area Source inventory was prepared by West Virginia DAQ by interpolation between the VISTAS 2002 and 2009 inventories. To calculate values for the partial Mason County, the Area Source inventory total county data was apportioned by population. Census data for 2000 for Mason County shows population at 25,957 (http://censtats.census.gov/cgi-bin/pct/pctProfile.pl), EPA's Green Book (http://www.epa.gov/oaqps001/greenbk/qnay.html) show the population of the Graham tax district as 2,774 or 10.69% of the population of Mason County.
- Biogenic emissions are not included in these summaries.
- The 2005 Fire inventory came from the VISTAS 2002 Typical Year Fire inventory. The VISTAS Fire inventory was broken out by SCC (source classification code) but for consistency with the Ohio and Kentucky submittals, it is included in the Area Source inventory. To calculate values for the partial Mason County, the Fire inventory total county data was apportioned by population. Census data for 2000 for Mason County shows population at 25,957 (http://censtats.census.gov/cgi-bin/pct/pctProfile.pl), EPA's Green Book (http://www.epa.gov/oaqps001/greenbk/qnay.html) show the population of the Graham tax district as 2,774 or 10.69% of the population of Mason County.
- Nonroad mobile source emissions source inventories for 2002 and 2009 came from the VISTAS inventories. The 2005 inventory was prepared by West Virginia DAQ by interpolation between the VISTAS 2002 and 2009 inventories. To calculate values for the partial Mason County, the Nonroad inventory total county data was apportioned by population. Census data for 2000 for Mason County shows population at 25,957 (http://censtats.census.gov/cgi-bin/pct/pctProfile.pl), EPA's Green Book (http://www.epa.gov/oaqps001/greenbk/qnay.html) show the population of the Graham tax district as 2,774 or 10.69% of the population of Mason County.
- MAR (aircraft, commercial marine vessels, and railroads) source emissions inventories for 2002 and 2009 came from the VISTAS inventories. MAR 2005 emissions estimates were derived by West Virginia DAQ by interpolation between the VISTAS 2002 and 2009 inventories. MAR Includes the following SCCs: 2280002100, 2280002200, 2285002006, 2285002008, 2285002010, 2275001000, 2275020000, 2275050000, 2275060000. To calculate values for the partial Mason County, the MAR inventory total county data was apportioned by population. Census data for 2000 for Mason County shows population at 25,957 (http://censtats.census.gov/cgi-bin/pct/pctProfile.pl), EPA's Green Book

(http://www.epa.gov/oaqps001/greenbk/qnay.html) show the population of the Graham tax district as 2,774 or 10.69% of the population of Mason County.

- Onroad mobile source emissions for 2005 were calculated from MOVES2010 - produced emission factors.
- The 2005 Point Source data are taken from West Virginia's annual emissions reporting program. For the partial Mason County: Non EGU includes only the New Haven Plant (ID 54-053-00004); EGU includes Mountaineer and Sporn.

Demonstration

Only $PM_{2.5}$ and NO_x necessitate Onroad mobile emissions inventory analysis. As documented in West Virginia's attainment demonstration SIP, West Virginia DAQ, in consultation with EPA determined mobile sources are insignificant contributors for SO_2. Consistent with West Virginia's attainment demonstration, West Virginia DAQ continues to consider mobile source SO_2 to be an insignificant contributor to fine particles for this nonattainment area. Based on the demonstration below, SO_2 constitutes less than one percent (<1%) of the area's total SO_2 emissions in 2005, 2008, 2015 and 2022 (ranging between 0.09% and 0.31%).

Requirement 2 of 5

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

Background

West Virginia DAQ prepared a comprehensive inventory for the West Virginia portion of the Huntington-Ashland area including Area, Mobile, and Point sources for $PM_{2.5}$, SO_2 and NO_x for base year 2002. The 2002 inventory was submitted to EPA on May 28, 2009 as part of West Virginia's $PM_{2.5}$ attainment demonstration SIP for this area. The information below describes the procedures used by MACTEC, Inc as a contractor to VISTAS and ASIP, to generate the 2002 base year inventory and to develop SIP-ready modeling inventories and future year projections (http://www.metro4-sesarm.org/vistas/data/RHR/EI/Reports/VISTAS_B&F_Revision_1_04-09-2008.pdf, MACTEC Report) based on a 2002 base year inventory. The MACTEC Report is contained in Appendix B. MACTEC generated future year estimates of annual emissions for each source sector using accepted growth surrogates. In this document, references to ASIP include VISTAS, the southeastern Regional Planning Organization. Note, the on-road mobile source sector was addressed by specific NO_x, $PM_{2.5}$ and SO_2 modeling as discussed below.

- Area Source inventories for 2002, 2009, 2012 and 2018 came from the VISTAS/ASIP inventories. The inventory for 2008 was prepared by interpolation between 2002 and 2009 of the VISTAS/ASIP inventories. The 2015 inventory was developed by interpolation between the VISTAS/ASIP 2012 and 2018 inventories. The 2022 inventory was extrapolated from the VISTAS/ASIP 2012 and 2018 inventories.
- Biogenic emissions are not included in these summaries.
- The 2008, 2015, and 2022 Fire inventories came from the VISTAS 2002 Typical Year Fire inventory. The Fire inventory was held constant throughout the inventories in this document.

- Nonroad mobile source inventories for 2002, 2009, 2012 and 2018 came from the VISTAS/ASIP inventories. The inventory for 2008 was interpolated between 2002 and 2009 of the VISTAS inventories. The 2015 inventory was developed by interpolation between the VISTAS/ASIP 2012 and 2018 inventories.The 2022 emissions data were extrapolated from the VISTAS/ASIP 2012 and 2018 inventories.
- MAR source inventories for 2002, 2009, 2012 and 2018 came from the VISTAS/ASIP inventories. The 2008 inventory was prepared by interpolation between 2002 and 2009 of the VISTAS/ASIP inventories. The 2015 inventory was developed by interpolation between the VISTAS/ASIP 2012 and 2018 inventories. The 2022 NO_x and $PM_{2.5}$ inventory was created by extrapolation from the VISTAS/ASIP 2012 and 2018 inventories. The 2022 SO_2 inventory was held constant at 2018 levels, since no further reduction in fuel sulfur content is expected.
- Onroad mobile source emissions for 2008, 2015, and 2022 were calculated from MOVES2010 - produced emission factors. See further discussion below.
- Point Source 2008 emissions were compiled from West Virginia DAQ's 2008 annual emissions inventory database and the EPA Clean Air Markets database. The 2015 EGU and nonEGU inventories were prepared by interpolation between the VISTAS/ASIP 2012 and 2018 inventories. The 2022 EGU inventory was kept the same as 2018 for NO_x, $PM_{2.5}$, and SO_2. The 2022 nonEGU inventory was extrapolated from the VISTAS/ASIP 2012 and 2018 inventories. For the partial Mason County: Non EGU includes only the New Haven Plant (ID 54-053-00004); EGU includes Mountaineer and Sporn.

Demonstration

On-Road Emission Estimations

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

Overview

U.S.EPA published a Federal Register notice of availability [75 FR 9411] 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 EPA's approved motor vehicle emission factor model for estimating VOCs, NOx, 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 EPA to estimate air pollution emissions from mobile sources. MOVES replaces EPA's previous emissions model for on-road mobile sources, MOBILE6.2. MOVES can be used to estimate exhaust and evaporative emissions as well as brake and tire wear emissions from all types of on-road vehicles.

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

The CAA requires EPA to regularly update its mobile source emission models. 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 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 EPA's approach to mobile source emission modeling based upon recommendations made to the Agency by the National Academy of Sciences.

EPA believes that MOVES should be used in ozone, carbon monoxide, 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.

The MOVES more detailed approach (when compared with the previous MOBILE model) to modeling allows 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 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 $PM_{2.5}$ emissions to be estimated.

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

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

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

For areas of our modeling region within a county with a travel demand model, information from this model was applied for the analysis. Specifically, VMT data in the HPMS vehicle class format and ramp fractions for rural and urban restricted roadways were obtained from the travel demand models. For areas outside of the travel demand model extents, ramp fractions were assumed to mirror those seen in their respective states. HPMS vehicle class VMTs for areas outside the travel demand model limits were derived and forecasted from current HPMS traffic data in those areas.

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

KDAQ. The KYOVA Interstate Planning Commission supplied information on the transit vehicle population for the region.

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

On-Road Mobile Emission Estimations

Tables 2 through 14 contain the results of the emissions analysis for the appropriate years. All emissions estimations are expressed in tons per year (tpy).

Table 2: Cabell County, WV Emissions Estimations for Onroad Mobile Sources

	2005	2008	2015	2022
NO_x (tpy)	4,262.48	3,504.59	1,702.34	847.76
$PM_{2.5}$ (tpy)	173.92	151.98	80.07	43.33
SO_2 (tpy)	81.13	21.95	9.39	9.13
Annual VMT	960,538,915	989,243,546	1,059,033,672	1,140,870,563

Table 3: Wayne County, WV Emissions Estimations for Onroad Mobile Sources

	2005	2008	2015	2022
NO_x (tpy)	1,720.01	1,432.79	676.93	386.80
$PM_{2.5}$ (tpy)	70.37	62.37	32.03	20.13
SO_2 (tpy)	32.87	9.02	3.76	4.26
Annual VMT	389,577,827	407,030,689	424,609,965	533,508,781

Table 4: Graham Tax District in Mason County, WV Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	31.12	27.36	15.33	8.72
$PM_{2.5}$ (tpy)	1.19	1.10	0.64	0.38
SO_2 (tpy)	0.54	0.16	0.07	0.08
Annual VMT	6,176,333	6,741,932	8,005,850	9,286,512

Table 5: Summary of West Virginia Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	6,013.60	4,964.74	2,394.60	1,243.28
$PM_{2.5}$ (tpy)	245.48	215.45	112.74	63.84
SO_2 (tpy)	114.54	31.12	13.22	13.46
Annual VMT	1,356,293,075	1,403,016,167	1,491,649,487	1,683,665,856

Table 6: Boyd County, KY Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	2,673.25	2,172.59	1,154.59	647.64
$PM_{2.5}$ (tpy)	114.31	97.91	51.16	29.09
SO_2 (tpy)	11.89	11.62	11.89	12.12
Annual VMT	488,758,339	473,274,668	510,947,840	560,930,984

Table 7: Emissions Estimations for Onroad Mobile Sources for the portion of Lawrence County, KY described by U.S. Census 2000 block group identifier 21-127-9901-6				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	170.69	139.16	70.54	37.96
$PM_{2.5}$ (tpy)	7.30	6.28	3.12	1.70
SO_2 (tpy)	0.76	0.74	0.73	0.71
Annual VMT	31,232,092	30,348,132	31,171,751	32,686,140

Table 8: Summary of Kentucky Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	2,843.94	2,311.75	1,225.13	685.60
$PM_{2.5}$ (tpy)	121.61	104.19	54.28	30.78
SO_2 (tpy)	12.65	12.36	12.61	12.83
Annual VMT	519,990,431	503,622,799	542,119,590	593,617,125

Table 9: Monroe and Sprigg Townships in Adams County, OH Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	122.49	103.66	54.82	26.21
$PM_{2.5}$ (tpy)	4.19	3.69	2.17	1.39
SO_2 (tpy)	2.10	0.71	0.32	0.32
Annual VMT	34,049,176	35,647,156	39,080,671	42,602,717

Table 10: Addison and Cheshire Townships in Gallia County, OH Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	59.34	50.43	26.89	12.94
$PM_{2.5}$ (tpy)	2.03	1.80	1.06	0.69
SO_2 (tpy)	1.02	0.34	0.16	0.16
Annual VMT	16.493,759	17,341,207	19,175,027	21,051,915

Table 11: Lawrence County, OH Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	1,692.81	1,403.49	759.82	397.98
$PM_{2.5}$ (tpy)	57.15	48.87	28.76	20.08
SO_2 (tpy)	28.08	9.16	4.14	4.48
Annual VMT	449,711,752	457,366,121	503,049,909	595,949,049

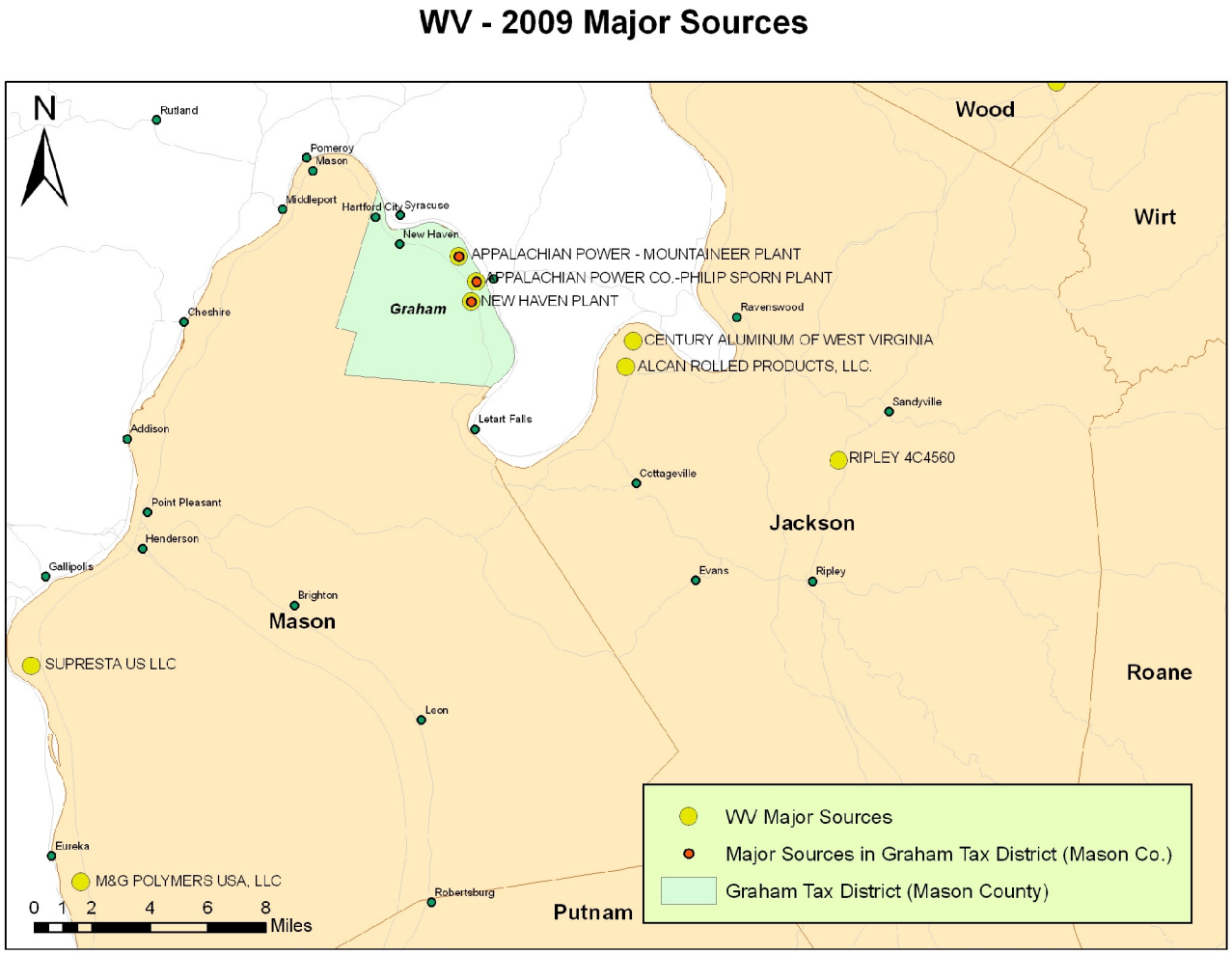
Table 12: Scioto County, OH Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	2,081.20	1,761.97	983.09	486.95
$PM_{2.5}$ (tpy)	70.26	61.40	37.35	24.56
SO_2 (tpy)	34.53	11.52	5.39	5.47
Annual VMT	552,962,632	575,354,151	655,158,989	728,816,580

Table 13: Summary of Ohio Emissions Estimations for Onroad Mobile Sources				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	3,955.84	3,319.55	1,824.63	924.08
$PM_{2.5}$ (tpy)	133.64	115.76	69.34	46.72
SO_2 (tpy)	65.73	21.73	10.01	10.42
Annual VMT	1,053,217,320	1,085,708,635	1,216,464,596	1,388,420,261

Table 14: Emissions Estimate Totals for the Onroad Mobile Source Sector for the Huntington - Ashland, WV-KY-OH Area				
	2005	**2008**	**2015**	**2022**
NO_x (tpy)	12,813.38	10,596.04	5,444.36	2,852.97
$PM_{2.5}$ (tpy)	500.73	435.40	236.36	141.34
SO_2 (tpy)	192.92	65.22	35.84	36.71
Annual VMT	2,929,500,826	2,992,347,601	3,250,233,674	3,665,703,241

The Mason County, WV major point sources are shown in the map below. The New Haven plant (51-053-00004) is the only Non-EGU located in the Graham tax district. Kentucky and Ohio elected to omit all Non-EGU sources in the partial counties from their analysis of significance for transportation conformity purposes, as being the most conservative approach, since zeroing out the Non-EGU point sources in the partial counties results in a higher percentage of emissions due to mobile sources.

Figure 6: Map of Mason County showing Graham Tax District and location of major sources.



The following table shows the emissions totals, by sector, for each county and partial county in the nonattainment area. For the partial counties – Mason, WV, Lawrence, KY, Adams, OH and Gallia, OH – the emissions for Area, MAR, and Nonroad were apportioned based on the percentage of the county population in the portion of the county designated nonattainment. For all the partial counties, the EGUs in the county are located in the nonattainment area. For a more detailed analysis see Appendix C.

Table 15: Percent of Mobile Emissions for the Huntington-Ashland, WV-KY-OH Area in 2005, 2008, 2015 and 2022– With Apportionment Analysis for Partial Counties													
		PM2.5				NOx				SO2			
State	Sector	2005	2008	2015	2022	2005	2008	2015	2022	2005	2008	2015	2022
WV	EGU	890.99	1,110.97	313.26	342.55	22,576.61	10,999.03	10,500.11	5,838.11	84,878.38	38,172.86	33,633.13	15,967.94
Cabell	NonEGU	654.69	422.29	462.76	551.01	2,845.31	3,298.08	3,092.70	3,277.40	272.50	420.95	435.13	455.32
Mason (10.69%)	Nonroad	47.55	44.67	33.85	20.21	463.99	422.29	307.76	208.34	26.96	11.97	1.06	0.87
Wayne	Area	1,407.22	1,397.28	1,401.51	1,496.25	937.10	949.59	1,047.07	1,155.92	1,973.13	2,035.68	2,164.65	2,290.71
	MAR	158.40	152.30	149.15	150.16	4,620.16	4,573.57	4,464.85	4,356.14	157.32	74.52	17.35	14.64
	Onroad	245.48	215.45	112.74	63.84	6,013.61	4,964.77	2,394.60	1,243.28	114.54	31.13	13.22	13.47
WV Onroad Percentage		7.21%	6.44%	4.56%	2.43%	16.05%	19.70%	10.98%	7.73%	0.13%	0.08%	0.04%	0.07%
KY	EGU	400.05	407.68	422.88	433.23	12,507.60	4,745.47	3,000.59	2,252.78	49,859.23	40,717.78	20,475.43	11,800.13
Boyd	NonEGU	1,200.70	1,449.68	1,455.23	1,458.01	6,943.93	7,116.32	7,453.89	7,803.35	9,650.25	10,188.42	11,065.41	12,012.04
Lawrence (6.74%)	Nonroad	11.80	10.58	7.67	4.75	175.00	154.25	103.24	52.47	8.73	3.79	0.88	0.25
	Area	351.57	361.69	383.47	392.70	47.01	49.88	56.25	62.65	550.84	576.48	600.66	625.99
	MAR	114.69	111.84	87.24	64.32	3,078.27	3,007.82	2,243.00	1,534.61	430.72	391.52	294.60	198.19
	Onroad	121.61	104.18	54.28	30.77	2,843.94	2,311.75	1,225.13	685.60	12.65	12.36	12.62	12.83
KY Onroad Percentage		5.53%	4.26%	2.25%	1.29%	11.11%	13.30%	8.70%	5.53%	0.02%	0.02%	0.04%	0.05%
OH	EGU	4,356.12	4,618.17	4,643.84	4,644.91	87,729.42	91,043.38	50,253.94	32,772.75	225,173.25	127,836.35	69,001.94	43,787.18
Adams (8.69%)	NonEGU	85.41	140.31	112.83	104.40	638.63	737.35	609.89	561.86	977.36	1,477.29	993.44	723.64
Gallia (4.05%)	Nonroad	53.05	46.31	31.64	16.87	507.22	438.75	288.68	137.70	56.90	20.88	3.39	0.63
Lawrence (6.74%)	Area	360.92	456.57	491.35	491.42	489.67	507.27	518.38	532.31	70.54	71.06	68.22	65.79
Scioto	MAR	58.40	51.58	30.15	9.24	2,164.10	2,020.32	1,308.81	632.65	188.29	157.35	97.54	37.69
	Onroad	133.64	115.77	69.34	46.71	3,955.84	3,319.55	1,824.62	924.08	65.73	21.73	10.01	10.43
OH Onroad Percentage		2.65%	2.13%	1.29%	0.88%	4.14%	3.38%	3.33%	2.60%	0.03%	0.02%	0.01%	0.02%
Huntington	EGU	5,647.16	6,136.82	5,379.98	5,420.69	122,813.63	106,787.88	63,754.64	40,863.64	359,910.86	206,726.99	123,110.50	71,555.25
Ashland	NonEGU	1,940.80	2,012.28	2,030.82	2,113.42	10,427.87	11,151.75	11,156.48	11,642.61	10,900.11	12,086.66	12,493.98	13,191.00
WV-KY-OH	Nonroad	112.40	101.56	73.15	41.82	1,146.20	1,015.29	699.67	398.50	92.59	36.65	5.32	1.75
NAA	Area	2,119.71	2,215.53	2,276.33	2,380.37	1,473.78	1,506.74	1,621.70	1,750.88	2,594.55	2,683.22	2,833.53	2,982.48
	MAR	331.48	315.73	266.54	223.72	9,862.53	9,601.71	8,016.67	6,532.39	776.33	623.40	409.49	250.52
	Onroad	500.73	435.40	236.36	141.32	12,813.39	10,596.07	5,444.35	2,852.96	192.92	65.22	35.85	36.73
NAA Onroad Percentage		4.70%	3.88%	2.30%	1.37%	8.08%	7.53%	6.00%	4.46%	0.05%	0.03%	0.03%	0.04%

Onroad mobile source SO_2 constitutes less than one tenth of one percent (<0.1%) of the area's total SO_2 emissions in the 2015 and 2022 horizon years.

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

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

Therefore, the West Virginia DAQ is herein making a finding that the area's highway emissions for $PM_{2.5}$, NO_x and SO_2 continue to be insignificant contributors to the nonattainment problem in the Huntington-Ashland 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 these pollutants in the 2015 and 2022 horizon years.

Requirement 3 of 5

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

Background

In consultation with EPA, Ohio EPA and Kentucky DAQ, West Virginia DAQ selected the year 2022 as the end year of the maintenance plan for this redesignation request. This document contains projected emissions inventories for 2015 and 2022. Thus, the pertinent inventory years are: 2005 (nonattainment year), 2008 (attainment year and maintenance plan base year), 2015 (interim year) and 2022 (maintenance plan end year). Three specific emissions inventory demonstrations should be made:

1. The attainment year (2008) emissions of $PM_{2.5}$, NO_x and SO_2 must each be less than the corresponding emissions in the nonattainment year (2005). The reductions must be attributable to federally enforceable emission reductions. (as outlined in chapter 2, section II.)
2. The interim year (2015) emissions of each of the three pollutants should be less than the maintenance plan base year (2008).
3. The end year (2022) emissions of each of the three pollutants should be less than the maintenance plan base year (2008).

As can be seen in Table 16 below, West Virginia has seen a significant decline of the 467,081 tons of SO_2 and 159,481 tons of NO_x emitted by EGUs in 2005. In 2008 and 2009 facilities began preparing for and implementing control programs to address CAIR and consent decrees. Significant reductions occurred regionally and nationally. Data available for 2010, show the SO_2 and NO_x reductions which were implemented under CAIR:

Table 16: Reductions in SO_2 and NO_x EGU Emissions Between 2008 and 2010						
	SO_2			NO_x		
	2008	2010	% Change	2008	2010	% Change
West Virginia	301,574	106,088	-65%	97,331	51,393	-47%
Kentucky	344,356	266,204	-23%	157,847	88,858	-44%
Ohio	709,444	570,045	-20%	235,018	104,574	-56%
National	7,616,456	5,105,413	-33%	2,996,577	2,054,792	-31%

Source: Clean Air Markets Quarterly Emissions Tracking, http://www.epa.gov/airmarkets/quarterlytracking.html (ARPState2008Preliminary2010.xls)
Note: 2008 data are final, 2010 are preliminary data submitted to EPA from sources as of 2/18/2011.

Further, Tables 17 - 50 clearly show total emissions from all sectors decreased in the period from 2005 to 2008 in each of the states within the nonattainment area, including West Virginia.

As outlined below, the reductions are enforceable and should continue in the future.EPA has raised concerns regarding the CAIR program and its remand. However, as discussed below, with the proposed CAIR replacement, the Transport Rule, West Virginia DAQ believes these are the most appropriate and accurate future projections.

On March 10, 2004, EPA promulgated the CAIR. Beginning in 2009, EPA's CAIR rule required 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 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. West Virginia DEP submitted a CAIR SIP to EPA on June 1, 2006. Revisions to the CAIR SIP were submitted on April 22, 2008. The revised CAIR SIP was approved on August 4, 2009 (74 FR 38536). As a result of CAIR, EPA projected that in 2009 emissions of NO_x would decrease from a baseline of 179,000 tons per year to 63,000 tons per year while in 2010 emissions of SO_2 would decrease from a baseline of 582,000 tons per year to 250,000 tons per year, within West Virginia. And by 2015 EPA projected emissions of NO_x will decrease to 44,000 tons per year while emissions of SO_2 will decrease to 118,000 tons per year, within West Virginia.

On December 23, 2008, EPA's CAIR program was remanded without vacatur by the D.C. Circuit Court.

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

> "Based on emissions monitoring data, EPA has observed substantial reductions in emissions from 2005 to 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. However, allowance prices of SO_2 have been relatively low since 2008, raising concerns that coal-fired units could burn dirtier fuels, operate scrubbers at reduced efficiency, or even bypass scrubbers altogether, instead relying on banked allowances (because there is not an existing large bank of NO_x allowances, NO_x allowance prices have not been affected as significantly). For these reasons, EPA is tracking SO_2 and NO_x emissions closely each quarter to evaluate further progress and assess whether backsliding may be occurring and, if so, where it may be taking place." [http://www.epa.gov/airmarkets/background.htm]

On July 6, 2010, EPA proposed a replacement to the CAIR program, the Transport Rule. [75 FR 45210] EPA intends to finalize the Transport Rule in time for reductions to begin in 2012. As proposed, the Transport Rule will preserve those initial reductions achieved under CAIR and provide more reductions in NO_x and SO_2 emissions in 2012 and 2014, ahead of the 2015 CAIR Phase 2.

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

Therefore, West Virginia DAQ is identifying emissions projections for 2015 and 2022 for EGUs with implementation of the CAIR program.

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

- Emissions inventories are required to be projected to future dates to assess the influence growth and future controls will have. VISTAS/ASIP developed growth and control files for Point, Area, and Nonroad categories for 2009, 2012 and 2018. These files were used to develop the future-year emissions estimates used in this document for the West Virginia portion of the Huntington-Ashland area. [http://www.metro4-sesarm.org/vistas/data/RHR/EI/Reports/VISTAS_B&F_Revision_1_04-09-2008.pdf, see Appendix B.]

- For the West Virginia portion of the Huntington-Ashland area, for the 2005 base year and the 2008 attainment year, emissions for the area and Nonroad sectors were grown from the 2002 VISTAS/ASIP modeling inventory. Point Source emissions for 2005 and 2008 were compiled from the West Virginia DAQ's 2005 and 2008 annual emissions inventory databases. The 2015 interim year emission estimates and the 2022 maintenance year estimates were based on the 2012 and 2018 VISTAS/ASIP modeling inventories for all sectors, except onroad.

- Ohio and Kentucky provided the emission estimates for the Ohio and Kentucky portions of the area, based on LADCO developed growth and control files for Point, Area, and Nonroad categories. Appendix D contains LADCO's technical support document detailing the analysis used to project emissions (Base M) [http://www.ladco.org/tech/emis/current/index.php].

- As performed by Kimley-Horn and Associates, Inc., Onroad mobile source emission projections are based on the 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 and using federally approved interagency consultation procedures. 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.

The detailed inventory information for the West Virginia portion of the Huntington-Ashland area for 2002 is in Appendix B. Emission trends are an important gauge for continued compliance with the $PM_{2.5}$ standard. Therefore, West Virginia DAQ performed an initial comparison of the inventories for the base year and maintenance years.

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

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

The West Virginia emissions data in the tables below are based on the following data sources:
- All On-Road data from Kimley-Horn and Associates Inc.
- 2008 EGU and non-EGU from West Virginia DAQ's 2008 annual emissions inventory database.
- All other West Virginia data from VISTAS/ASIP.
- All Ohio and Kentucky data from LADCO.

Demonstration

$PM_{2.5}$

The 2005 and 2008 actual $PM_{2.5}$ EGU and NonEGU emissions data below reflects PM2.5-primary emissions. Although some facilities reported both PM2.5-pri and the PM fraction emissions, not all facilities reported PM2.5-pri emissions. When PM2.5-pri was not reported by sources, WV DAQ applied PM augmentation procedures in accordance with standard EPA procedures and with further technical support provided by EPA's Emission Inventory and Analysis Group (EIAG).

Table 17: Cabell County, WV $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)

Sector	2005 (Base)	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU	0.00	0.00	0.00	0.00	0.00
NonEGU	524.96	220.25	409.29	490.61	-270.36
Nonroad	33.38	32.32	24.91	14.48	17.84
Area	861.36	858.22	861.87	932.52	-74.30
MAR	45.27	42.50	39.95	38.86	3.64
Onroad	173.92	151.98	80.07	43.33	108.65
TOTAL	**1,638.89**	**1,305.27**	**1,416.09**	**1,519.80**	**-214.53**

Table 18: Wayne County, WV $PM_{2.5}$ Emission Inventory Totals for Base Year 2005, 2008, and Projected 2015 and 2022 (tpy)

Sector	2005 (Base)	2008 Attainment	2015 Interim	2022 Maintenance	Safety Margin
EGU	10.13	7.25	3.98	4.95	2.30
NonEGU	129.73	118.26	53.47	60.40	57.86
Nonroad	12.31	10.77	7.87	5.13	5.64
Area	504.49	498.09	498.55	521.10	-23.01
MAR	108.00	104.86	104.35	106.42	-1.56
Onroad	70.37	62.37	32.03	20.13	42.24
TOTAL	**835.03**	**801.60**	**700.25**	**718.13**	**83.47**

Table 19: Mason County, WV $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	880.86	1,103.72	309.28	337.60	766.12
NonEGU	15.50	92.20	28.60	81.87	10.33
Nonroad	17.37	14.78	9.97	5.59	9.19
Area	387.04	383.22	384.41	398.81	-15.59
MAR	48.00	46.25	45.33	45.66	0.59
Onroad[1]	1.19	1.10	0.64	0.38	0.72
TOTAL	1,349.96	1,641.27	778.23	869.91	771.36

[1]Onroad emissions were only calculated for the Graham Tax District of Mason County, while the emissions for the other sectors include the entire county.

Table 20: Boyd County, KY $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.05	0.01	0.00	0.00	0.01
NonEGU	1,200.70	1,449.68	1,455.23	1,458.01	-8.33
Nonroad	11.15	9.92	7.18	4.42	5.50
Area	345.58	355.57	377.29	386.49	-30.92
MAR	113.42	110.64	86.34	63.71	46.93
Onroad	114.31	97.91	51.16	29.08	68.83
TOTAL	1,785.21	2,023.73	1,977.20	1,941.71	82.02

Table 21: Lawrence County, KY $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	400.00	407.67	422.88	433.23	-25.56
NonEGU	22.49	22.70	24.86	25.79	-3.09
Nonroad	9.68	9.77	7.21	4.91	4.86
Area	88.84	90.74	91.70	92.09	-1.35
MAR	18.79	17.82	13.33	9.05	8.77
Onroad[1]	7.30	6.27	3.12	1.69	4.58
TOTAL	547.10	554.97	563.10	566.76	-11.79

[1]Onroad emissions were only calculated for the portion of Lawrence County, KY described by US Census 2000 block group identifier 21-127-9901-6, while the emissions for the other sectors include the entire county.

Table 22: Adams County, OH $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	3,344.63	3,585.29	3,569.95	3,544.65	40.64
NonEGU	6.90	7.28	13.13	15.64	-8.36
Nonroad	15.62	13.28	8.70	4.04	9.24
MAR	7.39	6.79	4.21	1.74	5.05
Area	247.97	278.00	285.55	282.69	-4.69
Onroad[1]	4.20	3.69	2.17	1.39	2.30
TOTAL	3,626.71	3,894.33	3,883.71	3,850.15	44.18

[1]Onroad emissions were only calculated for Monroe and Sprigg Townships in Adams County, while the emissions for the other sectors include the entire county.

Table 23: Gallia County, OH $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	1,011.49	1,031.94	1,073.20	1,100.12	-68.18
NonEGU	0.00	0.00	0.00	0.00	0.00
Nonroad	11.87	10.33	7.22	4.07	6.26
MAR	7.50	6.91	4.32	1.84	5.07
Area	132.22	168.24	181.29	182.52	-14.28
Onroad	2.03	1.81	1.06	0.68	1.13
TOTAL	1,165.11	1,219.23	1,267.09	1,289.23	-70.00

[1]Onroad emissions were only calculated for Addison and Cheshire Townships in Gallia County, while the emissions for the other sectors include the entire county.

Table 24: Lawrence County, OH $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, and 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.94	0.69	0.14	0.80
NonEGU	1.21	1.39	1.75	1.90	-0.51
Nonroad	13.78	11.67	7.90	4.02	7.65
MAR	20.16	17.97	10.67	3.57	14.40
Area	134.89	134.73	131.79	129.08	5.65
Onroad	57.15	48.87	28.76	20.08	28.79
TOTAL	227.19	215.57	181.56	158.79	56.78

Table 25: Scioto County, OH $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.00	0.00	0.00	0.00
NonEGU	84.20	138.92	111.08	102.50	36.42
Nonroad	37.43	33.07	22.69	12.33	20.74
MAR	37.29	32.74	18.94	5.44	27.30
Area	199.12	290.87	327.40	330.38	-39.51
Onroad	70.26	61.40	37.35	24.56	36.84
TOTAL	428.30	557.00	517.46	475.21	81.79

Table 26: Huntington-Ashland Nonattainment Area $PM_{2.5}$ Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
County	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
Cabell, WV	1,638.89	1,305.27	1,416.09	1,519.80	-214.53
Mason, WV	1,349.96	1,641.27	778.23	869.91	771.36
Wayne, WV	835.03	801.60	700.25	718.13	83.47
WV $PM_{2.5}$ Total	**3,823.88**	**3,748.14**	**2,894.57**	**3,107.84**	**640.30**
Boyd, KY	1,785.21	2,023.73	1,977.20	1,941.71	82.02
Lawrence, KY	547.10	554.97	563.10	566.76	-11.79
KY $PM_{2.5}$ Total	**2,332.31**	**2,578.70**	**2,540.30**	**2,508.47**	**70.23**
Adams, OH	3,626.71	3,894.33	3,883.71	3,850.15	44.18
Gallia, OH	1,165.11	1,219.23	1,267.09	1,289.23	-70.00
Lawrence, OH	227.19	215.57	181.56	158.79	56.78
Scioto, OH	428.30	557.00	517.46	475.21	81.79
OH $PM_{2.5}$ Total	**5,447.31**	**5,886.13**	**5,849.82**	**5,773.38**	**112.75**
Combined $PM_{2.5}$ Total	**11,603.50**	**12,212.97**	**11,284.69**	**11,389.69**	**823.28**

NO_x

Table 27: Cabell County, WV NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.00	0.00	0.00	0.00
NonEGU	244.30	259.41	279.66	314.73	-55.32
Nonroad	323.62	291.30	203.36	129.15	162.15
Area	725.00	733.77	812.63	901.20	-167.43
MAR	1,587.60	1,573.50	1,540.59	1,507.68	65.82
Onroad	4,262.48	3,504.59	1,702.34	847.76	2,656.83
TOTAL	7,143.00	6,362.57	4,538.58	3,700.52	2,662.05

Table 28: Wayne County, WV NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	115.72	46.30	11.57	14.39	31.91
NonEGU	2,601.01	3,038.67	2,813.04	2,962.67	76.00
Nonroad	122.87	114.28	90.82	69.07	45.21
Area	173.50	175.95	192.12	210.04	-34.09
MAR	2,889.10	2,860.00	2,792.09	2,724.18	135.82
Onroad	1,720.01	1,432.79	676.93	386.80	1,045.99
TOTAL	7,622.21	7,667.99	6,576.57	6,367.15	1,300.84

Table 29: Mason County, WV NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	22,460.89	10,952.73	10,488.54	5,823.72	5,129.01
NonEGU	41.42	50.64	302.63	802.95	-752.31
Nonroad	163.69	156.28	127.03	94.66	61.62
Area	361.05	372.98	395.90	418.00	-45.02
MAR	1,341.99	1,310.32	1,236.43	1,162.54	147.78
Onroad[1]	31.12	27.36	15.33	8.72	18.64
TOTAL	24,400.16	12,870.31	12,565.86	8,310.59	4,559.72

[1] Onroad emissions were only calculated for the Graham Tax District of Mason County, while the emissions for the other sectors include the entire county.

Table 30: Boyd County, KY NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	39.41	9.85	2.96	0.00	9.85
NonEGU	6,943.93	7,116.32	7,453.89	7,803.35	-687.03
Nonroad	171.09	150.58	100.47	50.57	100.01
Area	41.22	43.92	50.02	56.14	-12.22
MAR	3,035.45	2,966.48	2,213.06	1,515.33	1,451.15
Onroad	2,673.25	2,172.59	1,154.59	647.64	1,524.95
TOTAL	12,904.35	12,459.74	10,974.99	10,073.03	2,386.71

Table 31: Lawrence County, KY NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	12,468.19	4,735.62	2,997.63	2,252.78	2,482.84
NonEGU	2.72	1.95	1.85	1.43	0.52
Nonroad	57.97	54.40	41.05	28.16	26.24
Area	85.89	88.43	92.45	96.64	-8.21
MAR	635.31	613.37	444.15	286.03	327.34
Onroad[1]	170.69	139.16	70.54	37.96	101.20
TOTAL	13,420.77	5,632.93	3,647.67	2,703.00	2,929.93

[1]Onroad emissions were only calculated for the portion of Lawrence County, KY described by US Census 2000 block group identifier 21-127-9901-6, while the emissions for the other sectors include the entire county.

Table 32: Adams County, OH NO_x Emission Inventory Totals for 2005, 2008, and 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	30,205.82	31,258.94	25,671.39	23,276.73	7,982.21
NonEGU	665.42	703.45	1,266.52	1,770.27	-1,066.82
Nonroad	142.28	128.52	92.82	57.47	71.05
Area	127.85	132.58	134.84	137.93	-5.35
MAR	325.30	307.93	199.67	97.77	210.16
Onroad	122.49	103.66	54.82	26.21	77.45
TOTAL	31,589.16	32,635.08	27,420.06	25,366.38	7,268.70

[1]Onroad emissions were only calculated for Monroe and Sprigg Townships in Adams County, while the emissions for the other sectors include the entire county.

Table 33: Gallia County, OH NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	57,523.60	59,688.25	24,476.65	9,385.96	50,302.29
NonEGU	0.00	0.00	0.00	0.00	0.00
Nonroad	110.23	96.65	67.88	38.85	57.80
Area	122.81	128.27	131.45	135.53	-7.26
MAR	316.92	299.78	194.41	95.18	204.60
Onroad	59.34	50.43	26.89	12.94	37.49
TOTAL	58,132.90	60,263.38	24,897.28	9,668.46	50,594.92

[1]Onroad emissions were only calculated for Addison and Cheshire Townships in Gallia County, while the emissions for the other sectors include the entire county.

Table 34: Lawrence County, OH NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	96.19	105.90	110.06	-13.87
NonEGU	68.51	77.46	97.06	154.65	-77.19
Nonroad	165.50	142.30	92.01	41.36	100.94
Area	232.73	235.97	238.92	242.31	-6.34
MAR	785.48	736.28	477.77	232.77	503.51
Onroad	1,692.81	1,403.49	759.82	397.98	1,005.51
TOTAL	2,945.03	2,691.69	1,771.48	1,179.13	1,512.56

Table 35: Scioto County, OH NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.00	0.00	0.00	0.00
NonEGU	570.12	659.89	512.83	407.21	252.68
Nonroad	324.89	281.37	185.85	89.77	191.60
Area	240.86	254.58	262.42	272.52	-17.94
MAR	1,337.52	1,245.14	805.82	387.53	857.61
Onroad	2,081.20	1,761.97	983.09	486.95	1,275.02
TOTAL	4,554.59	4,202.95	2,750.01	1,643.98	2,558.97

Table 36: Huntington-Ashland Nonattainment Area NO_x Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
County	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
Cabell, WV	7,143.00	6,362.57	4,538.58	3,700.52	2,662.05
Mason, WV	24,400.16	12,870.31	12,565.86	8,310.59	4,559.72
Wayne, WV	7,622.21	7,667.99	6,576.57	6,367.15	1,300.84
WV NO_x Total	**39,165.37**	**26,900.87**	**23,681.01**	**18,378.26**	**8,522.61**
Boyd, KY	12,904.35	12,459.74	10,974.99	10,073.03	2,386.71
Lawrence, KY	13,420.77	5,632.93	3,647.67	2,703.00	2,929.93
KY NO_x Total	**26,325.12**	**18,092.67**	**14,622.66**	**12,776.03**	**5,316.64**
Adams, OH	31,589.16	32,635.08	27,420.06	25,366.38	7,268.70
Gallia, OH	58,132.90	60,263.38	24,897.28	9,668.46	50,594.92
Lawrence, OH	2,945.03	2,691.69	1,771.48	1,179.13	1,512.56
Scioto, OH	4,554.59	4,202.95	2,750.01	1,643.98	2,558.97
OH NO_x Total	**97,221.68**	**99,793.10**	**56,838.83**	**37,857.95**	**61,935.15**
Combined NO_x Total	**162,712.17**	**144,786.64**	**95,142.50**	**69,012.24**	**75,774.40**

SO_2

Table 37: Cabell County, WV SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.00	0.00	0.00	0.00
NonEGU	52.80	28.33	146.84	174.24	-145.91
Nonroad	17.99	8.02	0.75	0.63	7.39
Area	1,465.98	1,512.26	1,607.26	1,700.04	-187.78
MAR	53.85	24.00	3.14	2.01	21.99
Onroad	81.13	21.95	9.39	9.13	12.82
TOTAL	**1,671.75**	**1,594.56**	**1,767.38**	**1,886.05**	**-291.49**

Table 38: Wayne County, WV SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.94	0.50	0.00	0.00	0.50
NonEGU	219.70	236.65	288.26	281.08	-44.43
Nonroad	7.78	3.43	0.27	0.21	3.22
Area	494.32	510.44	544.15	577.18	-66.74
MAR	98.94	48.50	13.94	12.46	36.04
Onroad	32.87	9.02	3.76	4.26	4.76
TOTAL	**854.55**	**808.54**	**850.38**	**875.19**	**-66.65**

Table 39: Mason County, WV SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	84,877.44	38,172.36	33,633.13	15,967.94	22,204.42
NonEGU	0.88	156.76	65.63	214.03	-57.27
Nonroad	11.15	4.91	0.37	0.28	4.63
Area	120.24	121.43	123.85	126.21	-4.78
MAR	42.39	18.93	2.49	1.60	17.33
Onroad[1]	0.54	0.16	0.07	0.08	0.08
TOTAL	**85,052.64**	**38,474.55**	**33,825.54**	**16,310.14**	**22,164.41**

[1] Onroad emissions were only calculated for the Graham Tax District of Mason County, while the emissions for the other sectors include the entire county.

Table 40: Boyd County, KY SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	1.14	0.29	0.09	0.00	0.29
NonEGU	9,650.25	10,188.42	11,065.41	12,012.04	-1,823.62
Nonroad	8.46	3.67	0.85	0.24	3.43
Area	544.34	569.78	594.03	619.38	-49.60
MAR	426.27	387.85	292.02	196.77	191.08
Onroad	11.89	11.62	11.89	12.12	-0.50
TOTAL	**10,642.35**	**11,161.63**	**11,964.29**	**12,840.55**	**-1,678.92**

Table 41: Lawrence County, KY SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	49,858.09	40,717.49	20,475.34	11,800.13	28,917.36
NonEGU	1.55	1.49	1.45	1.40	0.09
Nonroad	4.06	1.76	0.41	0.12	1.64
Area	96.74	99.37	98.36	98.02	1.35
MAR	66.03	54.52	38.28	21.04	33.48
Onroad[1]	0.76	0.74	0.73	0.71	0.03
TOTAL	**50,027.23**	**40,875.37**	**20,614.57**	**11,921.42**	**28,953.95**

[1]Onroad emissions were only calculated for the portion of Lawrence County, KY described by US Census 2000 block group identifier 21-127-9901-6, while the emissions for the other sectors include the entire county.

Table 42: Adams County, OH SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	125,070.34	35,946.20	27,077.57	23,276.73	12,669.47
NonEGU	4.37	3.73	8.04	11.62	-7.89
Nonroad	15.33	5.67	0.91	0.14	5.53
Area	33.56	33.54	31.73	30.08	3.46
MAR	28.54	19.33	6.61	1.79	17.54
Onroad	2.10	0.71	0.32	0.39	0.32
TOTAL	**125,154.24**	**36,009.18**	**27,125.18**	**23,320.75**	**12,688.43**

[1]Onroad emissions were only calculated for Monroe and Sprigg Townships in Adams County, while the emissions for the other sectors include the entire county.

Table 43: Gallia County, OH SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	100,102.91	91,889.46	41,924.16	20,510.45	71,379.01
NonEGU	0.00	0.00	0.00	0.00	0.00
Nonroad	10.76	3.98	0.67	0.15	3.83
Area	16.36	16.60	15.91	15.35	1.25
MAR	27.78	19.07	6.90	2.26	16.81
Onroad	1.02	0.34	0.16	0.16	0.18
TOTAL	**100,158.83**	**91,929.45**	**41,947.80**	**20,528.37**	**71,401.08**

[1]Onroad emissions were only calculated for Addison and Cheshire Townships in Gallia County, while the emissions for the other sectors include the entire county.

Table 44: Lawrence County, OH SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.69	0.21	0.00	0.69
NonEGU	0.24	0.05	0.35	0.55	-0.50
Nonroad	18.98	6.95	1.11	0.19	6.76
Area	30.33	29.94	28.93	27.94	2.00
MAR	68.18	53.99	29.93	5.03	48.96
Onroad	28.08	9.16	4.14	4.48	4.68
TOTAL	**145.81**	**100.78**	**64.67**	**38.19**	**62.59**

Table 45: Scioto County, OH SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
Sector	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
EGU	0.00	0.00	0.00	0.00	0.00
NonEGU	977.12	1,477.24	993.09	723.09	754.15
Nonroad	36.15	13.28	2.17	0.42	12.86
Area	36.63	37.53	35.89	34.61	2.92
MAR	116.50	100.91	66.76	32.41	68.50
Onroad	34.53	11.52	5.39	5.47	6.05
TOTAL	**1,200.93**	**1,640.48**	**1,103.30**	**796.00**	**844.48**

Table 46: Huntington-Ashland Nonattainment Area SO_2 Emission Inventory Totals for 2005, 2008, 2015 and 2022 (tpy)					
County	**2005 (Base)**	**2008 Attainment**	**2015 Interim**	**2022 Maintenance**	**Safety Margin**
Cabell, WV	1,671.75	1,594.56	1,767.38	1,886.05	-291.49
Mason, WV	85,052.64	38,474.55	33,825.54	16,310.14	22,164.41
Wayne, WV	854.55	808.54	850.38	875.19	-66.65
WV SO2 Total	**87,578.94**	**40,877.65**	**36,443.30**	**19,071.38**	**21,806.27**
Boyd, KY	10,652.35	11,161.63	11,964.29	12,840.55	-1,678.92
Lawrence, KY	50,027.23	40,875.37	20,614.57	11,921.42	28,953.95
KY SO_2 Total	**60,679.58**	**52,037.00**	**32,578.86**	**24,761.97**	**27,275.03**
Adams, OH	125,154.24	36,009.18	27,125.18	23,320.75	12,688.43
Gallia, OH	100,158.83	91,929.45	41,947.80	20,528.37	71,401.08
Lawrence, OH	145.81	100.78	64.67	38.19	62.59
Scioto, OH	1,200.93	1,640.48	1,103.30	796.00	844.48
OH SO_2 Total	**226,659.81**	**129,679.89**	**70,240.95**	**44,683.31**	**84,996.58**
Combined SO_2 Total	**374,918.33**	**222,594.54**	**139,263.11**	**88,516.66**	**134,077.88**

$PM_{2.5}$, NO_x, and SO_2

Table 47: West Virginia portion of the Huntington-Ashland Area Comparison of 2008 attainment year and 2015 and 2022 projected emission estimates (tpy)					
	2008 Attainment	**2015 Interim**	**2015 Projected Decrease**	**2022 Maintenance**	**2022 Projected Decrease**
$PM_{2.5}$	3,748.14	2,894.57	853.57	3,107.84	640.30
NO_x	26,900.87	23,680.01	3,220.86	18,378.26	8,522.61
SO_2	40,877.65	36,443.33	4,434.32	19,071.38	21,806.27

Table 48: Kentucky Portion of the Huntington-Ashland Area Comparison of 2008 attainment year and 2015 and 2022 projected emission estimates (tpy)					
	2008 Attainment	**2015 Interim**	**2015 Projected Decrease**	**2022 Maintenance**	**2022 Projected Decrease**
$PM_{2.5}$	2,578.70	2,540.30	38.40	2,508.47	70.23
NO_x	18,092.67	14,622.66	3,470.01	12,776.03	5,316.64
SO_2	52,037.00	32,578.86	19,458.14	24,761.97	27,275.03

Table 49: Ohio Portion of the Huntington-Ashland Area Comparison of 2008 attainment year and 2015 and 2022 projected emission estimates (tpy)					
	2008 Attainment	**2015 Interim**	**2015 Projected Decrease**	**2022 Maintenance**	**2022 Projected Decrease**
$PM_{2.5}$	5,886.13	5,849.82	36.31	5,773.38	112.75
NO_x	99,793.10	56,838.83	42,954.27	37,857.95	61,935.15
SO_2	129,679.89	70,240.95	59,438.94	44,683.31	84,996.58

Table 50: Huntington-Ashland Area Comparison of 2008 attainment year and 2015 and 2022 projected emission estimates (tpy)					
	2008 Attainment	**2015 Interim**	**2015 Projected Decrease**	**2022 Maintenance**	**2022 Projected Decrease**
$PM_{2.5}$	12,212.97	11,284.69	928.28	11,389.69	823.28
NO_x	144,786.64	95,142.50	49,644.14	69,012.24	75,774.40
SO_2	222,594.54	139,263.14	83,331.40	88,516.66	134,077.88

As shown in the table above (Table 50), $PM_{2.5}$ emissions in the nonattainment area are projected to decrease by 928 tons in 2015 and 823 tons in 2022. NO_x emissions in the nonattainment area are projected to decrease by 49,644 tons in 2015 and 75,774 tons in 2022. SO_2 emissions in the nonattainment area are projected to decline by 83,331 tons in 2015 and 134,078 tons in 2022.

Although Cabell, Wayne and Mason Counties show a combined net reduction in $PM_{2.5}$ emissions, area sources and, to a lesser extent, point sources show a projected increase in emissions due to expectations that the population will grow in this area; however, cleaner vehicles and fuels are expected to be in place in 2009 and 2018, and the Transport Rule will be implemented in 2012 and 2014 and these programs should cause an overall drop in all three pollutants emissions. Decreases from EPA rules covering Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements [65FR6698,10FEB2000], Highway Heavy-Duty Engine Rule [62FR54694, 21OCT1997], and the Non-Road Diesel Engine Rule [63FR56968, 23OCT1998] are factored into the changes.

In addition, the Mountaineer Power Station (AEP) in Mason County, WV implemented changes in 2007 and 2008. Mountaineer has a single 1300 megawatt (MW) unit, which was required by a federally enforceable consent decree (see Appendix E) to operate their SCR continuously to reduce NO_x emissions by January 2008, and to install and continuously operate an FGD to reduce SO_2 emissions by December 2007. The Philip Sporn Power Station (AEP) in Mason County (AEP) began operation of SNCR on Units #3 and #4 to reduce NO_x emissions in January 2009.

In addition to the above, the General J. M. Gavin Station (AEP) in Gallia County, OH implemented changes in 2009. The two units, #1 and #2 (each 1300 MW) were required by a federally enforceable consent decree to operate their SNCRs continuously to control and reduce NO_x emissions by December 2009. The Kyger Creek Station in Gallia County (units #1, #2, #3, #4 and #5) has installed SNCRs (to reduce NO_x emissions) which they have been running continuously since January 2009. In addition, Kyger Creek Station has plans underway for installation of FGDs (to reduce SO_2 emissions). They are expecting the FGDs to be operational in 2012. Finally the J. M. Stuart DP&L Station in Adams County (units #1,

#2, #3 and #4) incorporated year round operation of SNCR controls in 2009 to reduce NO_x emissions, as required through a federally enforceable consent decree.

Furthermore, the Big Sandy Power Station (AEP) in Lawrence County, KY implemented changes in 2009. Unit 2 was required by a federally enforceable consent decree to install and continuously operate an SCR (to reduce NO_x emissions) beginning January 1, 2009. Unit 2 is also required to install and continuously operate an FGD (to reduce SO_2 emissions) beginning December 31, 2015.

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 2007-2009. EPA's redesignation guidance (Policy Memo from John Calcagni, Director, Air Quality Management Division to Regional Air Directors: *Air Procedures for Processing Requests to Redesignate Areas to Attainment*), dated September 4, 1992 (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 annual $PM_{2.5}$ standard. Some of these reductions were realized due to the application of tighter federal standards on highway heavy-duty engines (Control of Emissions of Air Pollution from Highway Heavy Duty Engines) and Nonroad diesel engines (Control of Emissions of Air Pollution from Nonroad Diesel Engines), the application of tighter federal standards on new vehicles (Control of Air Pollution from New Motor Vehicles: Tier 2 Motor Vehicle Emission Standards and Gasoline Sulfur Control Requirements), Title IV of the CAA, the NO_x SIP Call, CAIR, and federal consent decrees requiring reductions of SO_2 and NO_x emissions from utility sources. Reductions achieved are discussed in greater detail under Chapter Five.

Table 51: Huntington-Ashland Area Combined Comparison of 2005 base year and 2008 attainment year On-road, MAR and EGU reductions		
	2005	**2008**
Onroad NO_x	12,813.39	10,596.04
Onroad $PM_{2.5}$	500.73	435.40
Onroad SO_2	192.92	65.22
MAR NO_x	12,254.67	11,912.80
MAR $PM_{2.5}$	405.82	386.48
MAR SO_2	928.48	727.10
EGU NO_x[1]	121,821.02	112,660.84
EGU $PM_{2.5}$[2]	5,647.16	6,136.82
EGU SO_2[1]	358,641.37	201,522.86

[1] Source: Clean Air Markets Division: [http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard] includes: Big Sandy, KY (1352), Riverside Generating (55198), Gen JM Gavin (8102), JM Stuart (2850), Killen (6031), Kyger Creek (2876), Big Sandy, WV (55284), Ceredo, (55276), Mountaineer (6264) and Phil Sporn (3938)

[2]Source: State emissions inventory data

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

CHAPTER FIVE

CONTROL MEASURES AND REGULATIONS

CAA 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 reasonably available control measures (RACM) and reasonably available control technology (RACT).

Background

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

EPA's $PM_{2.5}$ Implementation Rule [72FR20586, 29APR2007] interprets this requirement in great detail. Under 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

West Virginia DAQ, submitted a modeled attainment demonstration on May 28, 2009, demonstrating 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 West Virginia to develop RACT/RACM requirements, promulgate regulations and implement a control program prior to the projected attainment date.

In the April 2007 $PM_{2.5}$ Implementation Rule which established the requirements for RACM and RACT for $PM_{2.5}$ nonattainment area s, EPA stated that if a State projects that an area will attain the standard within 5 years of designation as a result of existing measures (i.e., projected to have a design value of 14.5 µg/m3 or lower), then the State may conduct a limited RACT and RACM analysis that does not involve additional modeling. Additionally, if a State could not achieve significant emissions reductions during 2008 due to the time required to implement the potential measures or other relevant factors, then the State could

conclude that there are no further RACM for the nonattainment area that would advance the attainment date by one year or more.

The predicted design value for the Huntington Area was 14.1 µg/m3, well below the annual $PM_{2.5}$ standard; therefore, the WVDAQ conducted a limited RACT and RACM analysis. A few RACM type measures had already been implemented by the WVDAQ, including 45CSR6, and 45CSR17, which were discussed in Section 6 of the attainment demonstration, submitted May 28, 2009.

Additional RACM measures could not have been implemented during 2008, since it would have taken at least two years to complete rule making and another eighteen months to two years for implementation of any new control measures.

Furthermore, the $PM_{2.5}$ Implementation Rule included a presumption that in States that fulfill their CAIR SO_2 emission reduction requirements entirely through EGU emission reductions, compliance by EGU sources with an EPA-approved CAIR SIP or a CAIR FIP would satisfy their SO_2 RACM/RACT requirements. The $PM_{2.5}$ Implementation Rule also included a presumption that in States that are subject to the CAIR annual NO_x emission reduction requirements and fulfill these requirements entirely through EGU emission reductions, compliance by EGU sources with an EPA-approved CAIR SIP or a CAIR FIP would satisfy their NOx RACM/RACT requirement for the $PM_{2.5}$ NAAQS, provided that sources with existing selective catalytic reduction (SCR) emission control technology installed on their boilers operate that technology on a year round basis beginning in 2009.

West Virginia is subject to the CAIR and submitted a CAIR SIP to EPA on June 1, 2006. Revisions to the CAIR SIP were submitted on April 22, 2008. EPA approved the revised CAIR SIP on August 4, 2009 (74 FR 38536) The CAIR SIP includes 45CSR39 – Control of Annual Nitrogen Oxide Emissions to Mitigate Interstate Transport of Fine Particulate Matter and Nitrogen Oxides; and 45CSR41 – Control of Annual Sulfur Dioxide Emissions to Mitigate Interstate Transport of Fine Particulate Matter and Sulfur Dioxide. Both of these rules rely entirely on EGU emission reductions to satisfy the annual NO_x and SO_2 reduction requirements.

West Virginia has a three utility companies that have units equipped with existing SCRs:

- Virginia Electric and Power Company - Mt. Storm Power Station
- American Electric Power - John Amos, Mountaineer and Mitchell Power Stations
- Allegheny Energy Supply - Harrison and Pleasants Power Stations.

Virginia Electric and Power Company and American Electric Power are both subject to federal Consent Decrees which require the year round operation of the existing SCRs beginning January 1, 2008. [See Appendix E for copies of the Consent Decrees.]

Allegheny Energy Supply has entered into Consent Orders with the State and agreed to operate the SCRs on the units at Harrison and Pleasants whenever the units are in operation,

except for periods of required SCR maintenance, beginning January 1, 2009. [See Appendix E for copies of the Consent Orders.]

Therefore, compliance with the CAIR requirements satisfy the SO_2 and NO_x RACM/RACT requirements for electric generating units.

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

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

Demonstration

In West Virginia's modeled attainment demonstration submitted on May 28, 2009, West Virginia demonstrated that attainment would be achieved in this area by 2009; and therefore, it was not necessary to submit a separate RFP plan.

Requirement 3 of 6

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

Background

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

Demonstration

The 2002 comprehensive inventory was submitted to EPA with West Virginia's $PM_{2.5}$ attainment demonstration SIP submitted on May 28, 2009.

West Virginia also updates its inventory in accordance with EPA's AERR rule (i.e. emissions statements). As discussed in Chapter 4 (Requirement 4), West Virginia DAQ 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

The 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. West Virginia passed this rule in 2002. NO_x SIP Call requirements are incorporated into permits along with monitoring, recordkeeping, and reporting necessary to ensure ongoing compliance. West Virginia DAQ 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. In West Virginia, this rule accounted for a reduction from 2003 levels of approximately 57 percent of NO_x emissions by 2008 from source subject to the rule. The other 21 states also adopted these rules.

On March 10, 2004, the EPA promulgated the CAIR. Beginning in 2009, 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 NO_x SIP Call for EGUs. National NO_x emissions will be cut from 4.5 million tons in 2004, to a cap of 1.5 million tons by 2009, and 1.3 million tons in 2018 in 28 states. States were required to submit a CAIR SIP as part of this effort. West Virginia submitted an initial CAIR SIP on June 1, 2006. Subsequently, WV submitted an abbreviated CAIR SIP on June 8, 2007, which requested authority to allocate CAIR allowances. Final revisions to the CAIR SIP were submitted on April 22, 2008. The revised CAIR SIP was approved in a direct final action on August 2, 2009 (74FR38536).

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 EPA Clean Air Markets web site, quantify the gradual NOx reductions that have occurred in West Virginia as a result of Title IV of the 1990 CAA Amendments and the beginning of the NO_x SIP Call Rule. West Virginia developed the NO_x Budget Trading Program rules in 45CSR 1 and 26 in response to the SIP Call. 45CSR1 regulated EGUs and 45CSR26 regulated certain non-EGUs under a cap and trade program based on an 77 percent reduction of NO_x emissions from EGUs and a 60 percent reduction of NO_x emissions from non-EGUs, compared to historical levels. This cap was in place through 2008, at which time the CAIR program superseded it as discussed above. Requirement 3 of 5 under Chapter 4 above discussed the reductions West Virginia has seen as a result of CAIR.

On April 21, 2004, EPA published Phase II of the NOx SIP Call that established a budget for large (greater than 1 ton per day emissions) stationary internal combustion engines. 45CSR1 addresses stationary internal combustion engines, all used in natural gas pipeline transmission. EPA approved this revision to the SIP on November 27, 2006. An 82 percent NOx reduction from 1995 levels was anticipated. Approval of the compliance plans occurred by August 4, 2006, and March 1, 2007 and the compliance demonstration began May 1, 2007.

Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards [65FR6698, 10FEB2000]

In February 2000, EPA published 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 applies nationwide. The federal rules phased in between 2004 and 2009.

EPA estimated that NO_x emission reductions will be approximately 77 percent for passenger cars, 86 percent for smaller SUVs, light trucks, and minivans, and 65 to 95 percent reductions for larger SUVs, vans, and heavier trucks. The sulfur content of gasoline is estimated to be reduced by up to 90 percent. VOC emission reductions will be approximately 12 percent for passenger cars, 18 percent for smaller SUVs, light trucks, and minivans, and 15 percent for larger SUVs, vans, and heavier trucks.

Heavy-Duty Diesel Engines [65FR59896, 06OCT2000]
In October 2000, EPA published 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 [69FR38958, 29JUN2004]
In June 2004, EPA published 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
West Virginia has a longstanding and fully implemented New Source Review (NSR) program. 45CSR14 - Permits for the Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration (PSD), was originally approved by EPA as part of the SIP with an effective date of 5/12/86 [51FR12517]. 45CSR14 has been updated and was last approved by EPA as part of the SIP with an effective date of 12/4/2006 [71FR64470].

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

West Virginia commits to maintaining the aforementioned control measures after redesignation. West Virginia 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 annual $PM_{2.5}$ standard in the Huntington-Ashland Area, will be submitted to EPA for approval as a SIP revision.

West Virginia, through the Division of Environmental Protection, Division of Air Quality, has the legal authority and necessary resources to actively enforce any violations of its rules or permit provisions. After redesignation, it intends to continue enforcing all rules that relate to the emission of $PM_{2.5}$ precursors in the Huntington-Ashland Area.

CHAPTER SIX

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

Requirement 1 of 4
A commitment to submit a revised plan eight years after redesignation.

Demonstration
West Virginia 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
West Virginia hereby commits to adopt and expeditiously implement necessary corrective actions in the following circumstances:

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

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

Action Level Response:
An action level response shall be prompted whenever a two-year average of the weighted annual means of 15.0 µg/m3 or greater occurs within the maintenance area. A violation of the standard (three-year average of the weighted annual means of 15.0 µg/m3 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, West Virginia DAQ in conjunction with the metropolitan planning organization or regional council of governments, will determine additional control measures needed to assure future attainment of the 1997 $PM_{2.5}$ NAAQS. 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. West Virginia DAQ 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 West Virginia 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, West Virginia will submit to 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 West Virginia DAQ deems appropriate. West Virginia DAQ 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) Concrete manufacturing - upgrade wet suppression.
5) 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 - SO2 and NOx controls;
- EGUs;
- process heaters;
- internal combustion engines;
- combustion turbines;
- other sources greater than 100 tons per year;
- Fleet vehicles;
- Concrete manufacturers;
- Aggregate processing plants.

CHAPTER SEVEN

PUBLIC PARTICIPATION

West Virginia published notification for a public hearing and solicitation for public comment concerning the draft redesignation petition and maintenance plan in the Huntington Herald Dispatch on May 20, 2011.

The public hearing to receive comments on the redesignation request is scheduled for 6:00 p.m. on June 21, 2011, at the West Virginia Division of Environmental Protection Headquarters located at 601 57th Street, SE, Charleston, WV. The public comment period closes on June 21, 2011. Appendix F includes a copy of the public notice.

CHAPTER EIGHT

CONCLUSIONS

The Huntington-Ashland $PM_{2.5}$ nonattainment area has attained the 1997 annual and 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. West Virginia DAQ has prepared a redesignation request and maintenance plan that meet the requirements of Section 110 (a)(1) of the 1990 CAA.

Based on this presentation, the Huntington-Ashland $PM_{2.5}$ nonattainment area meets the requirements for redesignation under the CAA and EPA guidance. West Virginia has performed an analyses showing 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 West Virginia hereby requests that the Huntington-Ashland 1997 $PM_{2.5}$ nonattainment area be redesignated to attainment simultaneously with EPA approval of the maintenance plan provisions contained herein.