west virginia department of environmental protection

REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE WEST VIRGINIA PORTION OF THE MARTINSBURG-HAGERSTOWN, WV-MD 1997 $PM_{2.5}$ NONATTAINMENT AREA

PROPOSED
June 2013

Promoting a healthy environment.

Page intentionally left blank.

Table of Contents

I. INTRODUCTION. . . . . Page 1
A. Request.. . . . . Page 1
B. Background. . . . . Page 1
C. Geographic Description. . . . . Page 2

II. REDESIGNATION CRITERIA. . . . . Page 4
A. The Martinsburg Area has attained the 1997 $PM_{2.5}$ Standard. . . . . Page 4
B. The Martinsburg Area has a Fully Approved SIP Under Section 110(k) of the CAA . . . . . Page 9
C. The Martinsburg Area's Air Quality Improvement is Due to Permanent and Enforceable Emissions Reductions. . . . . Page 10
D. The State has Developed a Maintenance Plan for the Martinsburg Area Which Ensures Attainment of the 1997 $PM_{2.5}$ Standard for at least 10 Years. . . . . Page 10
E. The Martinsburg Area Has Met All Relevant Requirements under CAA Section 110 and Part D. . . . . Page 10
1. Section 110(a) requirements. . . . . Page 10
2. Section 172(c) requirements. . . . . Page 11
3. Conformity. . . . . Page 11

III. MAINTENANCE PLAN. . . . . Page 12
A. $PM_{2.5}$ Emissions Demonstrations. . . . . Page 16
B. NO_x Emissions Demonstrations. . . . . Page 17
C. SO_2 Emissions Demonstrations. . . . . Page 18
D. NH_3 Emissions Demonstrations. . . . . Page 19
E. VOC Emissions Demonstrations. . . . . Page 20
F. Summary of $PM_{2.5}$, NO_x, SO_2, NH_3 and VOC Emission Reductions.. . . . . Page 21
G. Air Quality Improvement is Based on Permanent and Enforceable Emission Reductions . . . . . Page 22
H. Emissions Tracking. . . . . Page 23

IV. TRANSPORTATION ANALYSIS. . . . . Page 24
A. Onroad Emission Estimations. . . . . Page 24
1. Background. . . . . Page 24
2. Highway Emissions. . . . . Page 24
3. Analysis Methodology and Data Inputs. . . . . Page 25
B. Description of Input Data.. . . . . Page 27
1. Roadway Data. . . . . Page 28
2. Other Supporting Traffic Data. . . . . Page 30
3. Vehicle Class Data. . . . . Page 31
4. Vehicle Ages. . . . . Page 32
5. Vehicle Population Data. . . . . Page 32

6. Environmental and Fuel Data . . . . . Page 32
7. Other Vehicle Technology and Control Strategy Data. . . . . Page 33
C. Analysis Methodology. . . . . Page 33
1. VMT Preparation. . . . . Page 33
2. Speed Estimation . . . . . Page 36
3. MOVES Runs. . . . . Page 38
D. Proposed Motor Vehicle Emission Budgets (MVEBs). . . . . Page 41
1. Proposed NO_x MVEBs.. . . . . Page 42
2. Proposed Direct $PM_{2.5}$ MVEBs. . . . . Page 43
3. Summary of Proposed MVEBs. . . . . Page 44

V. CONTROL MEASURES AND REGULATIONS. . . . . Page 45
A. Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT). . . . . Page 45
B. Inventory of Actual Emissions.. . . . . Page 46
C. Evidence that control measures required in past $PM_{2.5}$ SIP revisions have been fully implemented.. . . . . Page 46
1. NO_x SIP Call, CAIR and CSAPR. . . . . Page 46
2. Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards. . . . . Page 48
3. Heavy-Duty Diesel Engines.. . . . . Page 48
4. Clean Air Non-road Diesel Rule. . . . . Page 48
D. Assurance that existing control measures will remain in effect.. . . . . Page 48

VI. SUPPLEMENTAL MODELING ANALYSES.. . . . . Page 49
A. EPA Modeling for the Cross State Air Pollution Rule (Final Transport Rule). . . . Page 49
B. EPA Modeling for Proposed Transport Rule 2010. . . . . Page 51
C. VISTAS/ASIP Emissions and Air Quality Modeling to Support $PM_{2.5}$ and 8-hour Ozone State Implementation Plans. . . . . Page 52

VII. CONTINGENCY MEASURES. . . . . Page 54
A. Maintenance Plan Review. . . . . Page 54
B. Corrective Actions. . . . . Page 54
1. Warning Level Response. . . . . Page 54
2. Action Level Response. . . . . Page 54
3. Control Measure Selection and Implementation. . . . . Page 55
C. Potential Contingency Measures. . . . . Page 55
D. $PM_{2.5}$, SO_2, and NO_x sources potentially subject to future additional control requirements. . . . . Page 55

VIII. PUBLIC PARTICIPATION.. . . . . Page 56

IX. CONCLUSIONS. . . . . Page 56

List of Tables

Table 1: Martinsburg Nonattainment Area Design Values for the 1997 Annual and 24-hr $PM_{2.5}$ NAAQS. . . . . Page 5
Table 2: SO_2 and NO_x EGU Emissions 2002 through 2011. . . . . Page 13
Table 3: Berkeley County, WV $PM_{2.5}$ Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy). . . . . Page 16
Table 4: Washington County, MD $PM_{2.5}$ Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 16
Table 5: Martinsburg Nonattainment Area $PM_{2.5}$ Emission Inventory Totals for 2007, 2017 and 2025 (tpy) . . . . . Page 17
Table 6: Berkeley County, WV NO_x Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy). . . . . Page 17
Table 7: Washington County, MD NO_x Emission Inventory Totals for 2007, 2017 and 2025 (tpy) . . . . . Page 17
Table 8: Martinsburg Nonattainment Area NO_x Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 18
Table 9: Berkeley County, WV SO_2 Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy). . . . . Page 18
Table 10: Washington County, MD SO_2 Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 18
Table 11: Martinsburg Nonattainment Area SO_2 Emission Inventory Totals for 2007, 2015 and 2025 (tpy). . . . . Page 19
Table 12: Berkeley County, WV NH_3 Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy). . . . . Page 19
Table 13: Washington County, MD NH_3 Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 19
Table 14: Martinsburg Nonattainment Area NH_3 Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 20
Table 15: Berkeley County, WV VOC Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy). . . . . Page 20
Table 16: Washington County, MD VOC Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 20
Table 17: Martinsburg Nonattainment Area VOC Emission Inventory Totals for 2007, 2017 and 2025 (tpy). . . . . Page 21
Table 18: West Virginia Portion of the Martinsburg Area Comparison of 2007 attainment year and 2017 and 2025 projected emission estimates (tpy). . . . . Page 21
Table 19: Maryland Portion of the Martinsburg Area Comparison of 2007 attainment year and 2017 and 2025 projected emission estimates (tpy). . . . . Page 21
Table 20: Martinsburg Area Comparison of 2007 attainment year and 2017 and 2025 projected emission estimates (tpy). . . . . Page 22
Table 21: Summary of Highway Emissions Inventory. . . . . Page 25
Table 22: Demographic Growth Assumptions to the Travel Model. . . . . Page 30
Table 23: MOVES Source Types and HPMS Vehicle Groups. . . . . Page 31
Table 24: MOVES Run Data Checklist. . . . . Page 39

Table 25: Percentage of Charleston Emissions Attributable to Mobile Sources in 2007, 2017 and 2025. . . . . Page 40
Table 26: Berkeley County (WV) NO_x Emission Inventory Totals, Onroad (Highway) Emissions and Original Safety Margins for 2017 and 2025 (tpy). . . . . Page 42
Table 27: Berkeley County (WV) NO_x Proposed NO_x MVEBs and Remaining Safety Margins After Reallocation from the Original Safety Margins into the NO_x MVEBs. . . . . Page 42
Table 28: Berkeley County (WV) $PM_{2.5}$ Emission Inventory Totals, Onroad (Highway) Emissions and Original Safety Margins for 2018 and 2025 (tpy). . . . . Page 43
Table 29: Berkeley County (WV) Proposed $PM_{2.5}$ MVEBs and Remaining Safety Margins After Reallocation from the Original Safety Margins into the $PM_{2.5}$ MVEBs. . . . . Page 43
Table 30: CSAPR Annual $PM_{2.5}$ Design Values (µg/m3).. . . . . Page 50
Table 31: Proposed Transport Rule Modeling Results from EPA - 2010. . . . . Page 51
Table 32: VISTAS/ASIP 2009, 2012 and 2018 Modeling Results (with CAIR). . . . . Page 53

List of Figures

Figure 1: Map of the Martinsburg-Hagerstown, WV-MD nonattainment area and monitor locations . . . . . Page 5
Figure 2: West Virginia $PM_{2.5}$ Annual Design Values, 1999-2001 through 2009-2011.. . . Page 7
Figure 3: Ohio $PM_{2.5}$ Annual Design Values, 1999-2001 through 2007-2009.. . . . . Page 8
Figure 4: $PM_{2.5}$ Annual Mean National Trends.. . . . . Page 9
Figure 5. Local Data Inputs Used for Emissions Inventory. . . . . Page 26
Figure 6. Emission Calculation Process.. . . . . Page 27
Figure 7. Examples of Key MOVES Input Data. . . . . Page 28
Figure 8. HEP Regional Travel Demand Model. . . . . Page 29
Figure 9. PPSUITE Speed/Emission Estimation Procedure. . . . . Page 35
Figure 10. Emission Factor vs. Speed Variances (NO_x). . . . . Page 36

Page intentionally left blank.

List of Appendices

Appendix A: Air Monitoring Data. . . . . Page A - 1

Appendix B: Berkeley County, West Virginia Emissions Inventory. . . . . Page B - 1

Appendix C: Berkeley County, West Virginia On-Road Mobile Emissions Inventory Documentation. . . . . Page C - 1

Appendix D: Washington County, Maryland Emissions Inventory. . . . . Page D - 1

Appendix E: MARAMA Documentation for Washington County, MD Inventory. . . Page E - 1

Appendix F: Washington County, Maryland On-Road Mobile Emissions Inventory Documentation. . . . . Page F - 1

Appendix G: Federal Consent Decrees and State Consent Orders. . . . . Page G - 1

Appendix H: Public Participation. . . . . Page H - 1

Page intentionally left blank.

REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE WEST VIRGINIA PORTION OF THE MARTINSBURG-HAGERSTOWN, WV-MD 1997 $PM_{2.5}$ NONATTAINMENT AREA

I. INTRODUCTION

The Martinsburg-Hagerstown, WV-MD $PM_{2.5}$ nonattainment area is a multi-state nonattainment area, comprising Berkeley County in West Virginia, and Washington County in Maryland. The area monitored attainment of the 1997 $PM_{2.5}$ standard with a design value for 2006-2008 of 14.9 $\mu g/m^3$, 2007-2009 of 14.0 $\mu g/m^3$, 2008-2010 of 12.9 $\mu g/m^3$ and 2009-2011 of 11.8 $\mu g/m^3$. The State of West Virginia herein requests redesignation by the United States Environmental Protection Agency of Berkeley to attainment relative to the 1997 $PM_{2.5}$ National Ambient Air Quality Standard. The State of Maryland also plans to request redesignation of Washington County, Maryland to attainment relative to the 1997 $PM_{2.5}$ National Ambient Air Quality Standard.

A. Request

The State of West Virginia is requesting that the EPA redesignate the West Virginia portion of the Martinsburg-Hagerstown, WV-MD 1997 $PM_{2.5}$ Nonattainment Area to attainment pursuant to the provisions of the Clean Air Act, section 107. The State is also requesting that EPA concurrently approve the associated maintenance plan as a revision to the State Implementation Plan (SIP), meeting the requirements of Clean Air Act, section 175A, which demonstrates that the area will continue to meet the current $PM_{2.5}$ air quality standards for at least ten more years.

The State of West Virginia is also requesting approval of the 2005 base year inventory as meeting the requirements under Clean Air Act Section 172(c)(3). DEP submitted this data into EPA's National Emissions Inventory (NEI) and has updated the onroad mobile emissions using MOVES, the most recent regulatory model. Other refinements include updates to the nonroad mobile emissions as well.

B. Background

The Clean Air Act (CAA) requires areas failing to meet a National Ambient Air Quality Standard (NAAQS) to develop State Implementation Plans (SIPs) to expeditiously attain and maintain the standard. The 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 98th 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 court 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.

On November 20, 2009 [74 FR60199] EPA determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 $PM_{2.5}$ NAAQS (Clean Data Determination). This determination was based on complete, quality-assured and certified ambient air monitoring data for the three year period, 2006-2008. This determination suspended the state's requirement to submit an attainment demonstration, Reasonably Available Control Measures (RACM), including Reasonably Available Control Technology (RACT), Reasonable Further Progress (RFP) plan, contingency measures, and other planning SIP revisions related to attainment of the 1997 $PM_{2.5}$ NAAQS for so long as the area continues to attain the 1997 $PM_{2.5}$ NAAQS.

On January 10, 2012 [77 FR 1411] EPA also determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 annual $PM_{2.5}$ NAAQS by the applicable attainment date of April 5, 2010. This determination was based upon complete, quality-assured, and certified ambient air monitoring data for the 2007-2009 monitoring period.

C. Geographic Description

The Martinsburg-Hagerstown, WV-MD $PM_{2.5}$ nonattainment area (Martinsburg area) is a multi-state nonattainment area, comprising Berkeley County in West Virginia, and Washington County in Maryland. This area is shown in Figure 1 under Section II.A. The Martinsburg area has not previously been subject to nonattainment area rulemakings for fine particles.

Although EPA designated the Martinsburg area nonattainment for the 15.0 $\mu g/m^3$ annual standard, as a result of the Clean Data Determination West Virginia DEP was not required to develop a plan to reduce oxides of nitrogen (NO_x), sulfur dioxide (SO_2) and direct $PM_{2.5}$ emissions and demonstrate that the area would meet the federal annual air quality standard by April 5, 2010.

This document is intended to support West Virginia's request that the West Virginia portion of the Martinsburg area be redesignated from nonattainment to attainment for the 1997 $PM_{2.5}$ standard. In addition, the State of Maryland also plans to submit a request for their portion of the Martinsburg area.

II. REDESIGNATION CRITERIA

Pursuant to Section 107(d)(3)(E) of the CAA states must sufficiently address five issues to obtain redesignation of a nonattainment area to attainment:

A. determinate that the area has attained the applicable NAAQS;
B. have a fully approved implementation plan under CAA section 110(k);
C. show that the improvement in air quality is due to permanent and enforceable emission reductions;
D. submit an EPA approvable maintenance plan which ensures attainment of the NAAQS for at least ten years beyond redesignation; and
E. show that the area has met the applicable requirements of CAA section 110 and part D.

The State of West Virginia herein affirmatively completes all five of the required elements as detailed below.

A. The Martinsburg Area has attained the 1997 $PM_{2.5}$ Standard
[See Appedix A]

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 $\mu g/m^3$. While calculating design values, three significant digits must be carried in the computations, with final values rounded to the nearest 0.1 $\mu g/m^3$. Decimals 0.05 or greater are rounded up, and those less than 0.05 are rounded down, so that 15.049 $\mu g/m^3$ is the largest concentration that is less than, or equal to 15.0 $\mu g/m^3$. Values at or below 15.0 $\mu g/m^3$ meet the standard; values equal to or greater than 15.1 $\mu g/m^3$ 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.

There are two (2) monitors measuring $PM_{2.5}$ concentrations in the Martinsburg, WV-MD nonattainment area. One (1) monitor is located in West Virginia and operated by the West Virginia Division of Air Quality (DAQ). One (1) monitor is located in Maryland and operated by the Maryland Department of the Environment (MDE). The location of the monitoring sites for this nonattainment area are shown in Figure 1. A listing of the design values based on the three-year average of the annual mean concentrations from 2001-2003 through 2009-2011 for the monitors is shown in Table 1. The data for the two monitors is located in Appendix A.

The data in Appendix A has been quality assured, up through 2011 in accordance with 40 CFR 58.10 and all other federal requirements. The data has been recorded in the AQS database and, therefore,

the data are available to the public. Table 1 shows the monitoring data for 2001-2011 that were retrieved from the EPA AQS.

Figure 1: Map of the Martinsburg-Hagerstown, WV-MD nonattainment area and monitor locations

Table 1: Martinsburg Nonattainment Area Design Values for the 1997 Annual and 24-hr $PM_{2.5}$ NAAQS

	1997 NAAQS 24 hr 3 yr 98% = 65									1997 Annual NAAQS = 15								
FRM Site	**01-03**	**02-04**	**03-05**	**04-06**	**05-07**	**06-08**	**07-09**	**08-10**	**09-11**	**01-03**	**02-04**	**03-05**	**04-06**	**05-07**	**06-08**	**07-09**	**08-10**	**09-11**
54-003-0003	40	37	36	34	33	31	29	31	30	16.3	16.1	16.2	15.8	15.8	14.9	14.0	12.9	11.8
24-043-0009	40	39	36	34	31	30	27	28	27	13.9	14.1	14.1	13.8	13.2	12.2	11.5	11.0	10.9

Source: EPA Air Quality System (AQS); http://www.epa.gov/airtrends/values.html
Notes: Green shading indicates meeting the standard, all monitors in the area monitor attainment.

The design values calculated for the Martinsburg 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.

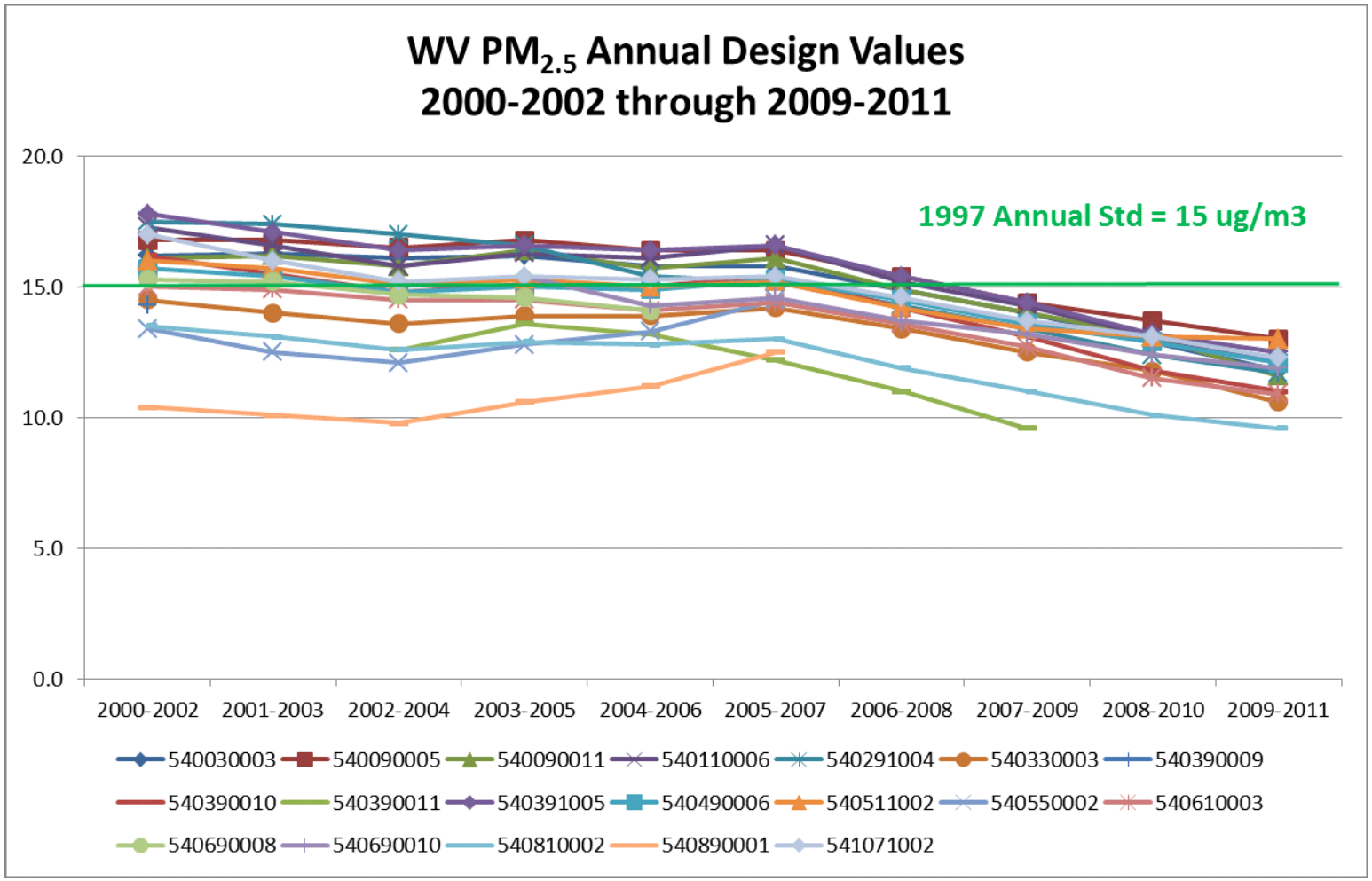
National monitoring for $PM_{2.5}$ began in 1999. There has been a clear downward trend in design values for all monitors in West Virginia and Maryland, as shown in Figures 2 and 3. Design values have also trended downward nationally, as shown in Figure 4.

On November 20, 2009 [74 FR 60199] EPA determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 $PM_{2.5}$ NAAQS [Clean Data Determination]. This determination was based upon complete, quality assured, quality controlled, and certified ambient air monitoring data that showed that the area monitored attainment of the 1997 $PM_{2.5}$ NAAQS during the 2006-2008 monitoring period. On January 10, 2012 [77 FR 1411] EPA also determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 annual $PM_{2.5}$ NAAQS by the applicable attainment date of April 5, 2010. This determination was based upon complete, quality-assured, and certified ambient air monitoring data for the 2007-2009 monitoring period.

$PM_{2.5}$ ambient air quality monitoring data for the recent three (3) year period 2009 through 2011, demonstrate that the air quality continues to meet the NAAQS for annual $PM_{2.5}$ in this nonattainment area. The NAAQS attainment, accompanied by decreases in emission levels discussed in Chapter Four, support a redesignation to attainment for the Martinsburg area based on the requirements in Section 107(d)(3)(E) of the CAA.

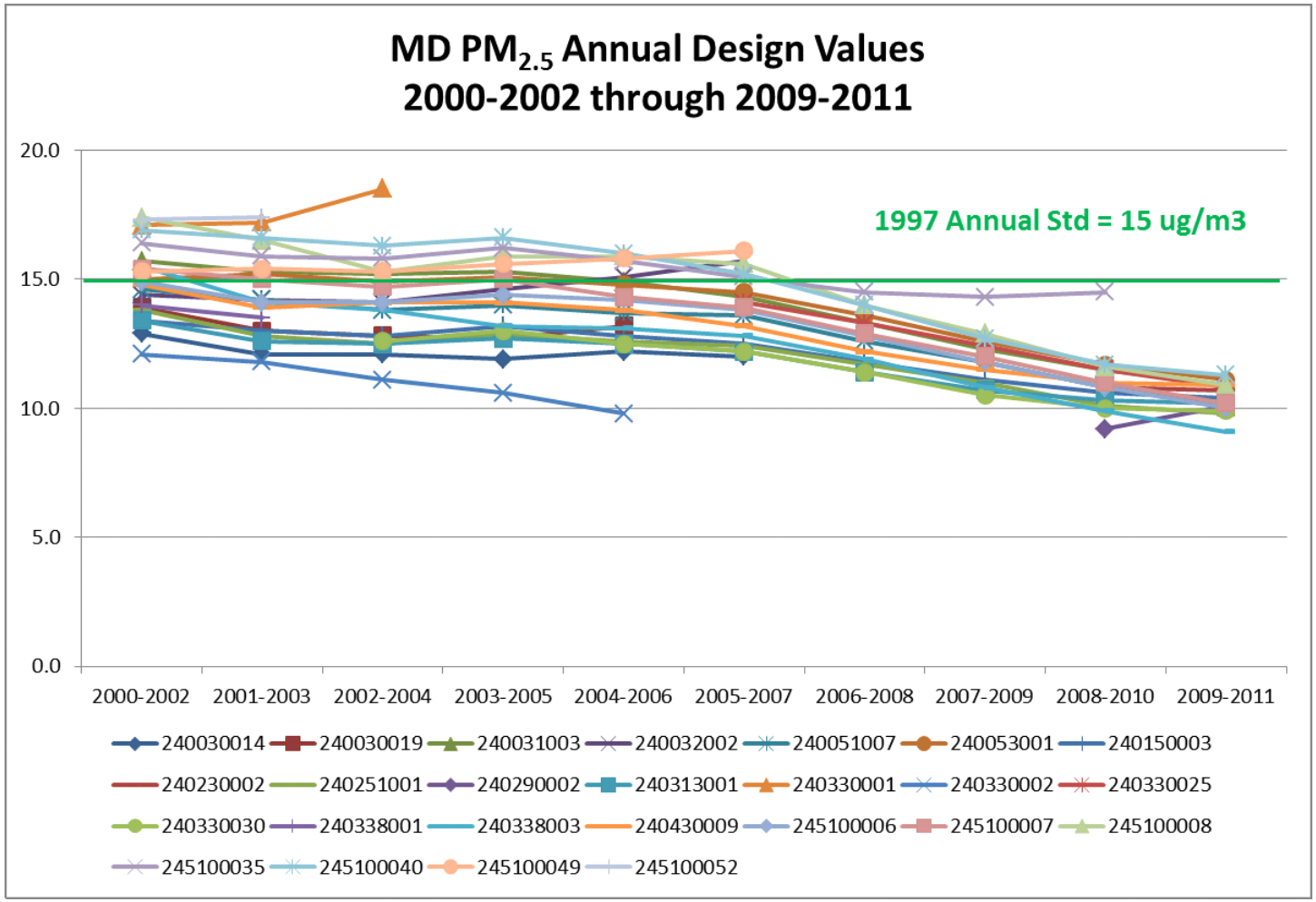
DAQ commits to continue monitoring $PM_{2.5}$ levels at the West Virginia sites indicated in Figure 1 and Table 1. DAQ will consult with EPA Region III prior to making changes to the existing monitoring network, should changes become necessary in the future. DAQ will continue to quality assure the monitoring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

Figure 2: West Virginia $PM_{2.5}$ Annual Design Values, 1999-2001 through 2009-2011.



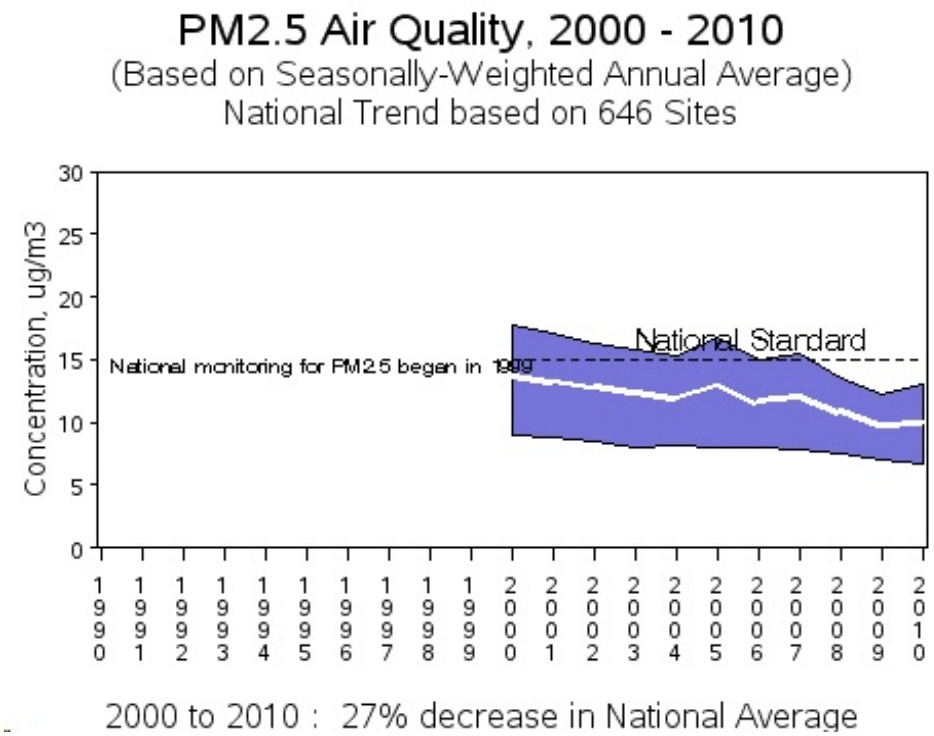
Data Source: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25_DesignValues_20092011_Final_07_30_12.xls

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



Data Source: http://www.epa.gov/airtrends/values.html, from Excel spreadsheet: PM25_DesignValues_20092011_Final_07_30_12.xls

Figure 4: $PM_{2.5}$ Annual Mean National Trends



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

B. The Martinsburg Area has a Fully Approved SIP Under Section 110(k) of the CAA

On December 17, 2004, EPA promulgated the initial $PM_{2.5}$ nonattainment areas designations for the $PM_{2.5}$ standards across the country, including the Martinsburg-Hagerstown, WV-MD area. 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. On November 20, 2009 [74 FR60199] EPA determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 $PM_{2.5}$ NAAQS (Clean Data Determination). This determination was based on complete, quality-assured and certified ambient air monitoring data for the three year period, 2006-2008. This determination suspended the state's requirement to submit an attainment demonstration, Reasonably Available Control Measures (RACM), including Reasonably Available Control Technology (RACT), Reasonable Further Progress (RFP) plan, contingency measures, and other planning SIP revisions related to attainment of the 1997 $PM_{2.5}$ NAAQS for so long as the area continues to attain the 1997 $PM_{2.5}$ NAAQS.

On January 10, 2012 [77 FR 1411] EPA also determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 annual $PM_{2.5}$ NAAQS by the applicable attainment date of April 5, 2010.

This determination was based upon complete, quality-assured, and certified ambient air monitoring data for the 2007-2009 monitoring period. The DEP believes that all applicable requirements under CAA section 110(k) have been met.

C. The Martinsburg Area's Air Quality Improvement is Due to Permanent and Enforceable Emissions Reductions

Several federally enforceable control measures have been implemented during the past decade which contribute to the air quality improvement, and will continue to reduce emissions in the future, including:

- NO_x SIP Call and the Clean Air Interstate Rule (CAIR);
- Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards [65FR6698, 10FEB2000];
- Heavy-Duty Diesel Engines [65FR59896, 06OCT2000];
- Clean Air Non-road Diesel Rule [69FR38958, 29JUN2004].

These are discussed in detail in Section V - Control Measures and Regulations.

D. The State has Developed a Maintenance Plan for the Martinsburg Area Which Ensures Attainment of the 1997 $PM_{2.5}$ Standard for at least 10 Years

Section 107(d)(3)(E) of the CAAA stipulates that for an area to be redesignated to attainment EPA must approve a maintenance plan that meets the requirements of Section 175A. A state may submit both the redesignation request and maintenance plan at the same time, and the plan adoption process, including rule-making or public hearing proceedings, may proceed on a parallel track. West Virginia is herein submitting a request to redesignate the Martinsburg area to attainment and is also requesting that EPA concurrently process this request and the accompanying maintenance plan.

E. The Martinsburg Area Has Met All Relevant Requirements under CAA Section 110 and Part D

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}).

1. <u>Section 110(a) requirements</u>

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, and 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 were 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]. The Transport Rule, or the Cross-State Air Pollution Rule (CSAPR) as it is now called, was finalized on July 6, 2011, and published in the Federal Register on August 8, 2011 [76FR48208]. Under the CSAPR, EPA adopted Federal Implementation Plans (FIPs) for each state covered by the rule, including West Virginia. The CSAPR further assists states in addressing their obligations regarding regionally transported pollution by providing reductions in NO_x and SO_2 emissions in 2012 and 2014. On December 30, 2011 the United States Court of Appeals for the District of Columbia stayed the implementation of CSAPR, indefinitely reinstating CAIR.

2. Section 172(c) requirements

Section 172(c) 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. Sections III and V discuss these requirements in more detail.

3. 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. EPA approved West Virginia's Transportation Conformity SIP detailing conformity procedures effective June 2, 2008 [73 FR 24175].Section IV discusses this requirement in more detail.

III. MAINTENANCE PLAN
(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.

West Virginia DAQ, in consultation with EPA and MDE, selected the year 2007 as the attainment year, 2017 as the interim year and 2025 as the end year of the maintenance plan for this redesignation request. This document contains actual emissions summaries for 2005 and 2007, and projected emissions summaries for 2017 and 2025. Thus, the pertinent inventory years for West Virginia are: 2005 (nonattainment year), 2007 (attainment year and maintenance plan base year), 2017 (interim year) and 2025 (maintenance plan end year). Detailed, SIP quality emissions inventories for all pertinent years are contained in Appendix B. [The State of Maryland is requesting redesignation of Washington County in a separate action.] Three specific emissions inventory demonstrations should be made for Berkeley County:

1. The attainment year (2007) 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 discussed in Section III.E and Section V).

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 (2025) emissions of each of the three pollutants should be less than the maintenance plan base year (2008).

As can be seen in Table 2 below, West Virginia and Maryland have seen a significant state-wide decline in the emissions of SO_2 and NO_x emitted by EGUs since 2002. In 2008 through 2011, facilities began preparing for and implementing control programs to address CAIR and consent decrees. Significant reductions occurred regionally and nationally. Data available for 2011, show the SO_2 and NO_x reductions which were implemented under CAIR and consent decrees.

Table 2: SO_2 and NO_x EGU Emissions 2002 through 2011										
	SO_2									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
WV	507,110	539,858	473,760	467,082	454,158	371,996	301,574	174,583	106,088	92,609
MD	255,360	268,991	281,684	281,753	276,271	272,879	227,198	198,254	28,670	30,541
US	10,196,210	10,594,972	10,259,212	10,222,639	9,392,502	8,933,517	7,616,449	5,724,185	5,120,381	4,503,028
	NO_x									
WV	225,371	203,142	172,339	159,481	151,673	150,849	97,331	36,120	51,393	53,415
MD	71,457	68,062	60,305	60,235	53,698	50,121	35,902	16,946	18,572	17,184
US	4,474,647	4,169,671	3,763,583	3,633,354	3,409,279	3,283,723	2,996,594	1,984,454	2,061,510	1,936,310

Source: Clean Air Markets, Air Markets Program Data, Acid Rain Program Emissions

Further, Tables 3- 20 clearly show total emissions have decreased in the period from 2005 to 2007 in Berkeley County, and emission projections through 2025 do not predict any increase in the total emissions for Berkeley County or the Martinsburg area. As outlined below, the reductions are enforceable and should continue in the future.

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 NO_x SIP Call for EGUs. The intent of the CAIR program was 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 would decrease to 44,000 tons per year while emissions of SO_2 would 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]. On July 6, 2011, EPA finalized the Transport Rule, now commonly referred to as the Cross-State Air Pollution Rule (CSAPR) [76 FR 48208, 08 AUG 2011] in time for reductions to begin in 2012. As finalized, the CSAPR would have preserved the 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 provided real reductions. We believe these reductions have assisted with $PM_{2.5}$ attainment in this nonattainment area and throughout West Virginia. It is also the DAQ's belief that the CSAPR 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 continue. As stated by EPA regarding the final Transport Rule or CSAPR:

> This rule will prohibit all significant contribution to nonattainment and interference with respect to the annual and 24-hour $PM_{2.5}$. In addition, it will resolve air quality issues at most nonattainment and maintenance receptors identified by EPA. EPA projects that unresolved nonattainment and maintenance issues will remain in only a few downwind states after promulgation and implementation of the Transport Rule. For the annual $PM_{2.5}$ standard, EPA projects that this rule will help assure that all areas in the east fully resolve their nonattainment and maintenance concerns. This rule will also help a number of areas achieve the standard earlier than they may have otherwise. [76 FR 48247]

However, on December 30, 2011 the United States Court of Appeals for the District of Columbia stayed the implementation of CSAPR, indefinitely reinstating CAIR.

Although there are no electric generating units in the West Virginia portion of the Martinsburg-Hagerstown, WV-MD area, the DAQ believes that CAIR, or any likely replacement for CAIR, will constrain nearby EGU NO_x and SO_2 emissions sufficiently to ensure that maintenance level emissions are not exceeded during the maintenance period.

As shown in Section VI - Supplemental Modeling Analyses, recent modeling -- CAIR, proposed Transport Rule, CSAPR (Final Transport Rule), including base cases where CAIR and CSAPR were not considered to be applicable requirements, and the VISTAS/ASIP modeling (which includes CAIR) -- all show that the Martinsburg-Hagerstown, WV-MD area will continue to maintain the 1997 $PM_{2.5}$ NAAQS.

The base year, attainment year and projection years emissions inventory development discussion contained in Appendix B identifies procedures used by the Division of Air Quality (DAQ) to develop emissions estimates for Berkeley County, the West Virginia portion of the Martinsburg-Hagerstown, WV-MD nonattainment area. The Maryland Department of the Environment (MDE) provided the emission estimates (contained in Appendix D) for the Maryland portion of the area, based on growth and control files for Point, Area, and Nonroad categories developed by MARAMA. Appendix E contains MARAMA's technical support document detailing the analysis used to project emissions.

Baker performed Onroad mobile source emission projections using the EPA MOVES model. The analysis is described in more detail in Appendix C for Berkeley County, WV and Appendix F for Washington County, MD. All projections were made using federally approved interagency consultation procedures.

Sectors included for West Virginia in the following tables are: Point, including Airports; Other Area (Area); Locomotive and Marine (LM); Non-road Mobile (Nonroad); Fire; and Onroad Mobile (Onroad). Since no Electric Generating Units (EGUs) are located in Berkeley County, there was no need to include a sector for EGUs. The Point Source sector in Berkeley County is equivalent to the Non-EGU sector in Washington County, MD.

Sectors for Maryland included in the following tables are: Electric Generating Units (EGUs); Non-Electric Generating Units (Non-EGUs); Area; Marine, Aircraft and Rail (MAR); Non-road Mobile (Nonroad); and Onroad Mobile (Onroad).

While the two states have slightly different subcategories for some emissions, the totals for the individual pollutants and precursors demonstrate maintenance for the entire interstate nonattainment area.

A. $PM_{2.5}$ Emissions Demonstrations

The 2005 and 2007 actual $PM_{2.5}$ EGU and NonEGU emissions data below reflect $PM_{2.5}$-primary emissions.

Table 3: Berkeley County, WV $PM_{2.5}$ Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy)

Sector	2005 (Base)	2007 Attainment	2017 Interim	2017 Safety Margin	2025 Maintenance	2025 Safety Margin
Point	361	227	222	**5**	239	**-12**
Area	1,430	677	694	**-17**	707	**-30**
LM	25	32	19	**13**	14	**17**
Nonroad	45	41	24	**17**	14	**27**
Fire	0.00	0.22	0.07	**0.15**	0.07	**0.15**
Onroad	199	176	66	**111**	40	**137**
TOTAL*	**2,059**	**1,154**	**1,025**	**129**	**1,015**	**139**

*Note: Numbers may not total exactly due to rounding.

Table 4: Washington County, MD $PM_{2.5}$ Emission Inventory Totals for 2007, 2017 and 2025 (tpy)

Sector	2007 Attainment	2017 Interim	2017 Safety Margin	2025 Maintenance	2025 Safety Margin
EGU	310	277	**33**	299	**11**
NonEGU	188	188	**0**	188	**0**
Area	501	522	**-20**	538	**-37**
MAR	10	5	**5**	3	**7**
Nonroad	74	47	**27**	33	**41**
Onroad	218	125	**93**	78	**140**
TOTAL*	**1,301**	**1,163**	**138**	**1,139**	**162**

*Note: Numbers may not total exactly due to rounding.

Table 5: Martinsburg Nonattainment Area $PM_{2.5}$ Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
County	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Berkeley, WV	1,154	1,025	129	1,015	139
Washington, MD	1,301	1,163	138	1,139	162
Martinsburg $PM_{2.5}$ Total*	**2,455**	**2,188**	**267**	**2,154**	**301**

*Note: Numbers may not total exactly due to rounding.

B. NO_x Emissions Demonstrations

Table 6: Berkeley County, WV NO_x Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy)						
Sector	**2005 (Base)**	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Point	3,402	1,967	1,913	**54**	2,070	**-103**
Area	636	121	110	**11**	107	**14**
LM	849	943	584	**359**	424	**519**
Nonroad	469	437	230	**208**	149	**289**
Fire	0.00	0.07	0.02	**0.04**	0.02	**0.04**
Onroad	5,520	5,005	2,016	**2,989**	1,277	**3,728**
TOTAL*	**10,875**	**8,473**	**4,853**	**3,620**	**4,026**	**4,447**

*Note: Numbers may not total exactly due to rounding.

Table 7: Washington County, MD NO_x Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
Sector	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
EGU	1,398	1,390	**8**	1,390	**8**
NonEGU	1,982	1,516	**466**	1,518	**465**
Area	296	317	**-22**	339	**-43**
MAR	289	196	**93**	144	**145**
Nonroad	793	433	**360**	301	**492**
Onroad	6,022	3,361	**2,641**	2,312	**3,710**
TOTAL*	**10,781**	**7,233**	**3,548**	**6,004**	**4,777**

*Note: Numbers may not total exactly due to rounding.

Table 8: Martinsburg Nonattainment Area NO_x Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
County	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Berkeley, WV	8,473	4,853	**3,620**	4,026	**4,447**
Washington, MD	10,781	7,233	**3,548**	6,004	**4,777**
Martinsburg NO_x Total*	**19,254**	**12,086**	**7,168**	**10,030**	**9,224**

*Note: Numbers may not total exactly due to rounding.

C. SO_2 Emissions Demonstrations

Table 9: Berkeley County, WV SO_2 Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy)						
Sector	**2005 (Base)**	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Point	1,978	1,444	1,405	**39**	1,521	**-77**
Area	575	300	249	**50**	241	**59**
LM	51	34	3	**31**	3	**31**
Nonroad	49	26	1	**25**	1	**25**
Fire	0.00	0.02	0.01	**0.01**	0.01	**0.01**
Onroad	109	30	10	**20**	10	**20**
TOTAL*	**2,462**	**1,833**	**1,667**	**166**	**1,776**	**57**

*Note: Numbers may not total exactly due to rounding.

Table 10: Washington County, MD SO_2 Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
Sector	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
EGU	5,536	4,590	**946**	4,590	**946**
NonEGU	1,277	1,271	**6**	1,271	**6**
Area	274	80	**195**	83	**191**
MAR	5	2	**4**	2	**4**
Nonroad	45	1	**44**	1	**44**
Onroad	45	19	**26**	21	**25**
TOTAL*	**7,183**	**5,962**	**1,221**	**5,967**	**1,216**

*Note: Numbers may not total exactly due to rounding.

Table 11: Martinsburg Nonattainment Area SO_2 Emission Inventory Totals for 2007, 2015 and 2025 (tpy)					
County	**2007 Attainment**	**2015 Interim**	**2015 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Berkeley, WV	1,833	1,667	**166**	1,776	**57**
Washington, MD	7,183	5,962	**1,221**	5,967	**1,216**
Martinsburg SO_2 Total*	**9,016**	**7,629**	**1,387**	**7,743**	**1,273**

*Note: Numbers may not total exactly due to rounding.

D. NH_3 Emissions Demonstrations

Table 12: Berkeley County, WV NH_3 Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy)						
Sector	**2005 (Base)**	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Point	67	91	93	**-2**	97	**-7**
Area	198	173	172	**1**	173	**0**
LM	0.35	0.42	0.45	**-0.03**	0.51	**-0.09**
Nonroad	0.39	0.41	0.49	**-0.09**	0.58	**-0.17**
Fire	0.00	0.01	0.00	**0.01**	0.00	**0.01**
Onroad	52	52	36	**16**	36	**16**
TOTAL*	**318**	**317**	**302**	**15**	**308**	**9**

*Note: Numbers may not total exactly due to rounding.

Table 13: Washington County, MD NH_3 Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
Sector	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
EGU	0.00	0.00	**0.00**	0.00	**0.00**
NonEGU	0.00	0.00	**0.00**	0.00	**0.00**
Area	1,113	1,115	**-2**	1,116	**-3**
MAR	0.00	0.00	**0.00**	0.00	**0.00**
Nonroad	0.79	0.95	**-0.16**	1.07	**-0.28**
Onroad	92	68	**24**	74	**17**
TOTAL*	**1,206**	**1,184**	**22**	**1,192**	**14**

*Note: Numbers may not total exactly due to rounding.

Table 14: Martinsburg Nonattainment Area NH_3 Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
County	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Berkeley, WV	317	302	**15**	308	**9**
Washington, MD	1,206	1,184	**22**	1,192	**14**
Martinsburg SO_2 Total*	**1,522**	**1,485**	**37**	**1,500**	**23**

*Note: Numbers may not total exactly due to rounding.

E. VOC Emissions Demonstrations

Table 15: Berkeley County, WV VOC Emission Inventory Totals for 2005, 2007, 2017 and 2025 (tpy)						
Sector	**2005 (Base)**	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Point	298	231	191	**40**	204	**24**
Area	2,505	1,386	1,042	**343**	1,089	**296**
LM	52	63	41	**22**	34	**29**
Nonroad	404	389	249	**140**	214	**175**
Fire	0.00	0.13	0.04	**0.09**	0.04	**0.09**
Onroad	1,473	1,378	673	**705**	498	**880**
TOTAL*	**4,732**	**3,447**	**2,197**	**1,250**	**2,042**	**1,405**

*Note: Numbers may not total exactly due to rounding.

Table 16: Washington County, MD VOC Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
Sector	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
EGU	10	9	**1**	9	**0**
NonEGU	354	353	**0**	353	**0**
Area	1,711	1,581	**130**	1,664	**46**
MAR	54	48	**6**	46	**8**
Nonroad	877	534	**344**	467	**410**
Onroad	1,657	948	**709**	725	**931**
TOTAL*	**4,662**	**3,472**	**1,191**	**3,266**	**1,397**

*Note: Numbers may not total exactly due to rounding.

Table 17: Martinsburg Nonattainment Area VOC Emission Inventory Totals for 2007, 2017 and 2025 (tpy)					
County	**2007 Attainment**	**2017 Interim**	**2017 Safety Margin**	**2025 Maintenance**	**2025 Safety Margin**
Berkeley, WV	3,447	2,197	**1,250**	2,042	**1,405**
Washington, MD	4,662	3,472	**1,191**	3,266	**1,397**
Martinsburg SO_2 Total*	**8,109**	**5,668**	**2,441**	**5,308**	**2,802**

*Note: Numbers may not total exactly due to rounding.

F. Summary of $PM_{2.5}$, NO_x, SO_2, NH_3 and VOC Emission Reductions

Table 18: West Virginia Portion of the Martinsburg Area Comparison of 2007 attainment year and 2017 and 2025 projected emission estimates (tpy)					
	2007 Attainment	**2017 Interim**	**2017 Projected Decrease**	**2025 Maintenance**	**2025 Projected Decrease**
$PM_{2.5}$	1,154	1,025	**129**	1,015	**139**
NO_x	8,473	4,853	**3,620**	4,026	**4,447**
SO_2	1,833	1,667	**166**	1,776	**57**
NH3	317	302	**15**	308	**9**
VOC	3,447	2,197	**1,250**	2,042	**1,405**

*Note: Numbers may not total exactly due to rounding.

Table 19: Maryland Portion of the Martinsburg Area Comparison of 2007 attainment year and 2017 and 2025 projected emission estimates (tpy)					
	2007 Attainment	**2017 Interim**	**2017 Projected Decrease**	**2025 Maintenance**	**2025 Projected Decrease**
$PM_{2.5}$	1,301	1,163	**138**	1,139	**162**
NO_x	10,781	7,233	**3,548**	6,004	**4,777**
SO_2	7,183	5,962	**1,221**	5,967	**1,216**
NH_3	1,206	1,184	**22**	1,192	**14**
VOC	4,662	3,472	**1,191**	3,266	**1,397**

*Note: Numbers may not total exactly due to rounding.

Table 20: Martinsburg Area Comparison of 2007 attainment year and 2017 and 2025 projected emission estimates (tpy)					
	2007 Attainment	**2017 Interim**	**2017 Projected Decrease**	**2025 Maintenance**	**2025 Projected Decrease**
$PM_{2.5}$	2,455	2,188	**267**	2,154	**301**
NO_x	19,254	12,086	**7,168**	10,030	**9,224**
SO_2	9,016	7,629	**1,387**	7,743	**1,273**
NH_3	1,522	1,485	**37**	1,500	**23**
VOC	8,109	5,668	**2,441**	5,308	**2,802**

*Note: Numbers may not total exactly due to rounding.

As shown in the table above (Table 20), $PM_{2.5}$ emissions in the nonattainment area are projected to decrease from the maintenance plan base year by 267 tons in 2017 and 301 tons in 2025. NO_x emissions in the nonattainment area are projected to decrease by 7,168 tons in 2017 and 9,224 tons in 2025. SO_2 emissions in the nonattainment area are projected to decline by 1,387 tons in 2017 and 1,273 tons in 2025. NH_3 emissions in the nonattainment area are projected to decrease by 37 tons in 2017 and 23 tons in 2025. VOC emissions in the nonattainment area are projected to decrease by 2,441 tons in 2017 and 2,802 tons in 2025.

The Martinsburg area shows projected net reductions in $PM_{2.5}$, NO_x, SO_2, NH_3 and VOC emissions. Cleaner vehicles and fuels are expected to be in place in 2017 and 2025, and CAIR remains in place until a CAIR Replacement Rule is finalized, these programs should cause an overall drop in the emissions of all five pollutants. 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.

G. Air Quality Improvement is Based on Permanent and Enforceable Emission Reductions

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.

Ambient air quality data from all monitoring sites indicate that air quality met the NAAQS for $PM_{2.5}$ in 2007-2009, 2008-2010 and in 2009-2011. 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."

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, CSAPR, and federal consent decrees requiring reductions of SO_2 and NO_x emissions from utility sources. Reductions achieved are discussed in greater detail under Section V.

H. Emissions Tracking

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

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

IV. TRANSPORTATION ANALYSIS

A. Onroad Emission Estimations

This section provides a summary of the on-road (highway) mobile source emissions inventory for the Berkeley County, West Virginia portion of the Martinsburg-Hagerstown, WV-MD nonattainment area under the 1997 annual $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). The estimations; methodology; and conclusions have been reviewed through the Inter-Agency-Confutation process detailed in West Virginia's SIP-approved Memorandum of Understanding (MOU) [73 FR 24175].The inventory was developed using EPA's Motor Vehicle Emission Simulator (MOVES) model. The section includes a summary of the methodology and data assumptions used for the analysis.

1. Background

Berkeley County (West Virginia) and Washington County (Maryland), two of the county jurisdictions in the Hagerstown Eastern Panhandle Metropolitan Planning Organization (HEPMPO), are designated nonattainment for the 1997 annual $PM_{2.5}$ NAAQS. Based on recent monitor readings showing compliance with the standard, a redesignation request and ten-year maintenance SIP has been prepared for the area. This highway inventory supports the SIP by providing estimated highway emissions for the 2005, 2007, 2017 and 2025 analysis years for the Berkeley County, West Virginia portion of the nonattainment area. One or more of the analysis years in the projected inventory may be designated as motor vehicle emission budgets (MVEBs) in support of future regional transportation conformity analyses. The transportation plans and programs for the region must be in conformance with all the provisions in the SIP and demonstrate that forecasted regional vehicle emissions do not exceed the established MVEBs.

The inventory is based on the latest planning assumptions including the use of regional planning tools maintained by the HEPMPO, which is the responsible Metropolitan Planning Organization (MPO) for the area. The highway emissions inventory has been estimated using MOVES, EPA's current state-of-the-art tool for estimating emissions from highway vehicles. Compared to previous tools, MOVES incorporates the latest emissions data, more sophisticated calculation algorithms, increased user flexibility, new software design, and additional capabilities. EPA announced the release of MOVES2010 in March 2010 (75 FR 9411), and released a minor revision as MOVES2010a in September 2010. In April 2012, EPA released MOVES2010b to allow users to benefit from several improvements to general model performance. MOVES2010b does not affect the criteria pollutant emissions results of MOVES2010a and therefore is not a new model. Based on the timing of the analysis, this highway emissions inventory utilizes the MOVES2010a model.

2. Highway Emissions

Table 21 summarizes the annual highway emissions inventory for the Berkeley County portion of the $PM_{2.5}$ nonattainment area. The inventory includes direct $PM_{2.5}$ (from tailpipe, brake wear and tire wear) oxides of nitrogen (NO_x) and sulfur dioxide (SO_2), ammonia (NH_3) and Volatile Organic Compounds (VOC). The emission estimates have been developed using the MOVES2010a emission model and latest planning assumptions. In addition to the required analysis years, test runs were also conducted for the current HEPMPO Long Range Transportation Plan (LRTP) 2040 horizon year. Available data on projects and land use were used to prepare this forecast. The 2040 analysis year has been included to illustrate the potential trends in $PM_{2.5}$ emissions due to the limited impacts of

vehicle turnover and technology in that timeframe. These emission trends are considered in the development of final MVEBs and safety margins.

Table 21: Summary of Highway Emissions Inventory					
Pollutants	**Emissions** *(Short Tons/Year)*				
	2005	**2007**	**2017**	**2025**	**2040**
$PM_{2.5}$	199.2	176.5	65.6	39.7	36.9
NO_x	5,520	5,005	2,016	1,277	1,142
SO_2	108.8	30.0	9.8	9.9	11.2
NH_3	52.2	51.8	35.8	35.7	40.0
VOC	1472.9	1378.4	673.4	498.1	442.4

3. Analysis Methodology and Data Inputs

The analysis methodology and data inputs were developed through interagency consultation and using available EPA guidance documents including:

- *Policy Guidance on the Use of MOVES2010 and Subsequent Minor Revisions for SIP Development, Transportation Conformity, and Other Purposes*, US EPA Office of Air and Radiation, EPA-420-B-12-010, April 2012.

- *Using MOVES to prepare Emission Inventories in State Implementation Plans and Transportation Conformity: Technical Guidance for MOVES2010, 2010a and 2010b.* US EPA Office of Air and Radiation, and Office of Transportation and Air Quality, EPA-420-B-12-028, April 2012.

- *Motor Vehicle Emission Simulator, User Guide for MOVES2010a*, EPA-420-B-10-036, August 2010.

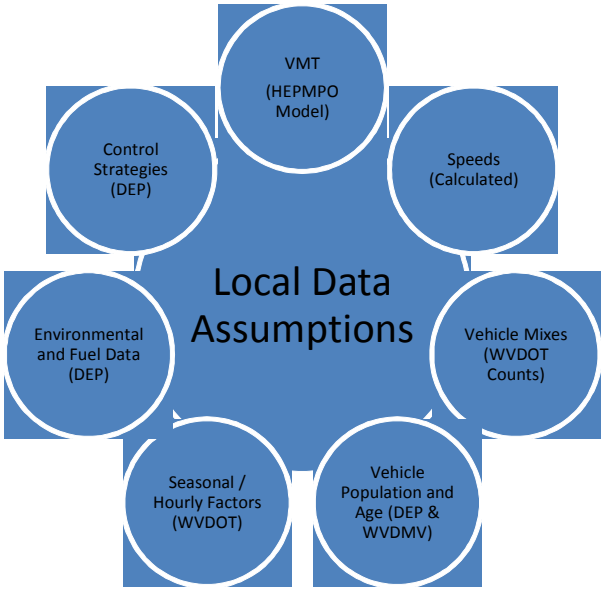
The methodologies used to produce the emission data conform to the recommendations provided in EPA's technical guidance. A mix of local and national default (internal to MOVES2010a) data has been used for this submission. As illustrated in Figure 5, local data has been used for the primary data items that have a significant impact on emissions including vehicle miles of travel, vehicle population, congested speeds, vehicle type mix and environmental and fuel assumptions. Local data inputs to the analysis process reflect the latest available planning assumptions using information obtained from the WVDOT, DEP, HEPMPO and other local/national sources.

The analysis methodology used for this inventory is consistent with that planned for future HEPMPO transportation conformity analyses including the latest LRTP. This includes the use of the regional travel demand model outputs and custom post-processing software (PPSUITE) to calculate hourly

speeds and prepare key traffic input files to the MOVES2010a emission model. PPSUITE consists of a set of programs that perform the following functions:

- Analyzes highway operating conditions.
- Calculates highway speeds.
- Compiles vehicle miles of travel (VMT) and vehicle type mix data.
- Prepares MOVES runs and processes MOVES outputs.

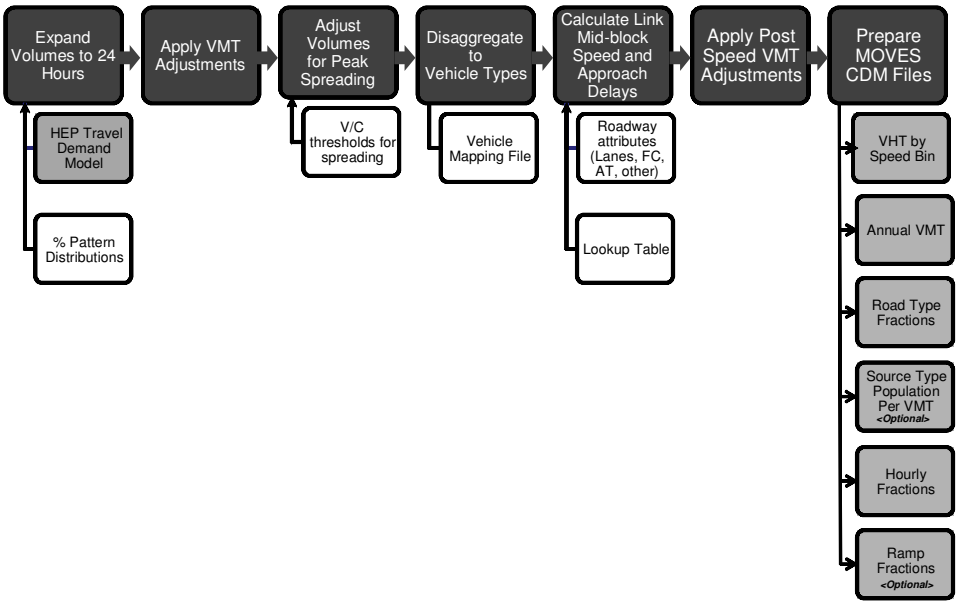
Figure 5. Local Data Inputs Used for Emissions Inventory



PPSUITE is a widely used and accepted tool for estimating speeds and processing emissions rates. It is has been used for past SIP highway inventories in Maryland, Pennsylvania, and New Jersey. The software is based upon accepted transportation engineering methodologies. For example, PPSUITE utilizes speed and delay estimation procedures based on planning methods provided in the Highway Capacity Manual, a report prepared by the Transportation Research Board (TRB) summarizing current knowledge and analysis techniques for capacity and level-of-service analyses of the transportation system.

The PPSUITE process is integral to producing traffic-related input files to the MOVES emission model. Exhibit 4 summarizes the key functions of PPSUITE within the emission calculation process. Other MOVES input files are prepared external to the PPSUITE software. These include vehicle population, vehicle age, environmental, and fuel input files.

Figure 6. Emission Calculation Process



The following subsections provide additional detail on the input planning assumptions and analysis methodology including a description of data sources, the role of MOVES default parameters and additional details on the role of PPSUITE in developing the traffic input data files to MOVES.

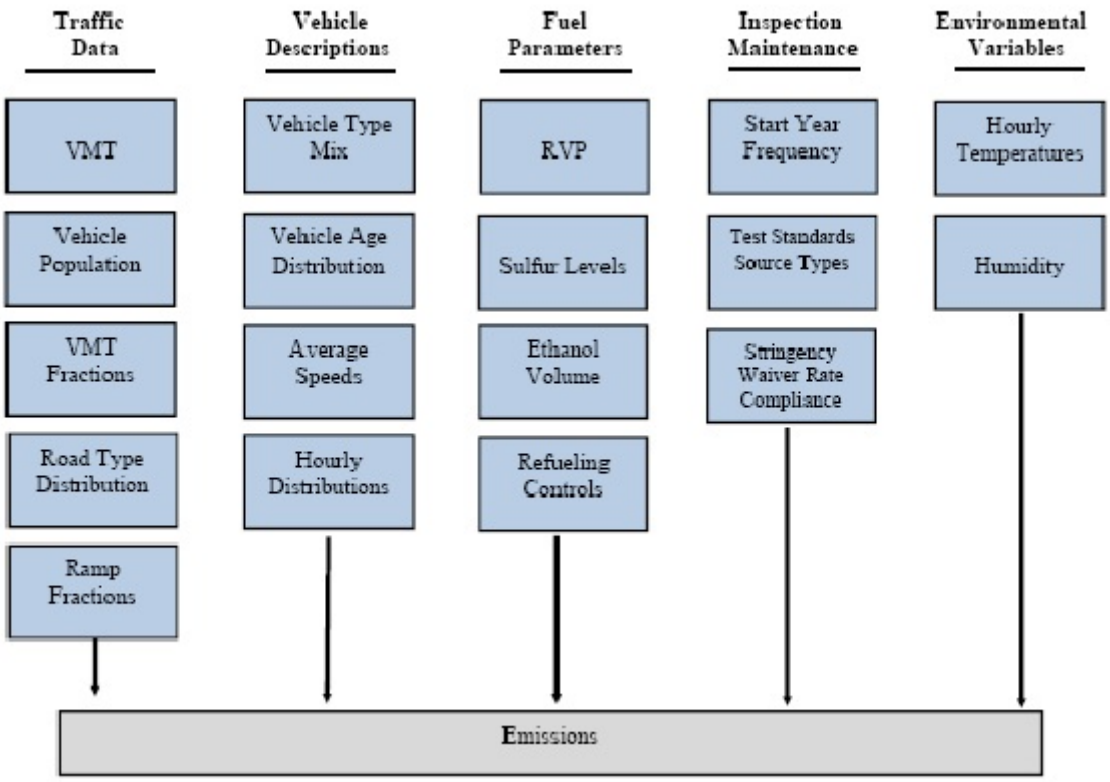
B. Description of Input Data

A large number of inputs to MOVES are needed to fully account for the numerous vehicle and environmental parameters that affect emissions. These include traffic flow characteristics, vehicle descriptions, fuel parameters, inspection/maintenance program parameters, and environmental variables as shown in Figure 7.

MOVES includes a default national database of meteorology, vehicle fleet, vehicle activity, fuel, and emission control program data for every county; but EPA cannot certify that the default data is the most current or best available information for any specific area. As a result, local data is recommended for use in SIP analyses, where available.

A mix of local and default data is used for this inventory. Local data sources are used for all inputs that have a significant impact on calculated emission rates. These data items are discussed in the following subsections.

Figure 7. Examples of Key MOVES Input Data



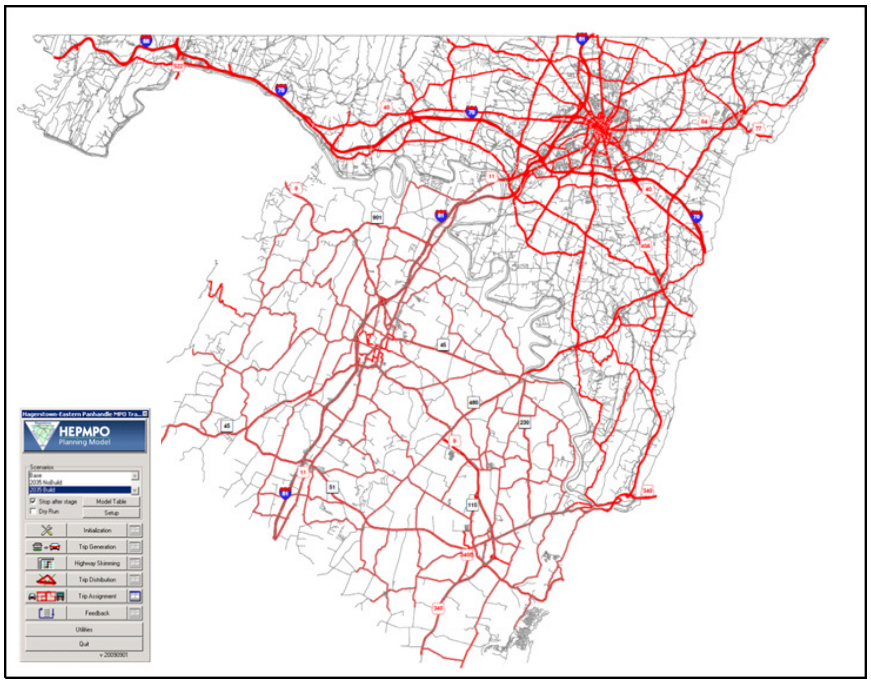
1. Roadway Data

The roadway data input to emissions calculations for this inventory is based on information from the HEPMPO regional travel demand model as used for the region's LRTP, Direction 2035. The travel model, as illustrated in Figure 8, estimates roadway volumes based on input demographic forecasts and expected changes to the transportation roadway network.

The HEPMPO travel demand model follows the basic "four-step" travel demand forecasting process and utilizes the TransCAD software platform. Given the small portion of daily travel carried by the bus system in the Hagerstown and Martinsburg regions, a separate mode choice or transit model is not included. Auto-occupancy factors are used to convert person trips into vehicle trips.

The model is driven by socio-economic and transportation network data. These data include items such as zonal population, households, income, school enrollment, and employment by type for 494 zones defined in the region. Transportation network data includes facility type, length, and speed limit for each of the highway links defined in the region. The highway network database contains attributes for each individual line in the line layer and includes all attributes needed to perform a traffic assignment. The travel model and associated land use inputs used for this inventory were based on the assumptions used for the 2035 LRTP submitted in June 2010.

Figure 8. HEP Regional Travel Demand Model



The travel model network and assigned traffic volumes are processed by the PPSUITE post processor to prepare the traffic inputs needed to the MOVES emission model. The following information is extracted from the model for emission calculations:

- lanes
- roadway capacity
- distance
- weekday traffic volume
- area type code
- facility class code

The volumes and distances are used in calculating highway VMT totals for each county. Forecast traffic volumes from the regional travel model are based on the input demographics. Table 22 summarizes the demographics used for the Direction 2035 LRTP and for this emissions inventory. As discussed in the next subsection, adjustments are needed to convert the traffic volumes (and VMT) to average daily conditions in each month. Additional forecast year demographics needed for this inventory, including 2017 and 2025, were determined through interpolation.

The lane values, capacities, area type, and facility class are important inputs for determining the congestion and speeds for individual highway segments. The PPSUITE processing software allows for many additional variables other than those available in the regional travel model. Using these variables improves the calculation of congested speeds. Such variables include information regarding free-flow speeds, traffic signal and control parameters, and volume-delay functions. This data is determined from lookup tables based on the model link's area type and facility class. Much of the lookup table data was developed from information contained in the Highway Capacity Manual.

Table 22: Demographic Growth Assumptions to the Travel Model				
County	**Year**	**Population**	**Households**	**Employment**
Washington	2008	146,337	57,277	82,377
	2035	199,253	79,913	106,048
	Annual Growth	1.1%	1.2%	0.9%
Berkeley	2008	101,125	41,208	42,702
	2035	140,905	61,808	61,349
	Annual Growth	1.2%	1.5%	1.4%
Jefferson	2008	51,806	20,908	21,489
	2035	79,053	35,624	32,687
	Annual Growth	1.6%	2.0%	1.6%
Region	2008	299,268	119,393	146,568
	2035	419,211	177,345	200,084
	Annual Growth	1.3%	1.5%	1.2%

2. Other Supporting Traffic Data

Other traffic data is used to adjust and disaggregate traffic volumes. Key sources used in these processes include the following:

- *HPMS VMT:* According to EPA guidance, baseline inventory VMT computed from the regional model must be adjusted to be consistent with HPMS VMT totals. Although it has some limitations, the HPMS system is currently in use in all 50 states and is being improved under FHWA direction. Adjustment factors are calculated which adjust the travel model VMT to be consistent with the reported HPMS totals for that year. These factors are applied to all county and facility group combinations within the region. These adjustments are important for accounting for missing local roadway VMT that is not represented within the regional travel model. For historic analysis years (e.g. 2005 and 2007), VMT has been reconciled to match the reported VMT for each of those years.

- *Seasonal Factors:* The travel model produces traffic volumes representing an average weekday. To support the annual emission calculation process, the model travel volumes are adjusted to reflect average annual daily traffic (AADT), an average of all days in the year including weekends and holidays. Seasonal adjustment factors were obtained from the WVDOT. The factors are based on data processing of West Virginia's permanent traffic count stations. The seasonal factors are also used to develop the MOVES daily and monthly VMT fraction files, allowing MOVES to determine the portion of annual VMT that occurs in each month of the year.

- *Hourly Patterns:* Speeds and emissions vary considerably depending on the time of day. Therefore, it is important to estimate the pattern by which roadway volume varies by hour of the day. Pattern data is in the form of a percentage of the daily volumes for each hour. Distributions are provided for all the counties within the region and by each facility type grouping. This data was not directly available from WVDOT but was determined through an assessment of available data in other states. The same factors are also used to develop the MOVES hourly fraction file.

3. Vehicle Class Data

Emission rates within MOVES vary significantly by the type of vehicle. The MOVES model produces emissions and rates by thirteen MOVES vehicle source types. However, VMT is input to MOVES by six HPMS vehicle groups. Table 23 summarizes the distinction between each classification scheme.

Table 23: MOVES Source Types and HPMS Vehicle Groups

SOURCE TYPES		HPMS Class Groups	
11	Motorcycle	10	Motorcycle
21	Passenger Car	20	Passenger Car
31	Passenger Truck	30	Passenger/Light Truck
32	Light Commercial Truck	40	Buses
41	Intercity Bus	50	Single Unit Trucks
42	Transit Bus	60	Combination Trucks
43	School bus		
51	Refuse Truck		
52	Single Unit Short-haul Truck		
53	Single Unit Long-haul Truck		
54	Motor Home		
61	Combination Short-haul Truck		
62	Combination Long-haul Truck		

For this regional inventory, vehicle type pattern data was developed for each county and facility class combination based on WVDOT classification counts and internal MOVES defaults. As the first step, WVDOT truck count data was used to develop percentage splits of the total volume to the following vehicle groups:

- autos
- heavy trucks and buses

MOVES default 2008 VMT by HPMS vehicle type (for Berkeley county) were then used to split the above vehicle groups (autos and trucks) into the 6 HPMS vehicle classes needed by MOVES.

The vehicle type percentages are also provided to the capacity analysis section of PPSUITE to adjust the speeds in response to trucks. That is, a given number of larger trucks take up more roadway space than a given number of cars, and this is accounted for in the speed estimation process by adjusting capacity using information from the Highway Capacity Manual.

4. Vehicle Ages

Vehicle age distributions are input to MOVES for each county by the thirteen source types. The distributions reflect the percentage of vehicles in the fleet up to 31 years old. The vehicle age distributions were prepared by DEP based on information obtained from West Virginia Division of Motor Vehicle (WVDMV) 2010 registration data. MOVES default values by analysis year were used for source types 41, 42, 43, 51, 52, 53, 61, and 62, which includes all heavy trucks and buses.

5. Vehicle Population Data

The information on the vehicle fleet including the number and age of vehicles impacts forecasted start and evaporative emissions within MOVES. Similar to vehicle ages, MOVES requires the population of vehicles by the thirteen source type categories. The MOVES national default values for calendar year 2010 provided the data for source types 51, 52, 53, 61 and 62. All other light-duty vehicles, buses and motor homes were developed based on WVDMV registration data. This data was processed by DEP based on 2010 registration data.

For the preparation of source type population for other years, the 2010 values were adjusted using growth factors based on historic and forecast population and employment for the region from the Woods and Poole 2012 State Profile. For light-duty vehicles, growth rates were developed based on the population growth in Berkeley County. For heavy trucks, growth rates were determined by selecting the maximum of the population and employment growth for that county.

6. Environmental and Fuel Data

Information on environmental, fuel, vehicle technology and other control strategy assumptions were determined based on a review of MOVES2010a default information and other available local data.

Average monthly minimum and maximum temperatures were obtained from the South East Regional Climate Center (SERCC). EPA's MOBILE6.2-MOVES meteorological data convertor spreadsheet (available from http://www.epa.gov/oms/models/moves/tools.htm) was used to prepare the hourly temperature inputs needed for the MOVES model based on the available data. MOVES default humidity values were used for the county.

MOVES default fuel assumptions were updated with the following local data assumptions by season:

- Summer (months 5-10): RVP=10 for E10 fuel; RVP=9 for conventional gasoline
- Winter (months 1,2,12): RVP=14
- Other (months 3,4,11): Uses MOVES default RVP that varies by year

The MOVES defaults included a 29% market share of E10 fuel in 2007 and a 100% market share of E10 fuel in future analysis years.

7. Other Vehicle Technology and Control Strategy Data

West Virginia does not have a vehicle inspection maintenance program and there are no state vehicle technology strategies included in the highway emissions inventory. Current federal vehicle emissions control and fuel programs are incorporated into the MOVES2010a software. These include the National Program standards covering model year vehicles through 2016. Modifications of default emission rates are required to reflect the early implementation of the National Low Emission Vehicle Program (NLEV) program in West Virginia. To reflect these impacts, EPA has released instructions and input files that can be used to model these impacts. This inventory utilized the August 2010 version of the files (http://www.epa.gov/oms/models/moves/tools.htm).

C. Analysis Methodology

The previous subsections have summarized the input data used for computing speeds and emission rates for this highway emissions inventory. This subsection explains how PPSUITE and MOVES uses that input data to produce emission estimates. Figure 9 provides a more detailed overview of the PPSUITE analysis procedure using the available traffic data information described in the previous subsection.

1. VMT Preparation

Producing an emissions inventory with PPSUITE requires a process of disaggregation and aggregation. Data is available and used on a very small scale - individual travel model roadway segments for each of the 24 hours of the day. This data needs to be processed individually to determine the distribution of vehicle hours of travel (VHT) by speed and then aggregated by vehicle class to determine the input VMT to the MOVES emission model. Key steps in the preparation of VMT include:

- *Assemble Travel Model Link VMT* - The HEPMPO regional travel model contains the roadway links, distances and travel volumes needed to estimate VMT. The PPSUITE software processes each link by simply multiplying the assigned travel volume by the distance to obtain VMT. Highway networks for analysis years not available from the past conformity runs are calculated by interpolating VMT from existing networks.

- *Apply Seasonal Adjustments* - PPSUITE takes the travel model average weekday volumes and adjusts the volume to reflect average annual conditions (AADT). The AADT volumes are used in the speed processing routines to determine an average set of congested speeds by hour of the day. The link AADT volumes are assembled by PPSUITE and extrapolated to produce the annual VMT file input to MOVES.

- *Disaggregate to Hours* - After adjusting the link volume to represent AADT, the volume is split to each hour of the day. This allows for more accurate speed calculations (effects of congested hours) and allows PPSUITE to prepare the hourly VMT and speeds for input to the MOVES model.

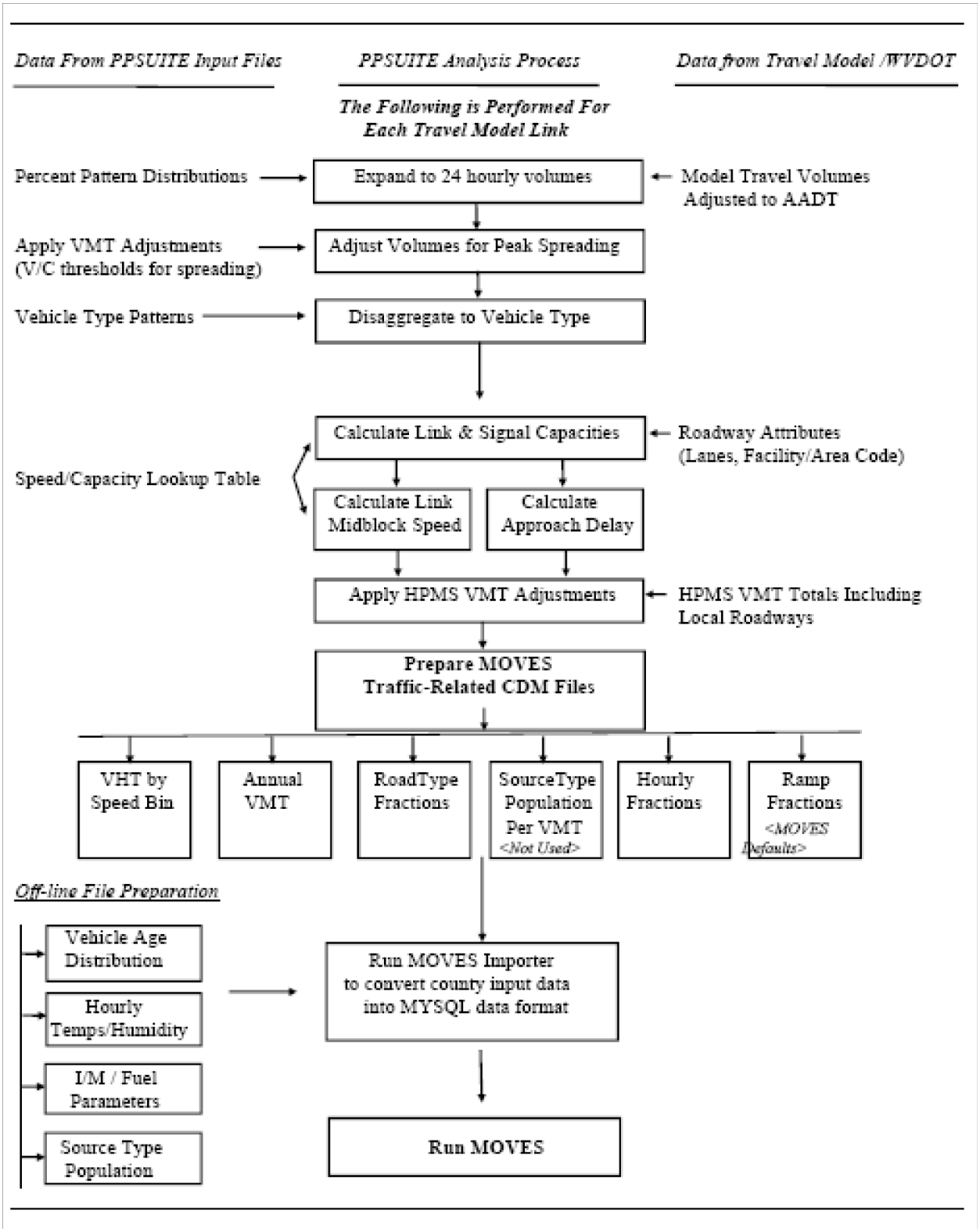
- *Peak Spreading* - After dividing the daily volumes to each hour of the day, PPSUITE identifies hours that are unreasonably congested. For those hours, PPSUITE then spreads a portion of the volume to other hours within the same peak period, thereby approximating the

"peak spreading" that normally occurs in such over-capacity conditions. This process also helps prevent hours with unreasonably congested speeds that may impact emission calculations.

- *Disaggregation to Vehicle Types* - EPA requires VMT estimates to be prepared by source type, reflecting specific local characteristics. The hourly volumes are disaggregated to the six HPMS MOVES vehicle grouping based on WVDOT vehicle classification count data in combination with MOVES defaults as described in the previous subsection.

- *Apply HPMS VMT Adjustments* - Volumes must also be adjusted to account for differences with the HPMS VMT totals, as described previously. VMT adjustment factors are provided as input to PPSUITE, and are applied to each of the roadway segment volumes. These factors were developed from reported HPMS VMT totals for years 2005, 2007 and 2008. The 2008 factors are applied to future year runs. The VMT added or subtracted to the travel model links assume the speeds calculated using the original volumes for each roadway segment for each hour of the day.

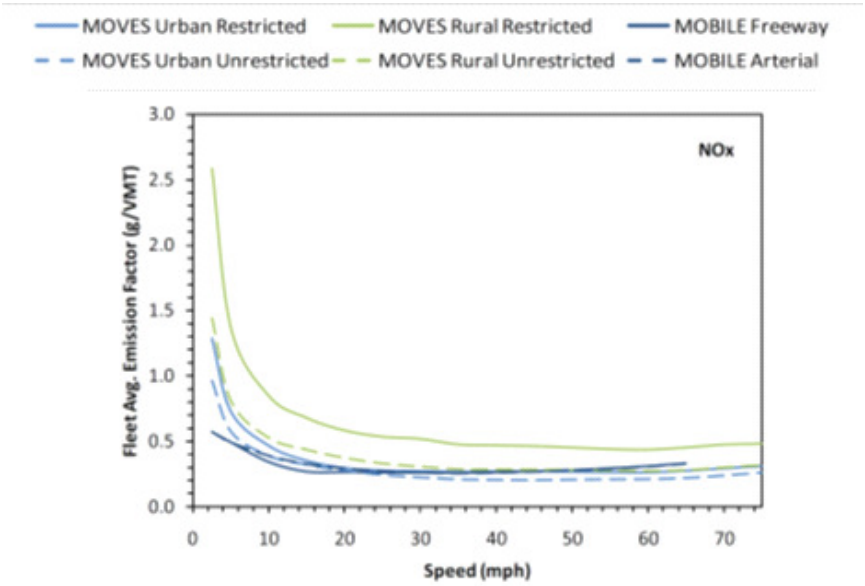
Figure 9. PPSUITE Speed/Emission Estimation Procedure



2. Speed Estimation

Emissions for many pollutants (including both VOC and NO_x) vary significantly with travel speed. While VOCs generally decrease as speed increases, NO_x decreases at the low speed range and increases at higher speeds, as illustrated in Figure 10.

Figure 10. Emission Factor vs. Speed Variances (NO_x)



Source: Figure 3 from Implications of the MOVES2010 Model on Mobile Source Emission Estimates, Air & Waste Management Association, July 2010

EPA recognizes that the estimation of vehicle speeds is a difficult and complex process. Because emissions are so sensitive to speeds, it recommends special attention be given to developing reasonable and consistent speed estimates; it also recommends that VMT be disaggregated into subsets that have roughly equal speed, with separate emission factors for each subset. At a minimum, speeds should be estimated separately by road type.

The computational framework used for this analysis meets and exceeds that recommendation. Speeds are individually calculated for each roadway segment and hour and include the estimated delays encountered at signals. Rather than accumulating the roadway segments into a particular road type and calculating an average speed, each individual link hourly speed is represented in the MOVES vehicle hours of travel (VHT) by speed bin file. This MOVES input file allows the specification of a distribution of hourly speeds. For example, if 5% of a county's arterial VHT operates at 5 mph during the AM peak hour and the remaining 95% operates at 65 mph, this can be represented in the MOVES speed input file. For the highway emissions inventory, distributions of speeds are input to MOVES by road type and source type by each hour of the day.

To calculate speeds, PPSUITE first obtains initial capacities (how much volume the roadway can serve before heavy congestion) and free-flow speeds (speeds assuming no congestion) from the speed/capacity lookup data. As described in previous subsections, this data contains default roadway information indexed by the area and facility type codes. For areas with known characteristics, values can be directly coded to the database and the speed/capacity data can be overridden. However, for most areas where known information is not available, the speed/capacity lookups provide valuable default information regarding speeds, capacities, signal characteristics, and other capacity adjustment information used for calculating congested delays and speeds. The result of this process is an estimated average travel time for each hour of the day for each highway segment. The average time multiplied by the volume produces vehicle hours of travel (VHT).

Developing the MOVES Traffic Input Files:

The PPSUITE software is responsible for producing the following MOVES input files during any analysis run:

- VMT by HPMS vehicle class
- VHT by speed bin
- road type distributions
- ramp fractions (Use MOVES defaults)

These files are text formatted files with a *.csv extension. The files are provided as inputs within the MOVES County Data Manager (CDM) and are described below:

- *VMT Input File*: VMT is the primary traffic input that affects emission results. The roadway segment distances and traffic volumes are used to prepare estimates of VMT. PPSUITE performs these calculations and outputs the MOVES annual VMT input file to the County Data Manager (CDM). The annual VMT is computed by multiplying the travel model adjusted AADT by 365 days in a year.

- *VHT by Speed Bin File*: As described in the previous subsection, the PPSUITE software prepares the MOVES VHT by speed bin file which summarizes the distribution of speeds across all links into each of 16 MOVES speed bins for each hour of the day by road type. This robust process ensures that MOVES emission rates are used to the fullest extent and is consistent with the methods and recommendations provided in EPA's technical guidance.

- *Road Type Distributions*: In MOVES, typical drive cycles and associated operating conditions vary by the type of roadway. MOVES defines five different road types as follows:

    1 Off-Network
    2 Rural Restricted Access
    3 Rural Unrestricted Access
    4 Urban Restricted Access
    5 Urban Unrestricted Access

For this inventory, the MOVES road type distribution file is automatically generated by PPSUITE using defined equivalencies. The off-network road type includes emissions from vehicle starts, extended idle activity, and evaporative emissions. Off-network activity in MOVES is primarily

determined by the Source Type Population input. The remaining distribution among road types is determined by equating the model facility types with each MOVES road type as follows:

- MOVES Road Type (2) = Rural travel model interstate and ramps
- MOVES Road Type (3) = All remaining Rural travel model facility types
- MOVES Road Type (4) = Urban travel model interstate and ramps
- MOVES Road Type (5) = All remaining Urban travel model facility types

- Ramp Fractions: MOVES default Ramp Fraction file (assuming 8% of ramp VMT fraction for both urban and rural links) is used as inputs to MOVES.

3. MOVES Runs

After computing speeds and aggregating VMT and VHT, PPSUITE prepares traffic-related inputs needed to run EPA's MOVES2010a software. Additional required MOVES inputs are prepared external to the processing software and include temperatures, I/M program parameters, fuel characteristics, vehicle fleet age distributions and source type population.

The MOVES county importer is run in batch mode. This program converts all data files into the MYSQL formats used by the MOVES model. At that point a MOVES run specification file (*.mrs) is created which specifies options and key data locations for the run. MOVES is then executed in batch mode.

MOVES can be executed using either the inventory or rate-based approaches. For this highway emissions inventory, MOVES is applied using the inventory-based approach. Under this method, actual VMT and population are provided as inputs to the model; MOVES is responsible for producing the total emissions for the region. Under the rate-based approach, MOVES would produce emission factors, after which PPSUITE would apply the emission factors to the link data and calculate total regional emissions.

Table 24: MOVES Run Data Checklist

Data Item	Inputs Assumptions
MOVES RunSpec	
Scale/Calulation Type	County Scale Inventory Run
Seasonal Analysis	Annual - 12 months including weekdays and weekend (using AADT approach)
Analysis Years	2005, 2007, 2017, 2025, *2040 (for outyear evaluation - optional to evaluate safety margin)*
Pollutants	$PM_{2.5}$, NOx, SO_2
Stage II Refueling Emissions	Not Applicable
Fuel Types	Gasoline, Diesel, CNG
Traffic Data	
Highway Network	Base networks are those used for past HEPMPO LRTP analyses and conformity
	Years not available are calculated by interpolating VMT from existing networks
Seasonal/Daily Adjustments	Factors to develop MOVES daily and monthly VMT fraction files as inputs. Seasonal adjustment factors received from WVDOT.
County HPMS VMT Adjustments	Calculate AADT HPMS adjustments for 2005, 2007 and 2008 (Ensure VMT for past years is consisitent with reported HPMS); HPMS VMT obtained from WVDOT website.
Vehicle Mixes	MOVES VMT required by 6 HPMS vehicle classes. Obtain WVDOT truck count data to determine average truck percentages by functional class; Split model traffic volumes into auto and trucks using these percentages and then use MOVES default VMT distributions for the Charleston region to divide the two vehicle groups (auto and trucks) into MOVES 13 source types, which are recombined to the 6 HPMS vehicle classes.
MOVES Inputs	
Annual VMT	Calculated by PPSUITE from Model network database / seasonal factors / vehicle mapping
Avg. Hourly Speed Distribution	Calculated by PPSUITE (Minimum Speed = 2.5 mph); Based on Model volumes and speed post processing by hour of day.
Road Type Distribution	Calculated by PPSUITE; a RoadType field must be added to the Model network based on FC.
Ramp Fraction	MOVES defaults
Month VMT Fractions	Factors to convert AADT to an average day in each month (Local data or MOVES default). Calculated based on seasonal adjustment factors.
Day VMT Fractions	Based on AADT assumption (i.e. 5/7 & 2/7)
Hour VMT Fractions	Factors to disaggregate daily traffic volumes by hour for different roadway functional classes. Borrow hourly distributions from Washington County, MD.
Source Type Population	2010 Inputs provided by WVDEP --> Adjust/grow to 2005, 2007 and future years by applying factors developed from Woods & Poole population/employment forecast data. (For non-trucks: use population growth. For trucks: maximum of population & employment growth)
Vehicle Age Distribution	Source Types 11, 21, 31, 32 & 54: based on 2010 WV DMV Registration Data; Source Types 41, 42, 43, 51, 52, 53, 61 & 62: use MOVES National Defaults.
Fuel Parameters (Gasoline/Diesel/CNG)	Use MOVES defaults with the following updates to RVP: 1. Summer (months 5 - 10): RVP = 10 for E10 and RVP = 9 for conventional gasoline 2. Winter (months 1, 2, 12): RVP = 14 3. Months 3, 4 & 11: Use MOVES default RVP which varies by year - 10.783 in 2005, 11.339 in 2007, and 12.729 in future years. (Note: MOVES defaults include 29% market share of E10 in 2007 and 100% market share of E10 in future years)
I/M Parameters	No I/M programs
Temperatures/Humidity	Temperatures: Use monthly average Max/Mins provided by WVDEP as inputs to EPA's Mobile6-MOVES converter to develop inputs in MOVES format. Humidity: MOVES defaults
Control Programs	
Early NLEV / CALLEVII	Include EPA provided MOVES override database for early NLEV implementation
California ZEV Program	Not Included

Note: Because of regulatory requirements after the checklist was developed, the precursors ammonia and Volatile Organic Compounds (VOC) were later added to the emission estimates.

The following table shows the emissions totals by sector, for each county in the nonattainment area. For a more detailed analysis see Appendices B, C, D and F.

Table 25: Percentage of Charleston Emissions Attributable to Mobile Sources in 2007, 2017 and 2025

County	Sector	PM2.5			NOx			SO2			NH3			VOC		
		2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025
Berkeley Co., WV	Point	227	222	239	1,967	1,913	2,070	1,444	1,405	1,521	91	93	97	231	191	207
Berkeley Co., WV	Area	677	694	707	121	110	107	300	249	241	173	172	173	1,386	1,042	1,089
Berkeley Co., WV	LM	32	19	14	943	584	424	34	3	3	0.42	0.45	0.51	63	41	34
Berkeley Co., WV	NonRoad	41	24	14	437	230	149	26	1	1	0.41	0.49	0.58	389	249	214
Berkeley Co., WV	Fire	0	0.07	0.07	0.07	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.13	0.04	0.04
Berkeley Co., WV	OnRoad	176	66	40	5,005	2,016	1,277	30	10	10	52	36	36	1,378	673	498
Berkeley Co., WV	**SubTotal**	**1,154**	**1,025**	**1,015**	**8,473**	**4,853**	**4,026**	**1,833**	**1,667**	**1,776**	**317**	**302**	**308**	**3,447**	**2,197**	**2,042**
Berkeley Co., WV	**Onroad Percentage**	**15.3%**	**6.4%**	**3.9%**	**59.1%**	**41.5%**	**31.7%**	**1.6%**	**0.6%**	**0.6%**	**16.3%**	**11.9%**	**11.6%**	**40.0%**	**30.7%**	**24.4%**
Washington Co., MD	EGU	310	277	299	1,398	1,390	1,390	5,536	4,590	4,590	0.00	0.00	0.00	10	9	9
Washington Co., MD	nonEGU	188	188	188	1,982	1,516	1,518	1,277	1,271	1,271	0.00	0.00	0.00	354	353	353
Washington Co., MD	Area	501	522	538	296	317	339	274	80	83	1,113	1,115	1,116	1,711	1,581	1,664
Washington Co., MD	MAR	10	5	3	289	196	144	5	2	2	0.00	0.00	0.00	54	48	46
Washington Co., MD	NonRoad	74	47	33	793	433	301	45	1	1	0.79	0.95	1.07	877	534	467
Washington Co., MD	OnRoad	218	125	78	6,022	3,381	2,312	45	19	21	92	68	74	1,657	948	725
Washington Co., MD	**Subtotal**	**1,301**	**1,163**	**1,139**	**10,781**	**7,233**	**6,004**	**7,183**	**5,962**	**5,967**	**1,206**	**1,184**	**1,192**	**4,662**	**3,472**	**3,266**
Washington Co., MD	**Onroad Percentage**	**16.7%**	**10.7%**	**6.8%**	**55.9%**	**46.7%**	**38.5%**	**0.6%**	**0.3%**	**0.3%**	**7.6%**	**5.7%**	**6.2%**	**35.5%**	**27.3%**	**22.2%**
Martinsburg, WV-MD	**Onroad Total**	**394**	**190**	**117**	**11,027**	**5,397**	**3,589**	**75**	**29**	**31**	**144**	**104**	**110**	**3,035**	**1,621**	**1,224**
Martinsburg, WV-MD	**Total**	**2,455**	**2,188**	**2,154**	**19,254**	**12,086**	**10,030**	**9,016**	**7,629**	**7,743**	**1,522**	**1,485**	**1,500**	**8,109**	**5,668**	**5,308**
Martinsburg, WV-MD	**Onroad Percentage**	**16.1%**	**8.7%**	**5.5%**	**57.3%**	**44.7%**	**35.8%**	**0.8%**	**0.4%**	**0.4%**	**9.4%**	**7.0%**	**7.3%**	**37.4%**	**28.6%**	**23.1%**

D. Proposed Motor Vehicle Emission Budgets (MVEBs)

In order to ensure that transportation plans can accommodate some measure of unexpected growth, WVDEP is proposing to establish MVEB's that are higher than the initial projected onroad (highway) emission estimates. The Transportation Conformity Rule (40 CFR 93.101) defines *Safety margin* as:

> "the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for reasonable further progress, attainment, or maintenance" (emphasis added).

Thus, in the context of the maintenance plan, there may be safety margins associated with the 2017 interim year and separate safety margins associated with the 2025 end year. These safety margins are calculated by subtracting the 2017 total emissions (for a given pollutant) and the 2025 total emissions (for a given pollutant), respectively, from the 2007 attainment year total emissions (for a given pollutant). We may refer to the results for a given pollutant/precursor as the *2017 safety margin* and the *2025 safety margin*, respectively.

Portions of the original safety margins may be reallocated to the MVEBs as long as adequate margins remain to ensure maintenance. It is important to consider that transportation planning organizations typically develop a twenty year Long Range Transportation Plan (LRTP) while the initial air quality maintenance plan only lasts for ten years. Under the conformity rule, the last year of the LRTP must be tested against the MVEBs established for the last year of the maintenance plan. Therefore, future transportation conformity determinations will not only be made for the specific years contained in the maintenance plans but also for horizon years contained in the LRTP, which now may extend to the year 2040.

That is, the future expected highway emissions, including growth, in 2040 will be compared against the 2025 MVEBs. It is also very important to recognize DAQ has little prior experience with MOVES in SIP development and must take prudent steps to ensure positive conformity determinations in the case where our agency's inexperience with, or misapplication of, MOVES leads to significant underestimation of future highway emissions. Therefore, it is DAQ's firm position that liberal amounts of the safety margins should be reallocated to the MVEBs to provide certainty in the transportation planning process.

With respect to the precursor emissions of ammonia and VOC, no MVEBs are required due to the provisions of the Transportation Conformity Rule section 40 CFR § 93.102(b)(2)(v) and the fact that neither the Administrator of EPA nor the State of West Virginia has made a finding that transportation-related emissions of these two precursors within the nonattainment area are a significant contributor to the $PM_{2.5}$ nonattainment problem.

1. Proposed NO_x MVEBs

NO_x is a precursor pollutant and contributes to fine particulate concentrations through the formation of nitrates. Only a fraction of the NO_x emissions is actually converted. Therefore, WVDEP believes that relatively higher NO_x emissions (as a percent of onroad emissions) may be incorporated in the MVEBs without endangering maintenance. In this case, WVDEP is proposing to add 30% to the initial highway emission estimates to set the NO_x MVEBs for 2017 and 2025, respectively.

Table 26: Berkeley County (WV) NO_x Emission Inventory Totals, Onroad (Highway) Emissions and Original Safety Margins for 2017 and 2025 (tpy)

	2007 Attainment	2017 Interim	2017 Original Safety Margin	2025 Maintenance	2025 Original Safety Margin
Berkeley County NO_x Total	**8,473**	**4,853**	**3,620**	**4,026**	**4,447**
Onroad Subtotal	5,005	2,016	na	1,277	na

Totals may not sum exactly due to rounding.

Thus, the original NO_x 2017 safety margin is 3,620 tons per year and the original NO_x 2025 safety margin is 4,447 tons per year. The DAQ proposes to reallocate an additional 30% to the original onroad NO_x estimates from the respective safety margins to the NO_x MVEBs. That is, 605 tpy would be subtracted from the 2017 safety margin and added to the highway emission estimate yielding a 2017 MVEB of 2,621 tpy, leaving a remainder of 3,015 tpy in the final 2017 safety margin. Similarly, 383 tpy would be subtracted from the 2025 safety margin and added to the 2025 highway emission estimate, yielding a 2025 MVEB of 1,660 tpy, leaving a remainder of 4,064 tpy in the final 2025 safety margin.

Table 27: Berkeley County (WV) NO_x Proposed NO_x MVEBs and Remaining Safety Margins After Reallocation from the Original Safety Margins into the NO_x MVEBs

	2007 Attainment	2017 Original Safety Margin OnRoad	Amount Reallocated to 2017 MVEB	2017 Remaining Safety Margin and Final MVEB	2025 Original Safety Margin OnRoad	Amount Reallocated to 2025 MVEB	2025 Remaining Safety Margin and Final MVEB
Berkeley NO_x Total	8,473	3,620	-605	**3,015**	4,447	-383	**4,064**
Onroad NO_x MVEB	5,005	2,016	+605	**2,621**	1,277	+383	**1,660**

Totals may not sum exactly due to rounding.

2. Proposed Direct $PM_{2.5}$ MVEBs

Direct $PM_{2.5}$ emissions (filterable and condensable) affect fine particulate concentrations more quickly and more significantly than precursor pollutants, on a mass emissions basis. Therefore, WVDEP is proposing a lower onroad emissions augmentation of 25% for direct $PM_{2.5}$.

Table 28: Berkeley County (WV) $PM_{2.5}$ Emission Inventory Totals, Onroad (Highway) Emissions and Original Safety Margins for 2018 and 2025 (tpy)

	2007 Attainment	2017 Interim	2017 Original Safety Margin	2025 Maintenance	2025 Original Safety Margin
Berkeley County NO_x Total	**1,154**	**1,025**	**129**	**1,015**	**139**
Onroad Subtotal	176	66	na	40	na

Totals may not sum exactly due to rounding.

Thus, the original $PM_{2.5}$ 2017 safety margin is 129 tons per year and the original $PM_{2.5}$ 2025 safety margin is 139 tons per year. The DAQ proposes to reallocate an additional 25% to the original onroad $PM_{2.5}$ estimates from the respective safety margins to the $PM_{2.5}$ MVEBs. That is, 17 tpy would be subtracted from the 2017 safety margin and added to the highway emission estimate yielding a 2017 MVEB of 83 tpy, leaving a remainder of 112 tpy in the final 2017 safety margin. Similarly, 10 tpy would be subtracted from the 2025 safety margin and added to the 2025 highway emission estimate, yielding a 2025 MVEB of 50 tpy, leaving a remainder of 129 tpy in the final 2025 safety margin.

Table 29: Berkeley County (WV) Proposed $PM_{2.5}$ MVEBs and Remaining Safety Margins After Reallocation from the Original Safety Margins into the $PM_{2.5}$ MVEBs

	2007 Attainment	2017 Original Safety Margin OnRoad	Amount Reallocated to 2017 MVEB	2017 Remaining Safety Margin and Final MVEB	2025 Original Safety Margin OnRoad	Amount Reallocated to 2025 MVEB	2025 Remaining Safety Margin and Final MVEB
Berkeley County $PM_{2.5}$ Total	1,154	129	-17	**112**	139	-10	**129**
Onroad $PM_{2.5}$ MVEB	176	66	+17	**83**	40	+10	**50**

Totals may not sum exactly due to rounding.

3. Summary of Proposed MVEBs

2017 NOx MVEB: 2,621 TPY 2025 $PM_{2.5}$ MVEB: 1,660 TPY

2017 $PM_{2.5}$ MVEB: 83 TPY 2025 $PM_{2.5}$ MVEB: 50 TPY

V. CONTROL MEASURES AND REGULATIONS

CAA Section107 (d)(3)(E)(ii), 107(d)(3)(iv), and 107(d)(3)(E)(v)

A. Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT)

Section 172(c)(1) of the 1990 Clean Air Act Amendments (CAA) requires states with nonattainment areas to implement reasonably available control measures (RACM) and reasonably available control technology (RACT). States with nonattainment areas must 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 states on their website regarding RACM, RACT, and the Clean Data Policy [www.epa.gov/airquality/urbanair/sipstatus/policy_details.html]:

> Under EPA's Clean Data Policy and the regulations that embody it, 40 CFR 51.918 (1997 8-hour ozone) and 51.1004(c) (PM-2.5), an EPA rulemaking determination that an area is attaining the relevant standard suspends the area's obligations to submit an attainment demonstration, reasonable available control measures (RACM), reasonable further progress, contingency measures and other planning requirements related to attainment for as long as the area continues to attain. EPA's statutory interpretation of the Clean Data Policy is described in the "Final Rule to Implement the 8-hour Ozone National Ambient Air Quality Standard—Phase 2" (Phase 2 Final Rule). 70 FR 71612, 71644-46 (Nov. 29, 2005) (ozone); See also 72 FR 20585, 20665 (Apr. 25, 2007) (PM-2.5). EPA believes that the legal bases set forth in detail in our Phase 2 Final rule, our May 10, 1995 memorandum from John S. Seitz, entitled "Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard," and our December 14, 2004 memorandum from Stephen D. Page entitled "Clean Data Policy for the Fine Particle National Ambient Air Quality Standards" are equally pertinent to all NAAQS. EPA has codified the Clean Data Policy for 1997 8-hour ozone and PM-2.5, and has also applied it in individual rulemakings for 1-hour ozone and PM-10.
>
> Under the Clean Data Policy, EPA may issue a determination of attainment (known informally as a Clean Data Determination) after notice and comment rulemaking determining that a specific area is attaining the relevant standard. For such areas the requirement to submit to EPA those SIP elements related to attaining the NAAQS is suspended for so long as the area continues to attain the standard. These planning elements include reasonable further progress (RFP) requirements, attainment demonstrations, RACM, contingency measures, and other state planning requirements related to attainment of the NAAQS. The determination of attainment is not equivalent to a redesignation, and the state must still meet the statutory requirements for redesignation in order to be redesignated to attainment. A determination of attainment for purposes of the Clean Data Policy/regulations is also not linked to any particular attainment deadline, and is not necessarily equivalent to a determination that an area has attained the standard by its applicable attainment deadline, e.g., under section 181(b).

On November 20, 2009 [74 FR60199] EPA determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 $PM_{2.5}$ NAAQS (Clean Data Determination). This determination was based on complete, quality-assured and certified ambient air monitoring data for the three year period, 2006-2008. This determination suspended the state's requirement to submit an attainment demonstration, Reasonably Available Control Measures (RACM), including Reasonably Available Control Technology (RACT), Reasonable Further Progress (RFP) plan, contingency measures, and other planning SIP revisions related to attainment of the 1997 $PM_{2.5}$ NAAQS for so long as the area continues to attain the 1997 $PM_{2.5}$ NAAQS.

On January 10, 2012 [77 FR 1411] EPA also determined that the Martinsburg-Hagerstown, WV-MD area had attained the 1997 annual $PM_{2.5}$ NAAQS by the applicable attainment date of April 5, 2010. This determination was based upon complete, quality-assured, and certified ambient air monitoring data for the 2007-2009 monitoring period.

Complete quality-assured $PM_{2.5}$ ambient air quality data for the most recent three (3) years, 2009 through 2011, demonstrate that the air quality continues to meet the NAAQS for annual $PM_{2.5}$ in this nonattainment area. Therefore, RACM, including RACT, no longer applies.

B. Inventory of Actual Emissions

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.

In accordance with the Consolidated Emissions Reporting Rule (CERR), the West Virginia 2002 and 2005 statewide comprehensive emissions inventories were submitted to EPA's CDX site on April 29, 2005 and June 1, 2007, respectively. The West Virginia 2008 comprehensive emissions inventory was submitted to the CDX on May 30, 2010 consistent with the requirements of the Air Emissions Reporting Requirements (AERR). We are hereby updating the 2005 comprehensive inventory for the Martinsburg nonattainment area, including updating the most recent estimates for ammonia, VOC, on-road mobile and other enhancements to make it as accurate as possible.

West Virginia will continue to provide updates to future inventories in accordance with EPA's AERR rule. As discussed in Section III.F, West Virginia DAQ submits, and commits to continue submissions of emission inventories every three years.

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

1. <u>NO_x SIP Call, CAIR and CSAPR</u>

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 sources 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 required 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 were expected 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 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).

On July 6, 2010, EPA proposed a replacement to the CAIR program, the Transport Rule [75 FR 45210]. On July 6, 2011, EPA finalized the Transport Rule, now commonly referred to as the Cross-State Air Pollution Rule (CSAPR) [76FR48208, 08AUG2011] in time for reductions to begin in 2012. As finalized, the CSAPR would have preserved the initial reductions achieved under CAIR and provided more reductions in NO_x and SO_2 emissions in 2012 and 2014, ahead of the 2015 CAIR Phase 2.

EPA states on their Cross-State Air Pollution Rule homepage: "By 2014, power plants in states common to both the Cross-State Air Pollution Rule and CAIR will achieve annual SO_2 emissions around 1.8 million tons lower and annual NO_x emissions around 76,000 tons lower than what would have been achieved at that time under CAIR." (www.epa.gov/airtransport/basic.html)

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. Section III above discussed the reductions West Virginia has seen as a result of CAIR.

On April 21, 2004, EPA published Phase II of the NO_x 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 NO_x 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.

2. 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.

3. 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 were phased in from 2004 through 2007. This rule applies to heavy-duty gasoline and diesel trucks and buses. This rule resulted 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 would be reduced by 97 percent by mid-2006.

4. 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 2004 levels, from approximately 3,000 parts per million (ppm) to 15 ppm in 2009. New engine standards took effect, based on engine horsepower, starting in 2008. Together, these rules will substantially reduce local and regional sources of $PM_{2.5}$ precursors.

D. Assurance that existing control measures will remain in effect

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 Martinsburg area, will be submitted to EPA for approval as a SIP revision.

West Virginia, through the Division of Environmental Protection, DAQ, 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 Martinsburg Area.

VI. SUPPLEMENTAL MODELING ANALYSES

Although EPA's Redesignation Guidance does not require modeling nonattainment areas seeking redesignation, extensive modeling has been performed covering the Martinsburg-Hagerstown, WV-MD area to determine the effect of national emission control strategies on $PM_{2.5}$ concentrations. These modeling analyses determined that the Martinsburg-Hagerstown, WV-MD area is significantly impacted by regional transport of $PM_{2.5}$ and its precursors, and that regional SO_2 and NO_x reductions are an effective way to attain the annual standards for $PM_{2.5}$ in this area. Future year modeled annual $PM_{2.5}$ concentrations are expected to be reduced by 6% to 25% from baseline design values. Examples of these modeling analyses are described below.

A. EPA Modeling for the Cross State Air Pollution Rule (Final Transport Rule)

EPA performed modeling to support the emission reductions associated with the Final Transport Rule or the Cross State Air Pollution Rule (CSAPR), as it is currently called. EPA used the Comprehensive Air Quality Model with Extension (CAMx) version 5.3 applied to the 2005 meteorology as processed by the Mesoscale Model (MM5), Version 3.7.4. Emissions input into the CAMx included SO_2, NO_x, VOC, NH_3 and direct $PM_{2.5}$ for 2005. The modeling was based on the annual fine particle design values calculated from 2003 through 2005, 2004 through 2006, and 2005 through 2007. Future year modeling was conducted, and the future year design values for 2012 and 2014 were evaluated for attainment of the annual NAAQS for $PM_{2.5}$ of 15 $\mu g/m^3$, as shown in Table 24. The Berkeley County monitor (54-003-0003) represents the Martinsburg area.

As indicated in the Air Quality Modeling Technical Support Document (TSD) for the CSAPR, air quality modeling was performed for several emissions cases: a 2005 base year, a 2012 "no CAIR" base case, a 2014 "no CAIR" base case, and the 2014 remedy case.

Modeling results for the Martinsburg area (Berkeley County monitor, 54-003-0003) show a 1.84 $\mu g/m^3$ (11.6%) decrease in the average $PM_{2.5}$ concentration for 2012 and a 2.23 $\mu g/m^3$ (14.0%) decrease in the average concentration for 2014, without accounting for CAIR or reductions required by the Transport Rule or CSAPR. A reduction of 3.94 $\mu g/m^3$ (24.7%) from the 2003-2007 baseline is expected for 2014 with the implementation of the CSAPR. It should also be noted that the base year design value used by EPA in their modeling was taken from 2003 through 2007 and is higher than the current 2009 through 2011 design value of 11.8 $\mu g/m^3$ in the area. Furthermore, the monitored design values for 2008-2010 and 2009-2011 of 12.9 and 11.8 $\mu g/m^3$, respectively, are less than the modeled base case design vales for 2012 and 2014. Figures 2 and 3 (in Section II) show the downward trend of the design values from 1999 through 2010 for the $PM_{2.5}$ monitors in West Virginia and Maryland.

Table 30: CSAPR Annual $PM_{2.5}$ Design Values (µg/m3)									
Site ID	**County**	**2003-2007 Average Ambient Value**	**2003-2007 Maximum Ambient Values**	**2012 Base Case Average Values**	**2012 Base Case Maximum Values**	**2014 Base Case Average Values**	**2014 Base Case Maximum Values**	**2014 Remedy Average Values**	**2014 Remedy Maximum Values**
54-003-0003	Berkeley	15.93	16.19	14.09	14.32	13.70	13.92	11.81	11.99
54-009-0005	Brooke	16.52	16.80	14.33	14.58	13.84	14.09	11.34	11.55
54-009-0011	Brooke	16.04	16.37	13.87	14.15	13.39	13.66	10.89	11.13
54-011-0006	Cabell	16.30	16.57	14.71	14.94	14.05	14.28	11.57	11.75
54-029-1004	Hancock	15.76	16.64	13.73	14.51	13.28	14.03	10.81	11.44
54-033-0003	Harrison	13.99	14.19	13.17	13.36	12.71	12.90	9.36	9.49
54-039-0010	Kanawha	15.15	15.38	13.40	13.60	12.78	12.97	10.13	10.28
54-039-0011	Kanawha	13.17	13.17	11.67	11.67	11.13	11.13	8.67	8.67
54-039-1005	Kanawha	16.52	16.59	14.65	14.71	14.01	14.06	11.30	11.35
54-049-0006	Marion	15.03	15.25	14.22	14.43	13.76	13.95	10.16	10.30
54-051-1002	Marshall	15.19	15.33	13.25	13.38	12.75	12.87	10.07	10.17
54-061-0003	Monongalia	14.35	14.47	12.89	13.01	12.41	12.53	9.28	9.40
54-069-0010	Ohio	14.58	14.58	12.53	12.53	12.05	12.05	9.51	9.51
54-081-0002	Raleigh	12.90	13.03	11.22	11.33	10.70	10.80	8.39	8.47
54-107-1002	Wood	15.40	15.44	13.74	13.77	13.16	13.20	10.84	10.87

Source: Air Quality Modeling Final Technical Support Document for the Final Cross-State Air Pollution Rule , pages B-61 - B-62. (www.epa.gov/airtransport/techinfo.html)

B. EPA Modeling for Proposed Transport Rule 2010

EPA performed modeling to support the emission reductions associated with the Proposed Transport Rule. EPA used the Comprehensive Air Quality Model with Extension (CAMx Version 5), applied to the 2005 meteorology as processed by the Mesoscale Model (MM5), Version 3.7.4. Emissions input into the CAMx included SO_2, NO_x, VOC, NH_3 and direct $PM_{2.5}$ for 2005. The modeling was based on the annual fine particle design values calculated from 2003 through 2005, 2004 through 2006, and 2005 through 2007. Future year modeling was conducted, and the future year design values for 2012 and 2014 were evaluated for attainment of the annual NAAQS for $PM_{2.5}$ of 15 µg/m^3, as shown in Table 31. The Berkeley County monitor (54-003-0003) represents the Weirton area.

Table 31: Proposed Transport Rule Modeling Results from EPA - 2010

Monitor ID	County	Design Value 2003-2007 (µg/m^3)	Future Design Value 2012 Base (µg/m^3)	Future Design Value 2014 Base (µg/m^3)	Future Design Value 2014 Remedy (µg/m^3)
54-003-0003	Berkeley	15.93	14.95	14.64	12.44
54-009-0005	Brooke	16.52	14.95	14.51	12.02
54-009-0011	Brooke	16.04	14.49	14.05	11.56
54-011-0006	Cabell	16.30	15.25	14.65	12.09
54-029-1004	Hancock	15.76	14.34	13.93	11.48
54-033-0003	Harrison	13.99	13.82	13.30	9.94
54-039-0010	Kanawha	15.15	14.01	13.45	10.77
54-039-0011	Kanawha	13.17	12.23	11.74	9.24
54-039-1005	Kanawha	16.52	15.28	14.69	11.97
54-049-0006	Marion	15.03	14.96	14.41	10.79
54-051-1002	Marshall	15.19	13.96	13.44	10.74
54-061-1003	Monongalia	14.35	13.72	13.14	10.01
54-069-0010	Ohio	14.58	13.18	12.72	10.15
54-081-0002	Raleigh	12.90	11.88	11.40	9.01
54-107-1002	Wood	15.40	14.31	13.77	11.40

Source: Technical Support Document for the Proposed Transport Rule, pages B-52 - B-53. (www.epa.gov/airquality/transport/pdfs/TR_AQModeling_TSD.pdf)

EPA stated in the preamble to the proposed Transport Rule that the "baseline analysis takes into account emissions reductions associated with the implementation of all federal rules promulgated by December 2008 and assumes that CAIR is not in effect." [75FR 45233, 02AUG2010]

Modeling results for the Martinsburg area (Berkeley County monitor, 54-003-0003) show a 0.98 $\mu g/m^3$ (6.2%) decrease in the $PM_{2.5}$ concentration for 2012 and a 1.29 $\mu g/m^3$ (8.1%) decrease in the concentration for 2014, without accounting for CAIR or reductions required by the Transport Rule. A reduction of 3.49 $\mu g/m^3$ (21.9%) from the 2003-2007 baseline is expected for 2014 with the implementation of the Transport Rule. It should also be noted that the base year design value used by EPA in their modeling was taken from 2003 through 2007 and is higher than the current 2009 through 2011 design value of 11.8 $\mu g/m^3$ in the area. Furthermore, the monitored design values for 2006-2008, 2007-2009, 2008-2010 and 2009-2011 of 14.9, 14.0, 12.9 and 11.8 $\mu g/m^3$, respectively, are less than the modeled base case design vales for 2012 and 2014. Figures 2 and 3 (in Section II) show the downward trend of the design values from 1999 through 2010 for the $PM_{2.5}$ monitors in West Virginia and Maryland.

C. VISTAS/ASIP Emissions and Air Quality Modeling to Support $PM_{2.5}$ and 8-hour Ozone State Implementation Plans

VISTAS/ASIP conducted modeling to determine the impact of CAIR and other control programs in the southeast, including West Virginia. The VISTAS/ASIP modeling used Version 4.51 of the Community Multi-scale Air Quality (CMAQ) modeling system with enhanced secondary organic aerosol (SOA) module (SOAmods) applied to the year 2002 meteorology, as processed by MM5. Emissions input into CMAQ included SO_2, NO_x, VOC, NH_3 and direct $PM_{2.5}$ for 2002. The modeling was based on 2000 through 2004 design values. Future year modeling for 2009, 2012 and 2018 was conducted and the future year design values were determined with the emission reductions associated with CAIR, as shown in Table 32. The Transport Rule is expected to provide reductions above and beyond CAIR. The Berkeley County monitor (54-003-0003) represents the Martinsburg area.

The VISTAS/ASIP modeling results for the Martinsburg area (Berkeley County monitor, 54-003-0003) predicted a 2.7 $\mu g/m^3$ (16.7%) decrease in the projected $PM_{2.5}$ concentration for 2009 from the 2002 design value. As shown in Table 1, the actual monitored design value for 2007-2009 was 14.0 $\mu g/m^3$, a 2.2 $\mu g/m^3$ (13.6%) improvement, slightly less than predicted. The modeling results show a continued improvement in the area, with a $PM_{2.5}$ concentration of 12.3 $\mu g/m^3$ by 2018, a 24.1% reduction from the 2002 design value. The current 2009-2011 design value for the area is 11.8 $\mu g/m^3$, which is lower than the predicted design values for 2012 and 2014.

Table 32: VISTAS/ASIP 2009, 2012 and 2018 Modeling Results (with CAIR)					
Monitor ID	**County**	**2002 Annual DVC**	**Annual DVF**		
			2009	**2012**	**2018**
54-003-0003	Berkeley	16.2	13.5	12.9	12.3
54-009-0005	Brooke	16.7	13.6	13.3	12.6
54-011-0006	Cabell	16.5	14.4	13.7	13.3
54-029-0011	Hancock	16.0	13.0	12.6	11.9
54-026-1004	Hancock	17.3	14.0	13.7	13.0
54-033-0003	Harrison	14.0	11.6	10.7	10.4
54-039-0010	Kanawha	15.4	13.1	12.2	11.7
54-039-1005	Kanawha	17.1	14.7	13.7	13.2
54-049-0006	Marion	15.3	12.9	12.0	11.6
54-051-1002	Marshall	15.6	13.2	12.7	12.1
54-055-0002	Mercer	12.7	10.6	9.7	9.1
54-061-0003	Monongalia	14.8	12.3	11.5	11.0
54-069-0008	Ohio	15.1	12.6	12.1	11.5
54-081-0002	Raleigh	13.1	11.0	10.1	9.5
54-089-0001	Summers	10.1	8.3	7.6	7.1
54-107-1002	Wood	16.1	13.8	13.4	12.6

Source: Technical Support Document for the Association for Southeastern Integrated Planning (ASIP) Emissions and Air Quality Modeling to Support $PM_{2.5}$ and 8-Hour Ozone State Implementation Plans, March 24, 2008.

VII. CONTINGENCY MEASURES

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

A. Maintenance Plan Review

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

B. Corrective Actions

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

1. Warning Level Response

A warning level response shall be prompted whenever the $PM_{2.5}$ average of the weighted annual mean of 15.5 $\mu g/m^3$ occurs in a single calendar year within the maintenance area. A warning level response will consist of a study to determine whether the $PM_{2.5}$ value indicates a trend toward higher $PM_{2.5}$ values or whether emissions appear to be increasing. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measures necessary to reverse the trend taking into consideration ease and timing for implementation as well as economic and social considerations. Implementation of necessary controls in response to a warning level response trigger will take place as expeditiously as possible, but in no event later than 12 months from the conclusion of the most recent calendar year.

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

2. Action Level Response

An action level response shall be prompted whenever a two-year average of the weighted annual means of 15.0 $\mu g/m^3$ or greater occurs within the maintenance area. A violation of the standard (three-year average of the weighted annual means of 15.0 $\mu g/m^3$ or greater) shall also prompt an action level response. In the event that the action level is triggered and is not found to be due to an exceptional event, malfunction, or noncompliance with a permit condition or rule requirement, 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.

3. 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 DAQ will submit to EPA an analysis to demonstrate the proposed measures are adequate to return the area to attainment.

C. Potential Contingency Measures

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.

D. $PM_{2.5}$, SO_2, and NO_x sources potentially subject to future additional control requirements.

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

- ICI Boilers - SO_2 and NO_x controls;
- EGUs;
- process heaters;
- internal combustion engines;
- combustion turbines;
- other sources greater than 100 tons per year;
- Fleet vehicles;
- Concrete manufacturers;
- Aggregate processing plants.

VIII. 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 State Register, The Charleston Gazette and the Martinsburg Journal on June 14, 2013.

The public hearing to receive comments on the redesignation request is tentatively scheduled for 6:00 p.m. on Tuesday, July 23, 2013, at the West Virginia Division of Environmental Protection Headquarters located at 601 57th Street, SE, Charleston, WV. The public comment period closes on July 15, 2013, unless a hearing is requested. A public notice announcing whether a hearing shall be held will be posted in the West Virginia State Register published on July 19, 2013. Appendix H includes a copy of the public notice.

IX. CONCLUSIONS

The Martinsburg $PM_{2.5}$ 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 West Virginia portion of the Martinsburg $PM_{2.5}$ 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 Martinsburg 1997 $PM_{2.5}$ nonattainment area be redesignated to attainment simultaneously with EPA approval of the CAA section 175A maintenance plan provisions contained herein.

The State of West Virginia is also requesting approval of the 2005 base year inventory as meeting the requirements under Clean Air Act Section 172(c)(3).