Memorandum

Date: March 28, 2013

To: MANE-VU

From: Paul Miller, NESCAUM

Re: Overview of state and federal actions relative to MANE-VU Asks

This memorandum provides a summary of certain elements in regional haze state implementation plans (SIPs) within and outside the Mid-Atlantic/Northeast Visibility (MANE-VU) regional planning area.[1] The SIPs covered are either from members of the MANE-VU regional planning organization (RPO), or from states outside the MANE-VU region that were identified as having emissions contributing 2% or more to sulfate levels at MANE-VU Class 1 areas.

The elements reviewed in each regional haze SIP were in the context of requests from MANE-VU in 2007 that certain measures, or their equivalents, be adopted within each jurisdiction by 2018 (referred to as the "MANE-VU Asks"). MANE-VU deemed these measures as appropriate for making reasonable progress towards achieving the national goal of natural background visibility in Class 1 areas by 2064. The MANE-VU Asks differed in some respects between the MANE-VU members and states outside of the MANE-VU region, but were intended to encompass comparable sulfur dioxide (SO_2) measures across all states. The specific elements of the MANE-VU Asks for inside and outside the MANE-VU region are given below according to two groupings of SIPs from inside and outside the MANE-VU region.

A common Ask element inside and outside the MANE-VU region was for a 90% or greater SO_2 emissions reduction by 2018 relative to 2002 from 167 electric generating unit (EGU) stacks. MANE-VU identified these specific stacks through modeling as having the largest impacts on visibility in its Class 1 areas among all modeled EGUs. This Ask element included flexibility for achieving the 90% reduction through alternative measures if not feasible at the stack.

This summary provides a "snap shot" of SO_2 emissions in 2011 at the individual stacks on the 167 EGU list. To provide additional context of state-wide reductions from

[1] NESCAUM thanks the following people for helpful assistance in reviewing and commenting on the state summaries: Robert Betterton, WV Department of Environmental Protection; James Boylan, GA Department of Natural Resources; John Hornback, SESARM; Wendy Jacobs, CT Department of Energy and Environmental Protection; Joseph Jakuta, OTC; Rob Kaleel, LADCO; Glenn Keith, MA Department of Environmental Protection; Martin Luther, KY Division for Air Quality; Charles Martone, NH Department of Environmental Services; Julie McDill, MARAMA; Doris McLeod, VA Department of Environmental Quality; Anne McWilliams, EPA Region 1; Albert Pearce, GA Department of Natural Resources; John Sipple, DE Department of Natural Resources and Environmental Control; Roger Thunell, MD Department of the Environment.

potential "alternative measures," we also use EPA's Acid Rain Program data to compare overall state-wide SO_2 reductions occurring in 2011 relative to 2002 against the requested amount from a state's stacks on the 167 EGU stack list. The comparison uses reported emissions from the Acid Rain Program rather than from the Clean Air Interstate Rule (CAIR) because not all states receiving a MANE-VU Ask are covered by CAIR. In addition, emissions reporting under CAIR started several years after the 2002 MANE-VU Ask baseline. A state-level comparison of 2011 SO_2 emissions reported in the Acid Rain Program and in the CAIR program found that reported SO_2 emissions in both programs were within about 5% for most states.

In addition to the MANE-VU Asks for states, MANE-VU also presented a federal ask to the U.S. Environmental Protection Agency (EPA) for additional national SO_2 reductions from power plants. The current status of federal efforts is summarized in the third section of this memorandum.

1. INSIDE MANE-VU REGION

For the MANE-VU members, the "MANE-VU Ask" requested the following actions:

- Timely implementation of BART requirements; and

- A low sulfur fuel oil strategy in the inner zone States (New Jersey, New York, Delaware and Pennsylvania, or portions thereof) to reduce the sulfur content of: distillate oil to 0.05% sulfur by weight (500 ppm) by no later than 2012, of #4 residual oil to 0.25% sulfur by weight by no later than 2012, of #6 residual oil to 0.3 – 0.5% sulfur by weight by no later than 2012, and to further reduce the sulfur content of distillate oil to 15 ppm by 2016; and

- A low sulfur fuel oil strategy in the outer zone States (the remainder of the MANE-VU region) to reduce the sulfur content of distillate oil to 0.05% sulfur by weight (500 ppm) by no later than 2014, of #4 residual oil to 0.25 – 0.5% sulfur by weight by no later than 2018, and of #6 residual oil to no greater than 0.5% sulfur by weight by no later than 2018, and to further reduce the sulfur content of distillate oil to 15 ppm by 2018, depending on supply availability; and

- A 90% or greater reduction in sulfur dioxide (SO_2) emissions from each of the top 100 electric generating units (EGUs) identified by MANE-VU (comprising a total of 167 stacks) as reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class 1 Federal area in the MANE-VU region. If it is infeasible to achieve that level of reduction from a unit, alternative measures will be pursued in such State; and

- Continued evaluation of other control measures including energy efficiency, alternative clean fuels, and other measures to reduce SO_2 and nitrogen oxide (NOx) emissions from all coal-burning facilities by 2018 and new source performance standards for wood combustion. These measures and other measures

identified will be evaluated during the consultation process to determine if they are reasonable and cost-effective.

Connecticut

Submittal Date of Regional Haze SIP
November 18, 2009; February 24, 2012; March 12, 2012; November 23, 2012

Haze SIP Status as of January 24, 2013
EPA proposed approval, 77 FR 17367 (March 26, 2012); EPA supplemental proposed approval, 78 FR 5158 (January 24, 2013); final by April 26, 2013 (under extended consent decree).[2]

BART Requirements
Connecticut identified an initial list of ten BART-eligible sources. Three BART-eligible sources were subsequently capped by consent order at below BART-eligible levels, removing them from the list. Connecticut determined that its existing rules achieved greater reductions from its remaining BART-eligible sources than from application of BART alone.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
Connecticut adopted low sulfur fuel oil rules and statute but implementation of the statute is contingent upon adoption of rules by Massachusetts (enacted), New York (enacted), and Rhode Island (not yet proposed).

90% SO_2 reduction of 167 EGU stacks
Does not have listed stack.

Evaluation of other control measures
Connecticut agreed to continue evaluating other possible control measures consistent with the MANE-VU Ask, including investigating success of other state programs regulating outdoor wood burning furnaces, and adoption of the California Low Emission Vehicle (CA LEV) program revisions for mobile sources.

Delaware

Submittal Date of Regional Haze SIP
September 25, 2008

Haze SIP Status as of December 18, 2012
EPA final approval, 76 FR 42557 (July 19, 2011)

BART Requirements

[2] Communication from David Conroy, EPA Region 1 (December 18, 2012).

Delaware identified four EGUs and one steel mill as BART-eligible sources. Delaware established enforceable caps for the steel mill to limit emissions below BART-eligible levels. Delaware also considers that in the aggregate, DE Regulation 1146 achieves greater reductions from its EGUs than would be achieved by applying presumptive BART on the BART-eligible EGUs.

Low Sulfur Oil Strategy Inner Zone
Delaware has not yet adopted low sulfur fuel strategy, but considers equivalent reductions met by including SO_2 reductions from all Delaware EGUs (in excess of 90% reductions).

Low Sulfur Oil Strategy Outer Zone
Does not apply.

90% SO_2 reduction of 167 EGU stacks
Delaware has five stacks at two power plants among the MANE-VU 167 EGU stacks list. Delaware indicated that the 90% reduction in SO_2 from the Edge Moor Unit 5 and Indian River Units 1-4 was relative to a baseline of calendar year 2002 actual SO_2 mass emissions levels from those units. Based on the actual 2002 SO_2 mass emissions from the subject Delaware EGUs, and applying the 90% reduction factor, Delaware determined that the actual SO_2 reduction obligation for those units was 19,909 tons/year. However, Delaware's analysis indicated that it was not feasible to achieve an SO_2 mass emissions reduction of 19,909 tons/year from Edge Moor Unit 5 and Indian River Units 1-4 alone. Alternatively, in the 2008 Visibility SIP document Delaware indicated that SO_2 emissions reductions from all of the EGU units affected by Delaware's 7 DE Admin Code 1146, Electric Generating Unit (EGU) Multi-Pollutant Regulation, would exceed 19,909 tons of annual SO_2 reductions. Delaware indicated that the SO_2 emissions reductions achieved by 7 DE Admin Code 1146 demonstrated that Delaware had met its obligation. Subsequent to the promulgation of 7 DE Admin Code 1146 (and Delaware's 2008 SIP submittal), units subject to the regulation have come into compliance with the regulation in 2009 and 2012 (phase-in), or have come into compliance with consent decrees and permanent, federally enforceable permit conditions related to the regulation. Beginning in 2011, the annual SO_2 emission reductions of 21,906 tpy have exceeded the 2018 target level of 19,909 tpy (7 years early). This is consistent with reported emissions in the Acid Rain Program.

Evaluation of other control measures
Delaware is evaluating diversity of fuels for energy needs, electricity conservation programs, and efficient energy infrastructure, along with encouraging new energy efficient product makers and promoting renewables, among other measures.

District of Columbia[3]

Submittal Date of Regional Haze SIP

[3] The District of Columbia contributes less than 0.1 $\mu g/m^3$ or 2% sulfate at nearby Class 1 areas, so its long-term strategy consists of adopting the control measures in the MANE-VU "on-the-books/on-the-way" scenario and meeting the BART requirements.

October 27, 2011

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 5191 (February 2, 2012)

BART Requirements
The District of Columbia has two BART-eligible sources that were to shut down by December 17, 2012.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
No rule proposed.

90% SO_2 reduction of 167 EGU stacks
Does not have listed stack.

Evaluation of other control measures
The District of Columbia plans to continue to pursue adoption of MANE-VU measures in "beyond-on-the-way" (BOTW) and "best and final" scenarios by 2018, as appropriate and necessary.

Maine

Submittal Date of Regional Haze SIP
December 9, 2010; supplemented September 14, 2011, November 9, 2011

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 24385 (April 24, 2012)

BART Requirements
Maine identified 10 BART-eligible sources, and determined all 10 were subject to BART. In 2007, ME legislature adopted BART requirements and deadlines. BART controls must be installed and operating by January 1, 2013 and either (1) require low sulfur oil (1% or less) or (2) be equivalent to a unit-specific 50% reduction in sulfur emissions from baseline. Three BART sources capped out under permit limits. Maine determined that existing controls and lower sulfur oil (where applicable) satisfied BART for the remaining sources.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
Legislation passed. Distillate = 50 ppm in 2016; 15 ppm in 2018. #6 Fuel - 0.5% in 2018.

90% SO_2 reduction of 167 EGU stacks
Maine has one stack on MANE-VU 167 stacks list. Maine determined it was not cost-effective to add controls to the unit, and will use lower sulfur fuel to comply by 2013. Low sulfur fuel will get an 84% reduction. In 2011, the unit had SO_2 emissions 76% lower than its 2002 levels, and greater than 90% lower when including additional SO_2 reductions from other units at the same power plant. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 48%.

Evaluation of other control measures
Maine has adopted rules on outdoor wood and pellet boilers, an outdoor wood boiler replacement and buy-back program, and a wood stove replacement buy-back program.

Maryland

Submittal Date of Regional Haze SIP
February 13, 2012

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 39938 (July 6, 2012).

BART Requirements
Maryland identified four EGUs and three non-EGUs as BART-eligible. Of the three non-EGUs, one was determined to not be a BART source based on start up date, one had existing and future selective non-catalytic reduction (SNCR) controls considered to satisfy BART, and one had additional requirements put in place to satisfy BART. For EGU BART-eligible sources, Maryland accepted existing controls and measures as satisfying BART on all units.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
No rule proposed. Maryland committed to pursuing a low sulfur fuel oil strategy as apporpriate and necessary.

90% SO_2 reduction of 167 EGU stacks
Maryland has nine stacks (12 units) at six power plants listed among the MANE-VU 167 stacks. Maryland's approach to the 90% MANE-VU Ask from its listed stacks is to use the state's Healthy Air Act (HAA) as approved in its SIP. Maryland operated from a total emissions baseline for the state's EGU units identified by the MANE-VU Ask. Maryland arrived at the total emissions needed to satisfy the Ask by totaling the 2002 base year emissions for the state's units on the 167 list and multiplying by 90%. This number is 211,892 tpy of SO_2. In 2011, Maryland achieved 208,941 tpy of reductions from the units in question and an additional 6,671 tpy from units regulated by the HAA but not included in the MANE-VU Ask. Maryland states that the Maryland HAA is

obtaining SO_2 reductions in excess of the 90% MANE-VU Ask before 2018. This is consistent with reported emissions in the Acid Rain Program.

Evaluation of other control measures
Maryland committed to evaluating other measures per MANE-VU Ask. Maryland also cited the Maryland Strategic Energy Investment Fund as a funding source for renewables and energy efficiency.

Massachusetts

Submittal Date of Regional Haze SIP
December 30, 2011; supplemented August 9, 2012; August 28, 2012

Haze SIP Status as of December 18, 2012
EPA final approval signed in September 2012; FR notice pending.[4]

BART Requirements
Massachusetts identifed nine power plants and eight non-EGUs as BART-eligible, and subsequently subject to BART. Seven BART sources were determined to have *de minimis* impacts and did not justify controls. Massachusetts adopted an Alternative to BART program achieving greater emissions reductions than source-by-source BART for EGUs (permit restriction, cap, retirement, low sulfur fuel). Massachusetts determined additional SO_2 control for one non-EGU BART source was not cost-effective and would have minimal impact on visibility. Volatile organic compounds (VOCs) from three petroleum storage facilities were addressed under Massachusetts' ozone SIPs rather than BART.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
Massachusetts adopted rules for 15 ppm sulfur #2 oil, and 0.5% sulfur by weight for #4 and #6 residual oils by 2018.

90% SO_2 reduction of 167 EGU stacks
Massachusetts has 10 stacks at five power plants on the MANE-VU 167 stacks list. Massachusetts estimates that based on its Alternative to BART, EPA's Mercury and Air Toxics Standards (MATS), and EGU closures, 2018 EGU SO_2 emissions will be 87% lower than 2002 emissions. In 2011, seven stacks had SO_2 emissions more than 90% lower than 2002 levels when including plant-wide emission reductions at the stacks. The remaining three stacks were 50-80% lower in 2011. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 were 94% of the MANE-VU Ask amount.

Evaluation of other control measures

[4] Communication from David Conroy, EPA Region 1 (December 18, 2012).

Massachusetts is implementing controls on outdoor wood-fired boilers. Massachusetts will pursue other reasonable and cost-effective measures as needed.

New Hampshire

Submittal Date of Regional Haze SIP
January 29, 2010; supplemented January 14, 2011; August 26, 2011

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 50602 (August 22, 2012)

BART Requirements
New Hampshire has two BART-eligible sources: Merrimack Unit 2 and Newington Unit 1, and both are included in the MANE-VU 167 stacks list. Control measures for these sources are described below in the 167 EGU stacks section. New Hampshire adopted BART in New Hampshire rule Env-A 2300: Mitigation of Regional Haze; effective date January 8, 2011.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
New Hampshire made commitment to continue evaluating strategy. No rule proposed.

90% SO_2 reduction of 167 EGU stacks
New Hampshire has three stacks at two power plants listed among the MANE-VU 167 stacks.

Merrimack Unit 1: No specific SO_2 limit given in haze SIP. Page 118 of the New Hampshire regional haze SIP indicates Merrimack Unit 1 required by rule to reduce mercury by 80% with flue gas desulfurization (FGD) that has an expected 90% minimum co-benefit in SO_2 reduction. 2011 SO_2 emissions were 17% below 2002 levels.

Merrimack Unit 2: Requires FGD operated at maximum sustainable reduction rate, but not less than 90% calendar month average, to be accomplished by July 1, 2013. 2011 SO_2 emissions were 32% below 2002 levels.

New Hampshire expects that controls at the Merrimack units will exceed the 90% MANE-VU Ask request.

Newington Unit 1: Requires an SO_2 limit of 0.50 lb/MMBtu by July 1, 2013; 2002 rate was 1.08 lb/MMBtu. 2011 SO_2 emissions were 94% below 2002 levels, in part due to lower utilization. New Hampshire determined that an enforceable 90% MANE-VU Ask reduction at this unit was not reasonable at this time.

EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 were 60% of the MANE-VU Ask amount.

Evaluation of other control measures
New Hampshire is seeking alternative measures for Newington Unit 1, including >90% SO_2 reduction at Merrimack Station, possible additional controls on other coal-burning units, and use of low sulfur fuel oil (p. 27 and Long Term Strategy, NH haze SIP).

New Jersey

Submittal Date of Regional Haze SIP
July 28, 2009; supplemented December 9, 2010; March 2, 2011; December 7, 2011

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 19 (January 3, 2012)

BART Requirements
New Jersey identified four refineries and one EGU (Hudson) as BART-eligible and subject to BART. New Jersey believes that the state's adopted rules in its 8-hour ozone and $PM_{2.5}$ SIPs along with consent decrees to address NOx, SO_2, and particulate matter (PM) at these sources will likely address BART.[5] New Jersey did not rely on CAIR for the Hudson EGU (also a 167 EGU stack).

Low Sulfur Oil Strategy Inner Zone
The New Jersey regional haze SIP stated an intent to propose and adopt low sulfur rules in accordance with the MANE-VU Ask. Current rule N.J.A.C. 7:27-9 already meets #6 fuel oil sulfur levels in parts of state. New Jersey proposed a low sulfur fuel oil rule on April 4, 2011. The rule now is in effect and will meet MANE-VU Ask sulfur levels by July 1, 2016.

Low Sulfur Oil Strategy Outer Zone
Does not apply.

90% SO_2 reduction of 167 EGU stacks
New Jersey has four stacks among the MANE-VU 167 stacks list. New Jersey indicates that existing orders on all four will result in more than a 90% SO_2 reduction by December 15, 2012. All four New Jersey stacks had 2011 SO_2 emissions more than 90% below 2002 levels. This is consistent with reported emissions in the Acid Rain Program.

Evaluation of other control measures
New Jersey cites draft Energy Master Planning as including ways to increase energy efficiency. It also cites the state's Global Warming Response Act signed in 2007 that will decrease greenhouse gases, which will help reduce haze pollutants. New Jersey lists a number of other measures under consideration that would address fugitive dust, open burning, residential wood burning, VOCs, and diesel exhaust.

New York

[5] One refinery (Hess Port Reading) has since announced plans to shut down by the end of February 2013.

Submittal Date of Regional Haze SIP
March 15, 2010; supplemented August 2, 2010; April 16, 2012; July 2, 2012

Haze SIP Status as of December 18, 2012
EPA partial approval 17 BART sources/partial disapproval 2 BART sources, 77 FR 51915 (August 28, 2012)

BART Requirements
New York required source-specific analysis of all BART-eligible sources. BART-eligible EGUs under CAIR were not exempted from BART analysis. EPA approved 17 source-specific SIP revisions for New York's BART sources, and issued FIPs for 2 additional BART sources.

Low Sulfur Oil Strategy Inner Zone
New York committed to adopting low sulfur fuel oil rules under 6 NYCRR Part 225, and adopted the rules subsequent to the state's regional haze SIP submittal. A 15 ppm heating oil requirement became effective in 2012. The remaining distillates' effective date is in 2014.

Low Sulfur Oil Strategy Outer Zone
Does not apply.

90% SO_2 reduction of 167 EGU stacks
New York has 11 stacks listed among the MANE-VU 167 stacks list. With the exception of the Oswego unit, all listed New York stacks were expected to either shut down or be controlled in range of 80-95% for SO_2. In the aggregate, accounting for shutdowns, controls, and new EGUs, New York expects to achieve the 90% MANE-VU Ask. 2011 SO_2 emissions at most of the state's listed stacks were at or approaching levels more than 90% below 2002 emissions at the individual stack, or were greater than 90% below when including SO_2 reductions/shutdowns at other units at the same facility. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 27%.

Evaluation of other control measures
New York was to continue evaluating energy efficiency, alternative clean fuels, and other measures to reduce NOx and SO_2 at all coal-burning facilities, and new source performance standards for wood combustion. New York was also pursuing VOC measures under its ozone SIPs.

Pennsylvania

Submittal Date of Regional Haze SIP
December 20, 2010

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 41279 (July 13, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
Pennsylvania accepted CAIR as BART for EGU NOx and SO_2. Pennsylvania made BART determinations for EGU particulate matter (PM) and all non-EGU BART-eligible sources that did not elect to be not BART-eligible through permit limitations. Pennsylvania determined that existing controls at all BART-eligible sources met BART requirements.

Low Sulfur Oil Strategy Inner Zone
Pennsylvania committed to a low sulfur fuel strategy not less stringent than the outer zone MANE-VU Ask, based on supply concerns. It proposed a rule in September 2010, with a full effective date by 2016.

Low Sulfur Oil Strategy Outer Zone
Does not apply.

90% SO_2 reduction of 167 EGU stacks
Pennsylvania has 15 stacks among the MANE-VU 167 stacks. In 2011, SO_2 emissions at 2 of the 15 stacks were more than 90% below 2002 levels. The remaining 13 stacks all had lower 2011 SO_2 emissions than in 2002 at levels less than a 90% reduction. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 equaled the MANE-VU Ask amount.

Evaluation of other control measures
Pennsylvania lists a number of measures being undertaken in on-going programs that can address haze, including refinery consent decrees, rulemakings on cement kilns and glass furnaces, and state energy initiatives to address peak demand days, and promote renewables, energy efficiency, and energy conservation.

Rhode Island

Submittal Date of Regional Haze SIP
August 7, 2009

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 30214 (May 22, 2012)

BART Requirements
Does not have BART-eligible sources.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
Rhode Island made a SIP commitment to adopt a low sulfur rule consistent with the MANE-VU Ask for the outer zone. A rule has not yet been proposed as of December 18, 2012.

90% SO_2 reduction of 167 EGU stacks
Does not have listed stack.

Evaluation of other control measures
Rhode Island stated an intent to adopt all reasonable control measures as expeditiously as practicable consistent with state law within 10 year planning period. It cited a possible state law to address outdoor wood boilers.

Vermont

Submittal Date of Regional Haze SIP
August 26, 2009; supplemented January 3, 2012

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 30212 (May 22, 2012)

BART Requirements
Does not have BART-eligible sources.

Low Sulfur Oil Strategy Inner Zone
Does not apply.

Low Sulfur Oil Strategy Outer Zone
Vermont adopted low sulfur fuel oil requirements in the "Vermont Energy Act of 2011." Full implementation will be by July 1, 2018.

90% SO_2 reduction of 167 EGU stacks
Does not have listed stack.

Evaluation of other control measures
Vermont stated an intent to continue investigating cleaner sources of energy.

2. OUTSIDE MANE-VU REGION

For states outside the MANE-VU region, the "MANE-VU Ask" requested:

- Timely implementation of BART requirements;

- A 90% or greater reduction in sulfur dioxide (SO_2) emissions from each of the top 100 electric generating units (comprising a total of 167 stacks) impacting any mandatory Class 1 Federal area in the MANE-VU region, or an equivalent SO_2 reduction from alternative measures within each State;

- The application of reasonable controls on non-EGU sources resulting in a 28% reduction in non-EGU SO_2 emissions, relative to on-the-books, on-the-way 2018 projections used in regional haze planning, by 2018, which is equivalent to the projected reductions MANE-VU will achieve through its low sulfur fuel oil strategy;

- Continued evaluation of other measures including measures to reduce SO_2 and nitrogen oxide (NOx) emissions from all coal-burning facilities by 2018 and promulgation of new source performance standards for wood combustion. These measures and other measures identified will be evaluated through consultation processes to determine if they are reasonable.

Georgia[6]

Submittal Date of Regional Haze SIP
February 11, 2010; supplemented September 19, 2010

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 38501 (June 28, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
Georgia accepted CAIR as BART for EGU NOx and SO_2. Georgia identified 24 BART-eligible sources, which included EGUs for PM only, and accepted exemption

[6] When contacted by MANE-VU states before the release of the "MANE-VU Ask" letters, The Georgia Environmental Protection Division (Georgia EPD) had the following response to those states:

> Georgia EPD is a member of the VISTAS Regional Planning Organization. Based on VISTAS SO_2 emissions sensitivity modeling for 2009 and VISTAS SO_2 Area of Influence (AOI) work for 2018, we have concluded that Georgia does not reasonably contribute to visibility impairment at [MANE-VU] Class I Area[s]. Furthermore, it should be noted that Georgia EPD is currently in the process of requiring 95% SO_2 controls to be installed on the seven largest coal fired power plants in Georgia. Not all of these controls were accounted for in the SO_2 emissions sensitivity modeling or the SO_2 AOI work; therefore, Georgia's contributions to [MANE-VU] Class I areas in these analyses will be a conservative upper bound leading to our conclusion that Georgia EGU and non-EGU SO_2 sources do not reasonably contribute to visibility impairment at [MANE-VU Class I Areas].

demonstrations from 22 of the 24 BART-eligible sources based on a 0.5 dv contribution threshold. A paper facility was required to use natural gas in one boiler. All other available BART control options were deemed not cost effective. The second BART facility was an EGU (Bowen), and no available BART control options for PM were deemed cost effective.

90% SO_2 reduction of 167 EGU stacks
Georgia has five stacks at two power plants listed in the MANE-VU Ask. Four of the stacks carry emissions from Bowen Units 1 through 4. The fifth stack carries the combined emissions from Harllee Branch Units 3 and 4. Georgia Rule 391-3-1-.02(2)(uuu) requires 95% removal of SO_2 from Bowen Units 1- 4 no later than January 1, 2012, and from Harllee Branch Units 1 – 4 no later than January 1, 2016.[7] Since the filing of the Georgia haze SIP, Georgia Power Company has filed requests to decommission Harllee Branch Units 1 and 2 in 2013 and Units 3 and 4 in 2015. In 2011, SO_2 emissions from the four units at Bowen were greater than 90% below 2002 emissions, with 2011 emissions at the Harllee Branch units about 25% below 2002 levels. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 73%.

28% SO_2 reduction in non-EGU emissions
Georgia required lower SO_2 permit limits for eight emissions units at five non-EGU facilities based on four-factor analysis. Georgia also required lower SO_2 permit emissions rates for two emissions units at one non-EGU facility for the purpose of BART exemption. Overall, 8,223 tons of SO_2 reductions are required between 2012 and 2018, which is approximately 15% of 2002 non-EGU facility SO_2 emissions.[7]

Evaluation of other control measures
No additional measures listed for further evaluation.

Illinois

Submittal Date of Regional Haze SIP
June 24, 2011

Haze SIP Status as of December 18, 2012
EPA final approval, 77 FR 39943 (July 6, 2012)

BART Requirements
Ilinois identified nine EGUs and two refineries as subject to BART. Illinois did not rely on CAIR for BART, and applied standards more stringent than CAIR to affected EGUs. Illinois considers federal consent decrees for the two refineries as BART for NOx and SO_2.

90% SO_2 reduction of 167 EGU stacks

[7] Communication from Georgia EPD – Air Protection Branch (March 5, 2013).

Illinois has one stack listed among the MANE-VU 167 stacks. The identified stack at Ameren-Coffeen has selective catalytic reduction (SCR) that will operate year-round, and a wet scrubber to comply with Illinois' multi-pollutant standards. Illinois states that the level of control required on the power plant will satisfy the MANE-VU Ask. In 2011, SO_2 emissions at the Ameren-Coffeen stack were more than 90% less than 2002 levels. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 267%.

28% SO_2 reduction in non-EGU emissions
Illinois expects on-the-books federal and state control measures will achieve sufficient reductions to satisfy MANE-VU Ask. Reductions not quantified.

Evaluation of other control measures
No additional measures listed for further evaluation.

Indiana

Submittal Date of Regional Haze SIP
January 14, 2011; March 10, 2011

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 34218 (June 11, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
Indiana identified 32 BART-eligible sources, which included EGUs. Initial analysis determined four non-EGU facilities and nine power plants were subject to BART. Of the four non-EGU BART sources, Indiana determined three were exempt based on additional modeling, and required BART measures on the fourth. For the power plants, Indiana accepted CAIR as BART for NOx and SO_2, and determined one EGU remained subject to BART for PM only (Alcoa Boiler 4). Indiana adopted a BART rule in 2010 for the EGU with a PM emission rate of 0.1 lb/MMBtu using an ESP.

90% SO_2 reduction of 167 EGU stacks
Indiana has 15 stacks at 9 power plants listed in the MANE-VU Ask; most of these stacks have or will have post-combustion emission controls (i.e., scrubbers). In 2011, 9 of the 15 listed stacks had SO_2 emissions more than 90% below 2002 levels. Another three stacks had decreases less than 90% relative to 2002. 2011 emissions at Clifty Creek (two stacks) increased, with about a doubling over 2002 emissions. The Rockport stack was about 7% higher in 2011 over 2002. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 were 86% of the MANE-VU Ask amount.

28% SO_2 reduction in non-EGU emissions
No additional measures identified. Indiana noted other existing federal requirements (e.g., low sulfur diesel) would result in additional reductions.

Evaluation of other control measures

No additional measures listed for further evaluation.

Kentucky

Submittal Date of Regional Haze SIP
June 25, 2008; revised May 28, 2010

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 19098 (March 30, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
Kentucky accepted CAIR as BART for EGU NOx and SO_2. Kentucky identified 26 BART-eligible sources of which 21 were exempted based on further analysis of impacts. BART analysis of five EGUs as subject to BART for PM provided for installing controls for visibility improvements.

90% SO_2 reduction of 167 EGU stacks
Kentucky has 10 stacks at 8 power plants on the MANE-VU 167 stacks list, comprising 14 units. Kentucky indicates that 13 of the 14 units (93%) have or will have SO_2 controls in 2015, including a unit which may instead opt to retire. The one remaining unit has plans to retire or to convert to natural gas by the federal Utility Mercury and Air Toxics Standards (MATS) deadline.[8] Kentucky believes that these controls more than adequately address MANE-VU's request. Of the ten stacks on the MANE-VU list, five had 2011 emissions more than 90% below 2002 levels at the plant level. Two other stacks had 2011 emissions more than 80% below 2002 levels, and one stack was 5% below 2002 levels. The remaining two stacks had 2011 emissions 1% and 49% higher than in 2002, of which respectively, one announced plans to retire, convert to natural gas, or install scrubbers, and the other has announced plans to replace the existing scrubber by the federal MATS deadline. This source also has plans to upgrade (replace or modify) two other existing scrubbers for the source's three non-167 Ask units.[8] EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 2%.

28% SO_2 reduction in non-EGU emissions
Kentucky believes that the significant existing and expected EGU emission controls more than adequately address MANE-VU's non-EGU emission control requests.

Evaluation of other control measures
Open burning regulation referenced, but not included in modeling.

Michigan

Submittal Date of Regional Haze SIP
November 5, 2010

[8] Communication from the Kentucky Division for Air Quality (March 8, 2013).

Haze SIP Status as of December 18, 2012
EPA partial approval with FIP for two BART sources, 77 FR 71533 (December 3, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
Michigan stated that CAIR addresses BART for EGUs. Michigan identified 35 non-EGUs as BART-eligible, and reduced the number of BART-eligible sources to six based on emissions and distance from Class 1 areas. Of the remaining six, one shut down and Michigan accepted mostly existing measures along with a few additional requirements as BART for the remaining sources. EPA determined Michigan failed to address two BART sources and issued a FIP.

90% SO_2 reduction of 167 EGU stacks
Michigan has five stacks at four facilities among the MANE-VU 167 list. Of the five listed stacks in Michigan, two had 2011 SO_2 emissions more than 90% below 2002 levels, and the remaining three had SO_2 emissions 2%-20% below 2002 levels. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 3%.

28% SO_2 reduction in non-EGU emissions
Michigan did not include additional measures beyond "on the books" requirements. Michigan listed potential reductions from its Renewable Energy Portfolio requirements, Mercury/multi-pollutants rules, $PM_{2.5}$ and ozone SIPs, and greenhouse gas programs. Reductions were not quantified.

Evaluation of other control measures
No additional measures listed for further evaluation.

North Carolina

Submittal Date of Regional Haze SIP
December 17, 2007

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 38185 (June 27, 2012); EPA limited disapproval with additional time given to revise SIP for CAIR deficiency, 77 FR 33642 (June 7, 2012)

BART Requirements
North Carolina accepted CAIR as BART for EGU NOx and SO_2 in addition to EGU requirements under the North Carolina Clean Smokestacks Act. North Carolina identified 17 BART-eligible sources. Of those, 15 were exempted based on further analysis. North Carolina determined that no additional controls were required at the BART-subject facilities.

90% SO_2 reduction of 167 EGU stacks

North Carolina has 12 stacks at 7 power plants in the MANE-VU 167 stacks list. Under the North Carolina Clean Smokestacks Act, 11 of those EGUs were controlled. Additionally, scrubbers are expected on 3 EGUs not identified by MANE-VU. North Carolina believes that these reductions satisfy the MANE-VU Ask. In 2011, 9 of the 12 EGUs had SO_2 emissions more than 90% lower than in 2002, and a 10th EGU retired in 2012. The remaining 2 EGUs had 2011 emissions 54% and 74% lower in 2011 than 2002 on a facility-wide basis. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 34%.

28% SO_2 reduction in non-EGU emissions

North Carolina indicated it believed that under the North Carolina Clean Smokestacks Act, additional reductions from EGUs not on the 167 list would satisfy the MANE-VU Ask. No additional non-EGU measures beyond existing and previously planned requirements were noted.

Evaluation of other control measures

Dust, methane, and ammonia controls from some non-EGU sector sources.

Ohio

Submittal Date of Regional Haze SIP

March 11, 2011

Haze SIP Status as of December 18, 2012

EPA limited approval, 77 FR 39177 (July 2, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements

Ohio identified 18 generating stations with 37 units as BART-eligible, and accepted CAIR as BART for NOx and SO_2. Ohio also determined that PM emissions from all BART-eligible EGUs did not contribute to visibility impairment above the 0.5 dv level at any Class 1 area, thus would not be subject to BART. Ohio identified 12 non-EGUs as BART-eligible. Ohio determined with additional modeling that it had one non-EGU source subject to BART. The source will implement an energy efficiency program as an alternative to BART that includes additional SO_2 controls or shut-downs.

90% SO_2 reduction of 167 EGU stacks

Ohio has 28 stacks at 15 power plants among the MANE-VU 167 EGU stacks list. Ohio listed a number of planned controls since 2002 in the context of the MANE-VU Ask. In 2011, 16 of the 28 EGU stacks had SO_2 emissions more than 90% below 2002 levels on a facility-wide basis. An additional seven EGU stacks indicated plans to install controls, convert to natural gas, or shut down prior to 2018. Another three EGU stacks had 2011 SO_2 emissions between approximately10-60% below 2002 levels. The remaining two EGU stacks increased emissions in 2011 relative to 2002, with one stack (Kyger Creek) doubling emissions, while planning to install scrubbers by mid-2012. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 were 61% of the MANE-VU Ask amount.

28% SO_2 reduction in non-EGU emissions
No additional non-EGU measures listed. Ohio believes on-the-books measures are currently sufficient to meet reasonable progress in MANE-VU.

Evaluation of other control measures
In response to MANE-VU Ask, Ohio believes on-the-books measures are currently sufficient to meet reasonable progress goals, and its emission sources have relatively insignificant impacts on MANE-VU Class 1 areas. No additional measures listed for further evaluation.

South Carolina[9]

Submittal Date of Regional Haze SIP
December 17, 2007

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 38509 (June 28, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
South Carolina accepted CAIR as BART for EGU NOx and SO_2. South Carolina identified 21 BART-eligible sources, including six EGUs for PM only. Of these 21 sources, 19 demonstrated exemptions to BART, including 4 of the 6 EGUs (for PM only). South Carolina determined no additional controls were needed on the remaining subject-to-BART sources.

90% SO_2 reduction of 167 EGU stacks
South Carolina has six stacks at four power plants listed in the MANE-VU 167 stacks list. In 2011, four stacks had SO_2 emissions that were approximately 90% below 2002 levels. The remaining two stacks were more than 70% below 2002 levels, with announced plans to retire at a date yet to be determined. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 43%.

28% SO_2 reduction in non-EGU emissions
None listed.

Evaluation of other control measures
No additional measures listed for further evaluation.

Tennessee

Submittal Date of Regional Haze SIP

[9] In its response to consultation requests from New Jersey and New Hampshire, South Carolina indicated it did not believe the state's emissions reasonably contributed to visibility impairment at Class 1 areas in the MANE-VU region.

April 4, 2008; revised May 14, 2012

Haze SIP Status as of December 18, 2012
EPA limited approval with no action on Eastman BART, 77 FR (April 24, 2012); EPA approval Eastman BART, 77 FR 70689 (November 27, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements
Tennessee accepted CAIR as BART for EGU NOx and SO_2. Tennessee identified twelve operating BART-eligible sources, including two EGUs (for PM only), with eight subsequently exempted based on demonstrations that they did not cause or contribute to visibility impairment at any Class 1 area, including one of the two EGUs (Bull Run). The four subject-to-BART sources had additional BART limitations put into permits, with no additional controls required at the remaining EGU (Cumberland).

90% SO_2 reduction of 167 EGU stacks
Tennessee has five stacks at four power plants on the MANE-VU 167 list. The Tennessee Valley Authority (TVA) controlled or expects to control Kingston 1 & 2 and John Sevier. TVA plans to control Gallatin if needed to meet its CAIR obligations or to achieve possible more stringent proposed national ambient air quality standards, and repower or shut down Johnsonville by the next review period in 2018. In 2011, SO_2 emissions at one stack (Sevier) were more than 90% lower than in 2002 when including plant-wide reductions. The other four stacks had SO_2 emissions lower than in 2002 in the range of 40-70%. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 6%.

28% SO_2 reduction in non-EGU emissions
Tennessee does not believe MANE-VU's request is justified for the state's emissions. Tennessee believes that MANE-VU's 2018 modeling in its technical support document for the August 2007 meeting did not prove that the state's non-EGU emissions were adversely impacting any of the Class 1 areas in the MANE-VU region.

Evaluation of other control measures
MANE-VU did not identify TVA Bull Run as part of 167 stacks, which is getting scrubbers and is located closer to Great Smoky Mountains than Johnsonville and Gallatin.

Virginia

Submittal Date of Regional Haze SIP
Main plan and narrative: October 4, 2010. Permits: June 17, 2008; March 6, 2009; January 14, 2010. Revisions: November 19, 2010; May 6, 2011; December 21, 2012

Haze SIP Status as of December 18, 2012
EPA limited approval, 77 FR 35287 (June 13, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements

Virginia accepted CAIR as BART for EGU NOx and SO_2. Virginia has four EGU units that are BART eligible for PM: Units 5 and 6 at Chesterfield Power Station (ORIS 3797), Unit 5 at Possum Point Power Station (ORIS 3804), and Unit 3 at Yorktown Power Station (ORIS 3809). Units 5 and 6 at Chesterfield are coal-fired boilers. Both are controlled by SCR, wet FGD, and ESPs. Unit 6 is also controlled by a polishing baghouse. Unit 3 at Yorktown and Unit 5 at Possum Point are residual oil-fired units. Economic models such as IPM predicted the retirement of residual oil fired units; however, the most recent Integrated Resource Plan filed by Dominion did not suggest that these units will be retired. These residual oil-fired units are infrequently utilized.[10]

Virginia identified 13 facilities having a total of 72 BART-eligible units. Ten facilities with BART-eligible units were exempted from BART based on modeling. The three remaining subject-to-BART sources were O-N Minerals (Chemstone)-Strasburg, Georgia Pacific-Big Island, and Meadwestvaco-Covington.

The units at O-N Minerals (Chemstone)-Strasburg that are subject to BART are the rotary kiln (U5) and the calcimatic kiln (U12). The calcimatic kiln was permanently retired. The rotary kiln was retrofitted with an SO_2 CEMs for continuous monitoring of exhaust gases as part of the BART requirements. Beginning in 2010, the kiln was required to meet an SO_2 limitation of 0.29 lbs/ton stone feed.

The units subject to BART at Georgia Pacific-Big Island are two coal-fired boilers, #4 and #5. Boiler #4 was permanently retired. For BART, Boiler #5 was required to retrofit with FGD.

Units at Meadwestvaco-Covington that are subject to BART are Boiler #9, a coal-fired unit; Boiler #10, a predominantly natural gas-fired unit; Recovery Furnace #1; and Smelt Dissolving Tank #1. Emissions are predominantly from Boiler #9. This unit's BART determination required the upgrade of the existing FGD system for increased removal efficiency.

90% SO_2 reduction of 167 EGU stacks

Virginia has eight stacks at four power plants listed among the MANE-VU 167 stacks. Virginia estimates that based on federal consent decrees, knowledge of owner control program estimates, and IPM projections, these units will reduce SO_2 emissions approximately 82% by 2018 from 2002 levels. In 2011, five listed stacks had SO_2 emissions approximately 90% below 2002 levels. The other three stacks had 40%-60% lower emissions, and two of these three had announced plans to retire or convert to natural gas prior to 2018. EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 exceeded the MANE-VU Ask amount by 28%.

28% SO_2 reduction in non-EGU emissions

[10] Communication from VA DEQ, February 4, 2013.

Virginia notes that enforceable SO_2 reductions at two EGUs not on the MANE-VU Ask 167 list and additional reductions at one non-EGU industrial source would meet the MANE-VU Ask request by 2018.

Evaluation of other control measures

Included in the Virginia Regional Haze SIP was a commitment to finalize a reasonable progress review focusing on SO_2 emissions for Meadwestvaco Covington's Stack 25, the main power house boiler stack. This stack had calculated visibility impacts, as described in the Virginia Regional Haze SIP, on multiple Class 1 areas. The reasonable progress determination was submitted to EPA as a SIP revision on May 6, 2011. The units exhausting to Stack #25 are Boilers 6, 7, 8, and 9. Boilers 6 and 9 are predominantly coal fired units. Boilers 7 and 8 may burn coal as well as biomass and are generally fired on biomass. The reasonable progress determination resulted in the permitted limit of the stack being reduced from just over 8,000 tpy of SO_2 to approximately 6,800 tpy of SO_2 , representing a decrease of more than 1,200 tons of SO_2 annually.

West Virginia

Submittal Date of Regional Haze SIP

June 18, 2008

Haze SIP Status as of December 18, 2012

EPA limited approval, 77 FR 16937 (March 23, 2012); EPA limited disapproval with FIP to replace CAIR with CSAPR, 77 FR 33642 (June 7, 2012)

BART Requirements

West Virginia identified 22 BART-eligible sources, including 7 EGUs, with 19 able to demonstrate exemptions. West Virginia accepted CAIR as BART for EGU NOx and SO_2, with all BART-eligible EGUs installing scrubbers and NOx controls. For PM, only one of the seven EGUs demonstrated it significantly contributed to visibility impairment at a Class 1 area. The subject to BART sources have or will shut down, or had an emission rate lowered using existing controls.

90% SO_2 reduction of 167 EGU stacks

West Virginia has 14 stacks at 10 power plants in the MANE-VU 167 stack list, and expects all stacks to have at least 90% control efficiency by 2018. In 2011, nine stacks had SO_2 emissions more than 90% below 2002 levels. The remaining five stacks had 2011 SO_2 emissions 35%-70% below 2002 levels, with three of the five stacks announcing plans to retire prior to 2018.[11] EPA Acid Rain Program data indicate that state-wide SO_2 reductions in 2011 were 99% of the MANE-VU Ask amount.

28% SO_2 reduction in non-EGU emissions

[11] The two stacks at Pleasants are equipped with wet scrubbers with an SO_2 removal efficiency of greater than 90%. In 2007, Pleasants replaced its stacks, eliminating the 15% bypass that had been used for stack gas reheat, and is now scrubbing 100% of the flue gas. The elimination of the bypass allowed for the 70% reduction in emissions from 2002 levels (communication from WV DEP, January 10, 2013)

West Virginia believes that additional SO_2 controls and unit shutdowns at EGUs not among the MANE-VU 167 stacks list satisfy the MANE-VU Ask. No additional non-EGU measures were noted.

Evaluation of other control measures
No additional measures listed for further evaluation.

Wisconsin[12]

Submittal Date of Regional Haze SIP
January 18, 2012; supplemented June 7, 2012

Haze SIP Status as of 12/18/12
EPA final approval, 77 FR 46952 (August 7, 2012)

BART Requirements
Wisconsin identified four non-EGUs as BART-eligible, and one of the four subsequently determined as subject to BART. Wisconsin drafted an admistrative order for the BART source to cap NOx and SO_2 emissions from several boilers. Wisconsin accepted CAIR/CSAPR as BART for EGU NOx and SO_2, and determined existing controls and permit limits satisfied BART for EGU PM.

90% SO_2 reduction of 167 EGU stacks
Does not have listed stack.

28% SO_2 reduction in non-EGU emissions
None listed.

Evaluation of other control measures
Wisconsin plans to evaluate potential measures on agricultural ammonia sources post-2018. Wisconsin will also continue to evaluate potential additional reductions from ICI boilers, reciprocating internal combustion engines and turbines, and mobile sources, as needed to meet reasonable progress goals.

[12] Wisconsin does not have a listed 167 EGU stack, but Vermont listed it among the states identified as having at least a 2% modeled sulfate impact at a MANE-VU Class 1 area, and as a state to be invited to the MANE-VU consultation process (letter from Justin Johnson, VT DEC, July 17, 2007; *in* MANE-VU Inter-RPO Consultation Briefing Book, 2007, at pp. 16-18). The Wisconsin haze SIP does not indicate it received a MANE-VU Ask.

3. U.S. EPA

For additional national measures, the federal "MANE-VU Ask" requested "that EPA work with the eastern Regional Planning Organizations to develop a proposal for tightening the CAIR program to achieve an additional 18% reduction in SO_2 [from power plants[13]] by no later than 2018."

While EPA has not developed a new proposal with the RPOs in response to the MANE-VU Ask, it has sought to implement two new rules since CAIR requiring greater SO_2 reductions from power plants by 2018. The projected reductions from these rules can be placed in the context of the reduction request in the MANE-VU Ask to EPA.

The first rule was the Cross-State Air Pollution Rule (CSAPR), also known as the Transport Rule, which was finalized in August 2011, then subsequently vacated by the D.C. Circuit in August 2012. Although no longer in effect, it was an effort by EPA that would have resulted in additional SO_2 reductions from EGUs beyond CAIR. The second rule is EPA's Utility Mercury and Air Toxics Standards (Utility MATS) finalized in February 2012. While this rule's focus is on air toxics, EPA projected additional significant SO_2 reductions from EGUs beyond CSAPR (and by inference CAIR as well) as a co-benefit from additional controls needed to meet the new air toxics standards. The potential additional reductions of each rule are summarized in the following sections.

Cross-State Air Pollution Rule

A straightforward accounting of additional EGU SO_2 reductions from CSAPR compared to CAIR is not possible due to differences in the states covered under the two rules, and differences in the reduced scope of emissions trading allowed under CSAPR relative to CAIR. At a basic level, the overall emission caps under each program can be compared and are shown in the table below, with accompanying caveats as noted. Also note that the full implementation of CAIR is in 2015, while CSAPR would have imposed its final cap by 2014.

Program	SO_2 cap (million tons annually)
CAIR	2.6 (2015)*
CSAPR	2.4 (2014)**
CSAPR % reduction beyond CAIR	-7.6%

* Due to EGUs' ability to use banked allowances under CAIR, EPA estimated actual SO_2 emissions in 2015 would be 4.1 million tons.

**EPA provided a "variability limit" that is a fixed percentage above each state's emissions budget to allow for year-to-year fluctuations in electricity generation. Therefore, the state "budget" may be

[13] Bracketed text is not in original. The MANE-VU Ask to EPA does not explicitly mention power plants in the quoted text, but the preceding paragraphs in its request to EPA indicate that the focus of the additional 18% SO_2 reductions is on power plants.

exceeded in any given year within the variability limit, resulting in emissions above the overall program cap to a limited extent.

Utility Mercury and Air Toxics Standards

The Utility MATS address air toxics emitted by fossil fuel power plants, but EPA estimated that the projected controls needed to be installed on affected EGUs would result in an additional 41% reduction in SO_2 emissions beyond CSAPR nationally.[14] A listing of states and DC covered by the MANE-VU Ask is given in the following table, which shows EPA's projected EGU SO_2 emissions in a 2017 future baseline case that assumes CSAPR is in place and a 2017 MATS future control case.[15] The table indicates that while the overall regional SO_2 reduction beyond CSAPR resulting from Utility MATS among the MANE-VU Ask states is less than the relative national reduction, the regional reduction of 24% still exceeds the MANE-VU Ask to EPA of 18%. The 24% additional reduction in EGU SO_2 emissions would also be a conservative minimum relative to CAIR, as it allows more emissions than CSAPR.

State	2017 future baseline EGU SO_2 (tons)[15]	2017 MATS future control case EGU SO_2 (tons)[15]
CT	3,581	1,400
DE	2,835	4,160
DC	5	0
GA	96,712	78,197
IL	118,217	103,867
IN	200,969	156,781
KY	116,927	125,430
ME	2,564	1,372
MD	29,786	18,091
MA	15,133	5,033
MI	163,168	82,834
NH	6,719	2,102
NJ	9,042	6,404
NY	14,653	28,174
NC	71,113	59,551
OH	180,935	139,208
PA	126,316	93,606
RI	0	0
SC	103,694	40,901

[14] EPA Fact Sheet: Mercury and Air Toxics Standards, *Benefits and Costs of Cleaning Up Toxic Air Pollution from Power Plants*, December 21, 2011. Available at http://www.epa.gov/airquality/powerplanttoxics/pdfs/20111221MATSimpactsfs.pdf (accessed January 2, 2013).

[15] U.S. EPA, *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards*, EPA-452/R-11-011, December 2011 (Table 5A-12).

TN	33,080	42,666
VT	264	264
VA	51,004	33,704
WV	84,344	66,857
WI	50,777	28,322
Subtotal MANE-VU Ask States only	1,478,257	1,117,524
MATS % reduction beyond CSAPR	---	-24%