Office of the Registrar of Regulations,
Legislative Council,
State of Delaware

Mid-Atlantic/Northeast Visibility Union

MANE-VU

Reducing Regional Haze for Improved Visibility and Health

INTER-RPO

CONSULTATION

BRIEFING BOOK

Inter-RPO Consultation Briefing Book

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Introduction

I. Background

The States of Maine, New Hampshire, Vermont, and New Jersey have Class I areas in the Mid-Atlantic/Northeast Visibility Union (MANE-VU) region. In preparation for setting reasonable progress goals for their Class I areas, the MANE-VU Class I States are seeking input from the States with emission sources that affect visibility in MANE-VU Class I areas and from Federal Land Managers and EPA. The MANE-VU Class I areas are also seeking input from these other States and agencies concerning strategies that should be adopted to achieve reasonable progress in improving visibility in the MANE-VU Class I areas.

Together with the MANE-VU staff at OTC, NESCAUM, and MARAMA, the MANE-VU Class I States have prepared this briefing book to support the process of consultation with States outside the MANE-VU region and to support consultation with Federal Land Managers. This briefing book is intended to facilitate discussions on an interstate conference call and interstate meetings to be scheduled in July and August 2007. This section presents the consultation requirement and reviews the contents of the briefing book. As detailed below, the consultation process is required by the EPA's Regional Haze Rules (40 CFR 51.300 – 51.309).

As explained in the preamble for the Regional Haze Rules, published in the Federal Register on July 1, 1999 (64 FR 35714) "[t]he EPA expects that much of the consultation, apportionment demonstrations, and technical documentation will be facilitated and developed by regional planning organizations." (See 64 FR 35735). The goals of instituting consultation procedures are mainly:

1. To help develop a common technical basis and apportionment for long-term strategies that could be approved by individual State participants and translated into regional haze SIPs for submission to EPA;
2. To demonstrate that States are working together to develop acceptable approaches for addressing regional visibility problems to which they jointly contribute; and
3. To provide information on areas of agreement and disagreement among States that the Administrator will take into account in the review of a State's implementation plan to determine whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions.

For the purposes of this Briefing Book, the term "consultation" refers solely to the consultation requirements of the Regional Haze Rules, and is not intended to refer to or address the Tribal government/Federal government consultation process.

II. Consultation Requirements Specified in the Regional Haze Rules

The requirements for consultation in the Regional Haze Rules are as follows:

A. Development of the Reasonable Progress Goal:

Section 51.308(d) of the Regional Haze Rules specifies that "–[I]n developing each reasonable progress goal, the State must consult with those States which may reasonably be anticipated to cause or contribute to visibility impairment in the mandatory Class I Federal area.

In any situation in which the State cannot agree with another such State or group of States that a goal provides for reasonable progress, the State must describe in its submittal the actions taken to resolve the disagreement.

In reviewing the State's implementation plan submittal, the [EPA] Administrator will take this information into account in determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions." [40 CFR §51.308(d)(1)(iv)].

B. Development of Long-term Strategy:

The Regional Haze Rules provides that – "[w]here the State has emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I Federal area located in another State or States, the State must consult with the other State(s) in order to develop coordinated emission management strategies. The State must consult with any other State having emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I Federal area within the State." [40 CFR § 51.308(d)(3)(i)].

C. State and Federal Land Manager Coordination:

According to Section 51.308(i)(2) of the Regional Haze Rules, " "[t]he State must provide the Federal Land Manager [FLM] with an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on an implementation plan (or plan revision) for regional haze required by this [Subpart P]". The purpose of the consultation in person is to allow the affected FLM to discuss: (1) The FLM's "assessment of impairment of visibility in any mandatory Class I Federal area;" and (2) "Recommendations on the development of the reasonable progress goal and on the development and implementation of strategies to address visibility impairment." [40 CFR §51.308(i)(2)].

The Rules also provides that – "[t]he plan (or plan revision) must provide procedures for continuing consultation between the State and Federal Land Manager on the implementation of the visibility protection program required by [Subpart P], including development and review of implementation plan revisions and 5-year progress reports,

and on the implementation of other programs having the potential to contribute to impairment of visibility in mandatory Class I Federal areas." [40 CFR §51.308(i)(4)].

D. Documentation of Consultation:

Documentation of the consultation process must be included in the Regional Haze SIP submittal. The preamble of the Regional Haze Rules States that "[t]he EPA is requiring States to document their analyses, including any consultations with other States in support of their conclusions…." (64 FR 35721). Formal consultation, as required by the Regional Haze Rules in 40 CFR Part 51, Subpart P, may be built upon prior, documented informal consultations.

There is a reciprocal and equal obligation by all States to consult with each other. This obligation carries forward into the future at each 10-year comprehensive State implementation plan (SIP) revision milestone. Although there is not an explicit consultation requirement in the regulations for developing the 5-year progress reports that all States must submit to EPA between the 10-year revisions, in acting on any deficiencies in the SIP for achieving reasonable progress, the States must "collaborate" with other States through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

III. Overview of the MANE-VU Inter-RPO Consultation Briefing Book

The primary goal of this Briefing Book is to provide a user-friendly review of MANE-VU's technical work and analyses investigating the nature of the visibility problem, the pollutants and sources contributing to the problem, and possible control measures and strategies to improve visibility. The book is organized into tabbed sections that will allow MANE-VU Class I States to walk our consultation partners through these analytical pieces in a systematic manner from beginning to end, as well as provide a quick reference for locating information responding to specific issues or questions.

Tab 2, "Consultation Overview," includes a brief explanation of the approach that MANE-VU applied in developing a single "consulting group" that encompasses all of the MANE-VU Class I areas. In this tab the reader will also find sample copies of the "intent to consult" letters sent by Maine, New Jersey, New Hampshire and Vermont to the States in the MANE-VU consulting group.

Tab 3, "MANE-VU Class I States' Resolution and Statements," includes four recently approved actions:

- The first is a Resolution adopted by the MANE-VU States with Class I areas outlining the set of principles they will follow in implementing the Regional Haze Rules.
- The second is a Statement that lays out a course of action that MANE-VU, as a region, will pursue toward assuring reasonable progress.

- The third is a Statement that outlines the MANE-VU States' initial ideas requesting a course of action by States outside of the MANE-VU region to help assure reasonable progress in improving visibility at our Class I areas. The course of action described is intended as a starting point for our discussions, and will be examined in light of the technical work and findings provided by other States during the Technical Call and the in-person Consultation Meetings.
- The fourth action is a request that MANE-VU is making of the U.S. Environmental Protection Agency to work with the eastern Regional Planning Organizations to develop a national proposal to achieve additional cost-effective SO_2 reductions.

Tab 4, "Uniform Rate of Progress," contains Power Point slides illustrating the glide path to natural conditions from 2004 to 2064 for each of the MANE-VU Class I areas, using both the EPA default calculation method for natural conditions and the alternative provided via the new IMPROVE algorithm.

Tab 5, "Pollution Apportionment," contains a Power Point slide presentation that shows the contribution of various pollutants to visibility extinction on the 20% worst and 20% best days from 2000-2004 at all MANE-VU Class I areas. It also includes a projection of the contribution of these pollutants for 2018.

Tab 6, "BART," is a section that summarizes the approach that the MANE-VU States are taking in their BART analyses, including an estimate of the potential reductions from BART-eligible sources in the region and possible ranges of controls and costs for SO2 and NOx.

Tab 7, "Technical Support for Reasonable Progress Goals and Long Term Strategies," comprises 3 subsections. The first, Tab 7A, provides an overview of the potential sources and control options that MANE-VU examined and summarizes the work done by MANE-VU as part of its "Reasonable Progress Goals Project" and report. The second section, Tab 7B, explains MANE-VU's approach to developing a set of regional haze control measures for the 2018 milestone, and includes a detailed discussion of how MANE-VU identified the top EGU stacks whose emissions affect visibility at MANE-VU Class I areas. The information in both Tab 7A and Tab 7B supports the second and third actions that are included in Tab 3 of this briefing book. The third section, Tab 7C, contains a summary of MANE-VU's CAIR+ Report documenting the analysis of the cost of additional SO_2 and NO_x controls at EGUs in the Eastern U.S., which supports the fourth action included in Tab 3 of the briefing book.

Tab 8, "Summary of Work," is a list of the references, including websites and other location information, for the technical reports and documents supporting MANE-VU's findings and proposed solutions for improving visibility at our mandatory Class I federal areas.

MANE-VU is continuing to develop additional information, and further summaries may be provided for the call or meetings. We recognize the importance of modeling results to assess visibility impacts in 2018.

IV. Conclusion

The MANE-VU Class I States appreciate the time you are taking to review this material and to participate in the technical call and in-person consultation meeting. We look forward to working with you as we establish our reasonable progress goals and together adopt and promote long term strategies that will improve visibility in all of our Class I areas.

Consultation Overview

MANE-VU Approach to the Development of "Consulting Groups"

On November 1, representatives from each RPO and the FLMs began a dialogue aimed at identifying groups of Class I areas that might serve to focus consultations for purposes of the regional haze rule. While it appears that consultations will be conducted state-to-state, the RPO representatives agreed that there may be a role for the RPO staff in identifying Class I areas with common visibility issues where a joint consultation process might be more efficient. At this point, the focus of the RPO efforts is to help identify common Class I "consulting groups" and leave it to the states involved in any future joint consultation process to discuss details regarding the nature and extent of state contributions to a common Class I group. Another role that the RPOs may play in the process is to assist with the scheduling of consultations so as to ensure that RPO-developed technical products would be ready and available to facilitate state discussions.

The Class I states within the MANE-VU RPO have considered the question of how best to group common Class I areas from the perspective of forming consulting groups. After reviewing monitoring and modeling data related to the sources of visibility impairment for each Class I site, they have proposed an approach that would create a single consulting group that encompasses all MANE-VU Class I sites. The "MANE-VU consulting group" would consist of the Acadia National Park, Maine; Brigantine Wilderness (within the Edwin B. Forsythe National Wildlife Refuge), New Jersey; Great Gulf Wilderness, New Hampshire; Lye Brook Wilderness, Vermont; Moosehorn Wilderness (within the Moosehorn National Wildlife Refuge), Maine; Presidential Range – Dry River Wilderness, New Hampshire; and Roosevelt Campobello International Park, New Brunswick.

The Class I states of MANE-VU recognize some differences between the Brigantine Wilderness and the northern tier of Class I sites in Vermont, New Hampshire and Maine. However, when viewed from the perspective of contributions to sulfate pollution – which is still the dominant form of visibility impairment experienced on the twenty percent worst visibility days at all MANE-VU sites – the group found more similarities than differences and felt that a single consulting group representing all MANE-VU sites offered the best opportunity to engage contributing states in a meaningful consultation process.

MANE-VU, therefore, proposes the addition of the MANE-VU consulting group to those already suggested by the Mid-West RPO in their October 19 memorandum. The revised "Table 1" on the next page reflects the proposed composition of the MANE-VU consulting group in a manner similar to that of the October 19 memo for three other proposed consulting groups. The MANE-VU Class I states are planning to contact those states listed in the proposed consulting group shortly to initiate the consultation process.

RPO	State	MI/MN	AR/MO/KY	VA/WV	MANE-VU
		(BOWA, VOYA, ISRO, SEN)	(UPBU, MINGO, HG, MACA)	(DOSO, SHEN, JRIV)	(ACAD, MOOS, GRGU, LYBR, BRIG)
MANE-VU	Connecticut				x
	Delaware				x
	Maine				x
	Maryland			x	x
	Massachusetts				x
	New Hampshire				x
	New Jersey				x
	New York				x
	Pennsylvania			x	x
	Rhode Island				x
	Vermont				x
VISTAS	Alabama				
	Florida				
	Georgia				x
	Kentucky		x		x
	Mississippi				
	North Carolina				x
	South Carolina				x
	Tennessee		x		x
	Virginia			x	x
	West Virginia			x	x
MRPO	Illinois	x	x		x
	Indiana	?	x		x
	Michigan	x			x
	Ohio			x	x
	Wisconsin	x			
CENRAP	Arkansas		x		
	Iowa	x			
	Kansas				
	Louisiana				
	Minnesota	x			
	Missouri	?	x		
	Nebraska				
	Oklahoma				
	Texas				
WRAP	N. Dakota	x			
	S. Dakota				
	Other Western States				
Canada	Manitoba				
	New Brunswick				x
	Ontario	x			x
	Quebec				x
	Other Provinces				

February 26, 2007

Carl Johnson, Acting Exec. Dep. Commissioner
625 Broadway, 14th Floor
Albany, NY 12233-1010

Dear Deputy Commissioner Johnson:

I am writing to request your state participate in the development of Maine's regional haze programs under Section 169A of the Clean Air Act. Visibility impairment, or regional haze, is caused by fine particle air pollution from many sources located over a wide region, and is an issue of great importance to both the future of our nation's wild places, and to the health of millions throughout the United States. In Maine, and most of the northeast, regional haze is due primarily to emissions of sulfur oxides (SO_X), organic carbon, and nitrogen oxides (NO_X). Regional haze has reduced visibility in the East by as much as 75% from natural conditions, and the same pollutants that are responsible for visibility degradation also cause a variety of serious health environmental impacts such as cardio-pulmonary disease, and contribute to the acidification of our waters.

The national visibility goal, as set forth in Section 169A of the Clean Air Act (CAA), requires ''the prevention of any future, and the remedying of any existing, impairment of visibility in Class I areas which impairment results from manmade air pollution.'' The 156 Class I areas across the country include many well-known national parks and wilderness areas, such as the Grand Canyon National Park in Arizona and Shenandoah National Park in Virginia. Maine is fortunate to be home to three Class I areas: 1) Acadia National Park; 2) Moosehorn National Wildlife Refuge Wilderness Area; and 3) Roosevelt Campobello International Park. States with Class I areas are required to maintain and improve visibility in these areas to eventually achieve natural background conditions by the year 2064.

The federal regional haze rules implementing Section 169A of the CAA require all states, to prepare State Implementation Plans (SIPs) demonstrating that reasonable progress is being made toward meeting the 2064 visibility goals. The first regional haze SIP is due in December 2007, and for Class I states such as Maine, must include reasonable progress goals for 2018 that have been developed in consultation with any other state having emissions that are reasonably anticipated to contribute to impairment in any of the State's Class I areas. [1] Future regulations to control air pollutant emissions affecting visibility must be evaluated and included in our regional haze SIPs before setting this first reasonable progress goal. Although future regional haze plans may need to address emissions from a very broad geographic area, for the purposes of this first SIP, we plan to focus our regional haze consultation and planning efforts on a number of eastern states. Appendix 1 provides a listing of these states along with technical justification for their inclusion in our first consultation process.

[1] 40 CFR 51.308 (d) (1) (iv)

In an effort to better utilize technical resources and foster inter-state and inter-agency cooperation in regional haze planning, EPA established and is funding Regional Planning Organizations (RPOs). Maine is a member of the Mid-Atlantic Northeast Visibility Union (MANE-VU), which is coordinating plans to reduce regional haze in the Northeast and Mid-Atlantic states. [2] During 2007, MANE-VU will be scheduling consultation meetings with the express intent of establishing reasonable progress goals for the Class I areas in the northeastern states. MANE-VU may also be working with other RPOs to which your State belongs (i.e.; the Mid-West RPO or VISTAS).

I am inviting your state to participate in our consultation process, and to send a representative to future meetings scheduled through our respective Regional Planning Organization. These meetings will provide a forum for discussing the policy and technical foundations behind the establishment of the first reasonable progress goals for the Class I areas of the northeastern United States, and will greatly facilitate the development of a coordinated program to address regional haze that will also significant public health benefits in the form of reduced fine particulate (and precursor) emissions. Please send the name, address and telephone number of the appropriate agency contact person to Jeff Crawford, Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333.

Thank you for considering this request and we look forward to working with you and your staff on this important initiative..

Sincerely,

David P. Littell
Commissioner

C:\ James Brooks, ME DEP
Jeffrey Crawford, ME DEP
Arthur Marin, NESCAUM
Susan Weirman, MARAMA
Chris Recchia, OTC
Sandra Silva, USFWS
Tim Allen, USFWS
Bruce Polkowsky, USDA, FS
Randy Moore, USDA, FS
Anne Acheson, USDA, FS
Anne Mebane, UDAA, FS
Chris Shaver, NPS

[2] MANE-VU's members include Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, the Penobscot Nation, the St. Regis Mohawk Tribe, the U.S. Environmental Protection Agency, the U.S. National Park Service (NPS), the U.S. Fish and Wildlife Service (FWS), and the U.S. Forest Service (USFS).

Appendix 1

States to be Consulted During the Establishment of Maine's Class I Area 2018 Reasonable Progress Goals

State	Technical Justification for Inclusion[3]					
	MANE-VU Member	REMSAD	Q/D	Calpuff NWS	Calpuff MM5	% Time Upwind
Connecticut	X					
Delaware	X					
District of Columbia	X					
Georgia			X			
Illinois			X	X		X
Indiana						
Kentucky			X	X	X	X
Maryland	X					
Massachusetts	X					
Michigan		X	X	X	X	X
New Hampshire	X					
New Jersey	X					
New York	X					
North Carolina			X		X	
Ohio		X	X	X	X	X
Pennsylvania	X					
Rhode Island	X					
Tennessee					X	
Vermont	X					
Virginia					X	
West Virginia		X	X	X	X	X

[3] From the report entitled "Contributions to Regional Haze in the Northeast and Mid-Atlantic United States", prepared by NESCAUM for the Mid-Atlantic / Northeast Visibility Union (MANE-VU), August 2006.

The State of New Hampshire
Department of Environmental Services

Thomas S. Burack
Commissioner

April 4, 2007

Commissioner/Secretary
Address
City, State, Zip

Dear Commissioner/Secretary,

As you are aware, New Hampshire is home to two Class I areas as designated under Section 169A of the U.S. federal Clean Air Act. The Great Gulf and the Presidential Range – Dry River Class I areas are located on the beautiful slopes of Mt. Washington, the highest point in the Northeastern United States. While this area is renowned for having some of the most challenging weather in the world, it also is known for providing very impressive vistas, that is, when visibility is not impaired by air pollution. Fortunately for those who visit this region and for those who live and work there, the Regional Haze rule requires that these areas and 154 others nationwide gradually improve visibility, with a goal of achieving natural conditions by 2064. While this ultimate goal is decades away, we begin today by taking reasonable actions and by partnering in consultation with states and Canadian provinces, as needed, to begin planning to take the first steps toward meeting this goal. I write today because we have identified your state or province as one that needs to be part of our collective solution to regional haze in New Hampshire.

According to the Clean Air Act, all U.S. states must submit State Implementation Plans (SIPs) by December 2007 for regional haze, regardless of whether they are home to a Class I area. Under the Act's section 169A (including regulations at 40 CFR 51.300), the regional haze SIP must demonstrate that reasonable progress will be made at nearby Class I areas at 10-year intervals, beginning in 2018. The regulations of 40 CFR 51.308(d)(1)(iv) specify that states with Class I areas should develop reasonable progress goals for their Class I areas and associated measures to meet those goals, in consultation with any jurisdiction that may reasonably cause or contribute to visibility impairment in those areas. The Federal Land Managers for the Class I area are also required to be consulted in this process.

While it is believed by the scientific community that every U.S. state contributes in some way to air pollution in The Great Gulf and the Presidential Range – Dry River Class I areas, we have limited our requests for consultations to only those states and Canadian providences that our analyses indicate have the potential for contributions over certain thresholds for $PM_{2.5}$ and/or sulfate to regional haze in our Class I areas. Beyond this, we are asking all states within our own Regional Planning Organization, the Mid-Atlantic Northeast – Visibility Union (MANE-VU) to consult with us. Because we have asked you to join us in consultation does not necessarily imply that we will be asking for air pollution control beyond measures you may have already identified as necessary for your own state for ozone and $PM_{2.5}$ ambient air standard attainment. By joining us, you can help us shape our regional haze progress goals for 2018 and help play a part in determining the best way to meet those goals for the New Hampshire Class I areas.

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
Telephone: (603) 271-1370 Fax: (603) 271-1381 TDD Access Relay NH 1-800-735-2964

We, or a representative from MANE-VU, will be contacting you soon to arrange a consultation meeting. Thank you for your anticipated participation in this consultation and we look forward to working with you and your staff. Should you have any questions, please contact Jeff Underhill of my staff at 603-271-1370 (or email: junderhill@des.state.nh.us).

Sincerely Yours,

Thomas S. Burack
Commissioner

Cc: Robert Scott, NHDES Air Resources Division
Jeffrey Underhill, NHDES Air Resources Division
Anna Garcia, OTC
Arthur Marin, NESCAUM
Susan Weirman, MARAMA

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
PO BOX 402
TRENTON, NJ 08625-0402
TEL. # (609) 292-2885
FAX # (609) 292-7695

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

January 18, 2007

Denise Sheehan, Administrator
New York Department of Environmental Conservation
625 Broadway, 14th Floor
Albany, NY 12233-1010

Dear Ms. Sheehan,

New Jersey is home to an area designated as a Class I area under Section 169A of the federal Clean Air Act, namely the Brigantine Wilderness area of the Edwin B. Forsythe National Wildlife Refuge. This area is one of 156 Class I areas located throughout the United States. Among the Class I areas in the eastern United States are the Otter Creek Wilderness area in West Virginia, Shenandoah National Park in Virginia, the Cape Romain Wilderness area in South Carolina and Acadia National Park in Maine. States with Class I areas are required to maintain and improve visibility in these areas to achieve natural background conditions by the year 2064. Existing visibility impairment in these Class I areas, also called regional haze, is caused by many sources located over a wide region.

All States, regardless of whether they are home to a Class I area, must prepare a State Implementation Plan (SIP) for Regional Haze by December, 2007, to meet the United States Environmental Protection Agency (USEPA) rules implementing Section 169A of the Clean Air Act (40 CFR 51.300). This Regional Haze SIP must demonstrate that reasonable progress towards improved visibility at the nearby Class I area will be made by certain milestone years. The first milestone year is 2018. The regulations at 40 CFR 51.308 (d) (1) (iv) require States with Class I areas to develop reasonable progress goals in consultation with any State that may reasonably cause or contribute to visibility impairment in the Class I area. This letter is part of New Jersey's consultation process for improving visibility at Brigantine.

Thus we are seeking your consultation on the reasonable progress goal and development of a coordinated emissions management strategy. For the purpose of establishing reasonable progress goals for the first Regional Haze SIP, the New Jersey Department of Environmental Protection has identified several States that may reasonably contribute to visibility impairment at Brigantine[35] or

[35] From the report entitled "Contributions to Regional Haze in the Northeast and Mid-Atlantic United States", prepared by NESCAUM for the Mid-Atlantic / Northeast Visibility Union (MANE-VU), August 2006.

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that are members of the Mid-Atlantic Northeast –Visibility Union (MANE-VU) planning organization. These States and the reason for their inclusion in our first consultation process are listed in the attached Table 1.

Future regulations to control air pollutant emissions that affect visibility must be evaluated and included in our Regional Haze SIPs before setting this first reasonable progress goal for the year 2018. To be as inclusive as possible in this important planning process, this letter is being sent to all States within the eastern United States. We plan to focus our initial planning efforts, and to jointly develop a coordinated emission management strategy to meet the first reasonable progress goal of this first round of SIP development, on the States identified in Table 1.

Regardless of whether your State has been identified as causing or contributing to visibility impairment at the Brigantine Wilderness area, you are invited to send a representative of your State to future meetings to be scheduled through our respective Regional Planning Organizations. At these meetings, establishment of the first reasonable progress goal for the Class I areas of the northeastern United States will be specifically discussed. New Jersey will be working with your State through MANE-VU, a regional planning group formed to coordinate and facilitate the regional haze SIP activities. MANE-VU will also be working with other Regional Planning Organizations (RPOs) to which your State may belong (i.e.; the Mid-West RPO or VISTAS). Please send us the name, address and telephone number of the appropriate person within your organization to contact to inform them of the particulars of the first meeting. Please send this to Ray Papalski, 401 East State Street, P. O. Box 418, Trenton, New Jersey 08625-0418.

Should your staff have any questions on this request or on the technical aspects of this letter, please call Ray Papalski at (609) 633-7225 or e-mail him at ray.papalski@dep.state.nj.us. Should you have any questions on New Jersey's plans for the consultation process, please call Mr. Chris Salmi of my staff at (609) 292-6710. Thank you for your anticipated cooperation, and we look forward to working with you and your staff in the near future.

Sincerely yours,

Lisa P. Jackson
Commissioner

Attachment

c: Arthur Marin, NESCAUM
Susan Weirman, MARAMA
Chris Recchia, OTC
Raymond Werner, USEPA
Sandra Silva, USFWS
Randy Moore, USDA, FS
Chris Shaver, NPS

Table 1

States to be Consulted on Establishing New Jersey's Class I Area 2018 Reasonable Progress Goals

State Name (alphabetical order)	Technique / Reason for Inclusion[2]
Connecticut	MANE-VU member
Delaware	MANE-VU member
District of Columbia	MANE-VU member
Georgia	> 0.1 ug/m^3 or > 2% Sulfate Contribution
Illinois	> 0.1 ug/m^3 or > 2% Sulfate Contribution
Indiana	3 of 5 techniques (Q/D, Calpuff 1 & 2)
Kentucky	> 0.1 ug/m^3 or > 2% Sulfate Contribution
Maine	MANE-VU member
Maryland	4 of 5 techniques (Q/D, Remsad, Calpuff 1 &2)
Massachusetts	MANE-VU member
Michigan	> 0.1 ug/m^3 or > 2% Sulfate Contribution
New Hampshire	MANE-VU member
New York	4 of 5 techniques (Q/D, Remsad, Calpuff 1 &2)
North Carolina	4 of 5 techniques (Q/D, Remsad, Calpuff 1 &2)
Ohio	All techniques
Pennsylvania	All techniques
Rhode Island	MANE-VU member
South Carolina	> 0.1 ug/m^3 or > 2% Sulfate Contribution
Tennessee	> 0.1 ug/m^3 or > 2% Sulfate Contribution
Vermont	MANE-VU member
Virginia	4 of 5 techniques (Q/D, Remsad, Calpuff 1 &2)
West Virginia	All techniques

[2] From the report entitled "Contributions to Regional Haze in the Northeast and Mid-Atlantic United States", prepared by NESCAUM for the Mid-Atlantic / Northeast Visibility Union (MANE-VU), August, 2006. This table lists the number of techniques where a state was determined to have a greater impact on visibility levels than New Jersey emissions.

AIR POLLUTION CONTROL DIVISION
Building 3 South
103 South Main Street
Waterbury, VT 05671-0402

TEL 802-241-3840
FAX 802-241-2590

July 17, 2007

Gina McCarthy, Commissioner
Connecticut Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Dear Commissioner McCarthy:

This letter has two purposes. Its first purpose is to present a brief summary of results of analyses which the State of Vermont , in conjunction with the Regional Planning Organization (RPO) MANE-VU, has conducted to fulfill requirements for the protection of visibility in federally managed areas of the United States known as Class I areas (Section 169A of the Clean Air Act). The analyses indicate that sources of visibility impairing air pollutants in the State of Connecticut, though not contributing at a level currently believed to be significant, will require our consultation with you on strategies addressing regional haze in the Class I Lye Brook Wilderness area located in Vermont.

Its second purpose is to invite you and/or representatives from the department/agency responsible in your state for regulatory air matters, to participate in a consultation process to determine an appropriate mitigation strategy for Lye Brook Wilderness. The consultation process will develop a recommendation for the most cost-effective strategy, agreeable to all jurisdictions involved, for implementation of long-term measures and controls which demonstrate that reasonable progress goals for the Class I area, to be established in Vermont's State Implementation Plan (SIP), will be achieved.

Background:

Environmental Protection Agency (EPA) final regional haze rules promulgated on July 1, 1999 require every state, whether containing a Class I area or not, to develop a SIP describing that state's control commitments (if any) to a long-term strategy for achieving reasonable progress goals (RPGs) in all Class I areas by 2018. 2018 is the end of the first 10 year period in a series of periodic SIP submittals that are required by the rules. The first SIPs under the regional haze rules (40 CFR 51.300) must be submitted to EPA by December 2007. Individual state plans that are developed need to be consistent with each other for them to be effective in achieving the RPGs. The regulations at 40 CFR 51.308 (d) (1) (iv) require a documented consultation process between all states involved in any multi-state strategy aimed at achieving the RPGs. This consultation record is one element required in the SIP of any state such as Vermont which contains one or more Class I areas. This letter serves to initiate the formal consultation process between our two states regarding the strategies to be incorporated in our state SIPs for submittal in December 2007.

Because the development of an effective strategy for mitigation of regional haze will be regional in nature, several other states have also been invited to participate in this consultative process to develop a SIP strategy that demonstrates the RPGs for visibility will be met in Lye Brook Wilderness Area by 2018. Vermont is a member of

the Regional Planning Organization MANE-VU which is comprised of the New England States and New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia. All other MANE-VU member states are being invited to consult with Vermont on our SIP strategy. In addition, a total of eleven other states outside of MANE-VU have been identified as having a level of impact on regional haze in the Lye Brook Wilderness area which is considered "significant" for this first round of regional haze SIPs with a 2018 target for RPGs. The attached Table 1 identifies all of the states with which Vermont believes it must consult during this planning period.

Table 1 summarizes the specific analytical results for each state which lead us to believe sources of haze-causing air pollutants in your state contribute significantly to the regional haze experienced at Vermont's Class I area. Over the past three years MANE-VU has conducted a number of studies and used several accepted scientific methodologies to identify the sources of impacts on visibility at all of the Class I areas in the northeast. These have been collected into a technical document entitled "Contributions to Regional Haze in the Northeast and Mid-Atlantic United States" dated August 2006 (http://manevu.org). This information will be available along with other technical study results during our consultative process. All MANE-VU states have determined that they will participate in each of the consultation processes for each of the MANE-VU Class I areas. In that context, if your state is a member of MANE-VU, staff from your state will already be aware of the consultation that has been ongoing internally through committees and workgroups involved in MANE-VU RPO planning efforts.

If your state is not a member of MANE-VU, you are also invited and encouraged to send a representative to future consultation meetings which will be scheduled through contacts between our respective RPOs (MANE-VU, VISTAS, MRPO). These meetings will be held over a period of months in the near future. At the meetings, establishment of the 2018 RPGs for each of the Class I areas in the northeastern U.S. will be discussed and strategies intended to achieve the RPGs will be proposed and defined. Please send us the name, address and contact phone number and/or email address of the appropriate person within your organization to contact when details of the first consultation meeting have been finalized.

The Vermont contact for this consultation process is Paul Wishinski, Air Quality Planning Chief for the Vermont Air Pollution Control Division, Phone: 802-241-3862 Fax: 802-241-2590 email: Paul.Wishinski@state.vt.us. Please contact him if you have any questions about the regional haze planning consultation process that we are formally proposing with this letter.

Sincerely,

Justin Johnson, Deputy Commissioner
Department of Environmental Conservation
Vermont Agency of Natural Resources

TABLE 1

States to be Consulted on Establishing Vermont's Class I Area 2018 Reasonable Progress Goals and Strategies for Achieving Them

State Name	Primary Haze-Causing Significant Impact[1] and/or Other Reason for Inclusion
Connecticut	MANE-VU member
Delaware	MANE-VU member
District of Columbia	MANE-VU member
Georgia	Sources impact > 2% Sulfate Contribution
Illinois	Sources impact > 2% Sulfate Contribution
Indiana	Sources impact > 2% Sulfate Contribution
Kentucky	Sources impact > 2% Sulfate Contribution
Maine	MANE-VU member
Maryland	Sources impact > 2% Sulfate Contribution
Massachusetts	Sources impact > 2% Sulfate Contribution
Michigan	Sources impact > 2% Sulfate Contribution
New Hampshire	MANE-VU member
New Jersey	MANE-VU member
New York	Sources impact > 2% Sulfate Contribution
North Carolina	Sources impact > 2% Sulfate Contribution
Ohio	Sources impact > 2% Sulfate Contribution
Pennsylvania	Sources impact > 2% Sulfate Contribution
Rhode Island	MANE-VU member
Tennessee	Sources impact > 2% Sulfate Contribution
Virginia	Sources impact > 2% Sulfate Contribution
West Virginia	Sources impact > 2% Sulfate Contribution
Wisconsin	Sources impact > 2% Sulfate Contribution

[1] From the report entitled "Contributions to Regional Haze in the Northeast and Mid-Atlantic United States", prepared by NESCAUM for the Mid-Atlantic / Northeast Visibility Union (MANE-VU), August 2006. The primary criteria Vermont used to identify a state as having a significant impact on Vermont's Class I area was the modeled base-year 2002 state-wide sulfur oxide emission impacts on the ambient sulfate levels predicted at receptors in the Class I area. Any state with a modeled annual average sulfate ion impact greater than 2% of all modeled sulfate ion impacts was considered to have "significant impacts" for purposes of consultation on long-term strategies and reasonable progress goals.

MANE-VU Class I States' Resolution and MANE-VU Statements

Mid-Atlantic/Northeast Visibility Union
MANE-VU

Reducing Regional Haze for Improved Visibility and Health

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New Jersey
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U.S. FIsh and Wildlife Service
U.S. Forest Service

RESOLUTION OF THE COMMISSIONERS OF STATES WITH MANDATORY CLASS I FEDERAL AREAS WITHIN THE MID-ATLANTIC NORTHEAST VISIBILITY UNION (MANE-VU) REGARDING PRINCIPLES FOR IMPLEMENTING THE REGIONAL HAZE RULE

- **WHEREAS** the Clean Air Act and EPA's Regional Haze Rules require all States to identify key sources of haze-causing air pollution, develop plans to reduce emissions from those sources, and submit those plans to EPA by December 2007; and

- **WHEREAS** pollutants that impair visibility also cause unhealthy levels of ozone and fine particle pollution, and both the types of emission sources and major individual emission sources that contribute to visibility impairment in mandatory Class I Federal areas also contribute to unhealthy levels of ozone and fine particle pollution in urban and suburban areas; and,

- **WHEREAS** implementing controls to improve visibility in national parks and wilderness areas that are mandatory Class I Federal areas will also improve air quality in areas that are not currently attaining the health-based standards for ozone and fine particle pollution; and,

- **WHEREAS** the Clean Air Scientific Advisory Committee (CASAC) and USEPA staff have recently reviewed the health protection adequacy of the fine particulate and ozone standards and recommended these standards be lowered to more protective levels, and that additional emission controls would be required in order to meet more stringent ambient air quality standards; and,

- **WHEREAS** all States are required to develop and submit State Implementation Plans (SIPs) to control fine particulates, ozone and Regional Haze with varying dates for attaining a health or welfare standard; and,

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- Allow the regulated community to better plan for the future with greater certainty with regard to air pollution control measures and programs; and

- **WHEREAS** technical analysis conducted for MANE-VU has identified sulfur dioxide emissions from sources in twenty-three States in the eastern United States as contributing to visibility impairment in the baseline year of 2002 within the MANE-VU mandatory Class I Federal areas (see attached list); and,

- **WHEREAS** further technical analysis conducted for MANE-VU has identified sulfur dioxide emissions from stacks at key Electric Generating Units (EGUs) as the most significant source of sulfate at MANE-VU mandatory Class I Federal areas in the baseline year of 2002, and

- **WHEREAS** it is in the best interest of human health and the environment to achieve these reductions as soon as practicable and as required by the Regional Haze rule and Clean Air Act to meet the 2018 planning goal for regional haze:

THEREFORE, be it resolved, that the Commissioners of the States with mandatory Class I Federal areas within MANE-VU will implement the regional haze rule in accordance with a set of principles that set forth a path for a) achieving reasonable progress toward preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas, and b) leveraging the multi-pollutant benefits that such actions may provide for enhanced public health and environmental protection; and

FURTHERMORE, that the set of principles for implementing the regional haze rule includes the following:

1. We will establish reasonable progress goals for the mandatory Class I Federal areas within our borders based upon an identification of existing sources affecting visibility, considering new, existing and planned emissions control measures, and reflecting the requisite 4-Factor Analysis conducted to determine reasonable measures that can be implemented by 2018; and these goals will achieve as much or more visibility improvement as would be achieved by the uniform rate of progress, and

2. We invite all States identified as contributing to visibility impairment (listed below)in MANE-VU mandatory Class I Federal areas to review specific proposed measures identified as reasonable according to the 4-factor analysis required by the Regional Haze Rule, and

3. We will ask all States identified as contributing to visibility impairment in MANE-VU mandatory Class I Federal areas to make timely emissions reductions consistent with measures determined to be reasonable through the consultation process; and

4. In setting our reasonable progress goals, we are assuming all measures determined to be reasonable by the Class I states are implemented in contributing states; and

5. Our reasonable progress goals will assume implementation of measures already deemed "reasonable" to meet other requirements of the Clean Air Act within the MANE-VU or Ozone Transport Commission States, and we will seek agreement from other contributing States and areas outside the OTC or MANE-VU regions to implement these measures as well; and

6. The invitation to contributing States to review the proposed reasonable measures includes an option of flexibility such that each contributing State could obtain its share of the emission reductions needed to meet the progress goals for the MANE-VU mandatory Class I Federal areas through implementation of other new or expanded rules or programs that will achieve a commensurate or equal level of emission reduction in their State and visibility benefit in the mandatory Class I Federal areas as would have been achieved through implementation of the reasonable measure in the same time frame requested by the MANE-VU States with mandatory Class I Federal areas, and

7. We call upon Federal Land Managers responsible for the air quality within our national parks and wilderness areas to identify any State's Regional Haze SIP submittal that is inconsistent with the reasonable progress goals set by Class I States, and to express concerns in writing to the affected States and to EPA during the 60-day SIP review period required by the Regional Haze rule, and

8. We call upon the US EPA to act on any inconsistencies between the reasonable progress goals set by the States with mandatory Class I Federal areas and the Regional Haze SIPs of contributing States and to resolve these discrepancies prior to approving the affected States' Regional Haze SIPs and to act on incomplete SIPs in the SIP review process, and

9. We will call upon the US EPA to implement any national or regional measures deemed "reasonable" through the consultation process through new or expanded federal rules, and

10. Through the consultation process, we will seek near-term commitments to implement new or expanded reasonable measures and long-term

resolve these discrepancies prior to approving the affected States' Regional Haze SIPs and to act on incomplete SIPs in the SIP review process, and

9. We will call upon the US EPA to implement any national or regional measures deemed "reasonable" through the consultation process through new or expanded federal rules, and

10. Through the consultation process, we will seek near-term commitments to implement new or expanded reasonable measures and long-term commitments in the 10 year or beyond time frame to reduce fine particle, nitrogen oxide, volatile organic compound and sulfur dioxide emissions, and

11. We commit to submitting the 5-year progress reports required by the Regional Haze rule as a revision to the initial SIP, and we will use these reports to review the status of measures committed to in initial SIPs, to address unresolved new control programs, to determine the availability and need for new reasonable measures and to adjust the Regional Haze SIP accordingly. The Class I states will rely on adequate Federal funding to comply with this Federal requirement.

Respectfully signed and committed,

The Commissioners of the States with mandatory Class I Federal areas in MANE-VU

New Hampshire

Maine

Vermont

New Jersey

States within MANE-VU and others Contributing at least 2% of Modeled Sulfate to 2002 Concentrations at MANE-VU mandatory Class I Federal areas

Maine
New Hampshire
Vermont
Massachusetts
Rhode Island
Connecticut
New York
New Jersey
Pennsylvania
Delaware
Maryland
District of Columbia
Michigan
Illinois
Indiana
Ohio
Wisconsin
Kentucky
West Virginia
Virginia
Tennessee
North Carolina
South Carolina
Georgia

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STATEMENT OF THE MID-ATLANTIC/NORTHEAST VISIBILITY UNION (MANE-VU) CONCERNING A COURSE OF ACTION WITHIN MANE-VU TOWARD ASSURING REASONABLE PROGRESS

The federal Clean Air Act and Regional Haze rule require States that are reasonably anticipated to cause or contribute to impairment of visibility in mandatory Class I Federal areas to implement reasonable measures to reduce visibility impairment within the national parks and wilderness areas designated as mandatory Class I Federal areas. Most pollutants that affect visibility also cause unhealthy concentrations of ozone and fine particles. In order to assure protection of public health and the environment, any additional air pollutant emission reduction measures necessary to meet the 2018 reasonable progress goal for regional haze should be implemented as soon as practicable .

To address the impact on mandatory Class I Federal areas within the MANE-VU region, the Mid-Atlantic and Northeast States will pursue a coordinated course of action designed to assure reasonable progress toward preventing any future, and remedying any existing impairment of visibility in mandatory Class I Federal areas and to leverage the multi-pollutant benefits that such measures may provide for the protection of public health and the environment. This course of action includes pursuing the adoption and implementation of the following "emission management" strategies, as appropriate and necessary:

- 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

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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 electric generating unit (EGU) stacks identified by MANE-VU (Attachment 1- comprising a total of 167 stacks – dated June 20, 2007) as reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class I 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.

This long-term strategy to reduce and prevent regional haze will allow each state up to 10 years to pursue adoption and implementation of reasonable and cost-effective NOx and SO_2 control measures.

Adopted by the MANE-VU States and Tribes on 20 June 2007

David Littell, Commissioner – Maine Dept. of Environmental Protection
Chair

Mid-Atlantic/Northeast Visibility Union
MANE-VU

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STATEMENT OF THE MID-ATLANTIC/NORTHEAST VISIBILITY UNION (MANE-VU) CONCERNING A REQUEST FOR A COURSE OF ACTION BY STATES OUTSIDE OF MANE-VU TOWARD ASSURING REASONABLE PROGRESS

The federal Clean Air Act and the Regional Haze rule require States that are reasonably anticipated to cause or contribute to impairment of visibility in mandatory Class I Federal areas to implement reasonable measures to reduce visibility impairment within the national parks and wilderness areas designated as mandatory Class I Federal areas. Most pollutants that affect visibility also cause unhealthy concentrations of ozone and fine particles. In order to assure protection of public health and the environment, air pollutant emission reductions required to meet the 2018 reasonable progress goal for regional haze should be achieved as soon as practicable.

To address the impact on mandatory Class I Federal areas within the MANE-VU region, the Mid-Atlantic and Northeast States request that States outside of the MANE-VU region that are identified as contributing to visibility impairment in the MANE-VU mandatory Class I Federal areas pursue a course of action designed to assure reasonable progress toward preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas and to leverage the multi-pollutant benefits that such actions may provide for the protection of public health and the environment. This request for a course of action includes pursuing the adoption and implementation of the following control strategies, as appropriate and necessary:

- timely implementation of BART requirements; and
- A 90% or greater reduction in sulfur dioxide (SO_2) emissions from each of the electric generating unit (EGU) stacks identified by MANE-VU (Attachment 1- comprising a total of 167 stacks – dated June 20, 2007) as reasonably anticipated to cause or contribute to impairment of visibility in each mandatory Class I 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

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- 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 ; and

- continued evaluation of other measures including measures to reduce SO2 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 during the consultation process to determine if they are reasonable.

This long-term strategy to reduce and prevent regional haze will allow each state up to 10 years to pursue adoption and implementation, of reasonable NOx and SO_2 control measures.

Adopted by the MANE-VU States and Tribes on 20 June 2007

David Littell, Commissioner – Maine Dept. of Environmental Protection
Chair

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STATEMENT OF THE MID-ATLANTIC / NORTHEAST VISIBILITY UNION (MANE-VU) CONCERNING A REQUEST FOR A COURSE OF ACTION BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) TOWARD ASSURING REASONABLE PROGRESS

The US Clean Air Act and the EPA Regional Haze rule require States that are reasonably anticipated to cause or contribute to impairment of visibility in mandatory Class I Federal areas to implement reasonable measures to reduce visibility impairment within the national parks and wilderness areas designated as mandatory Class I Federal areas.

Most pollutants that affect visibility also cause unhealthy concentrations of ozone and fine particles, and contribute to other adverse environmental impacts. In order to assure protection of public health and the environment, air pollutant emission reductions required to meet the 2018 reasonable progress goal for regional haze should be achieved as soon as practicable.

MANE-VU assessments indicate that sulfur dioxide emissions from power plants in a broad region of the Eastern US are the most important contributor to regional haze at mandatory Class I Federal areas within MANE-VU.

By 2018, emissions from these plants will be substantially reduced under requirements of EPA's Clean Air Interstate Rule. This will result in improved visibility at MANE-VU Class I areas.

However, even after implementation of the CAIR rule, emissions from power plants will remain a substantial source of pollutants contributing to visibility impairment in MANE-VU Class I areas.

Furthermore, under more stringent national ambient air quality standards, these same pollutants will continue to contribute to ozone pollution and fine particle pollution in nonattainment areas within the region.

Therefore, it is an important responsibility of both EPA and the MANE-VU states to determine whether additional emissions reductions at power

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plants should be a part of a reasonably available strategy to improve visibility in the MANE-VU region.

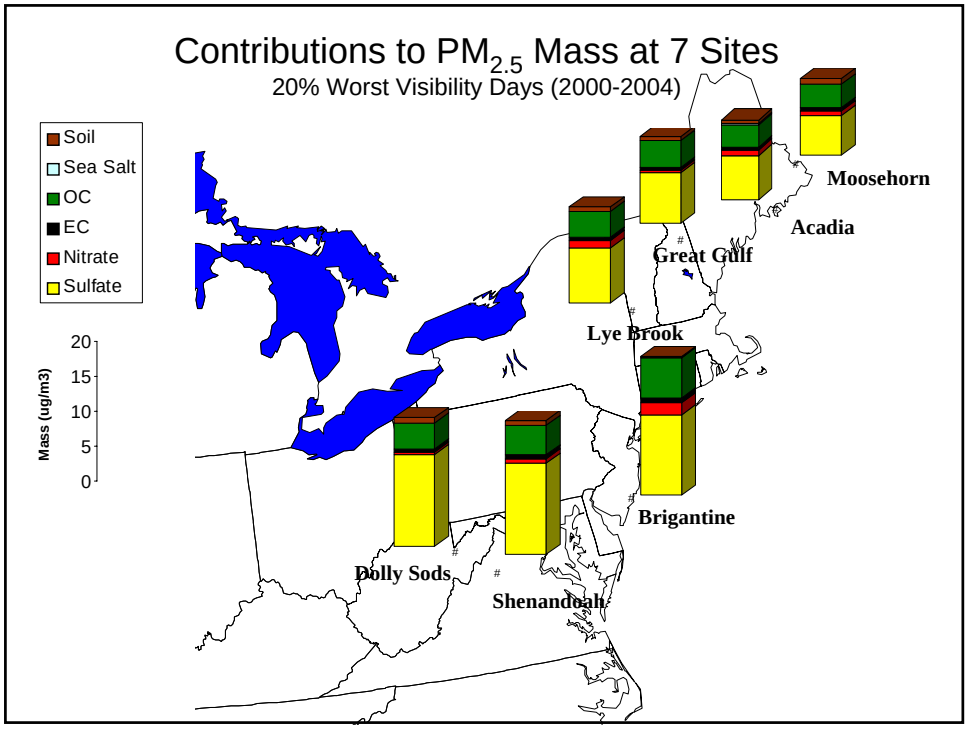
MANE-VU sponsored additional modeling using the Integrated Planning Model (IPM®). Results of this modeling indicate that an additional 18% emissions reduction in SO2 emissions beyond CAIR levels could be achieved by 2018 at a reasonable cost.

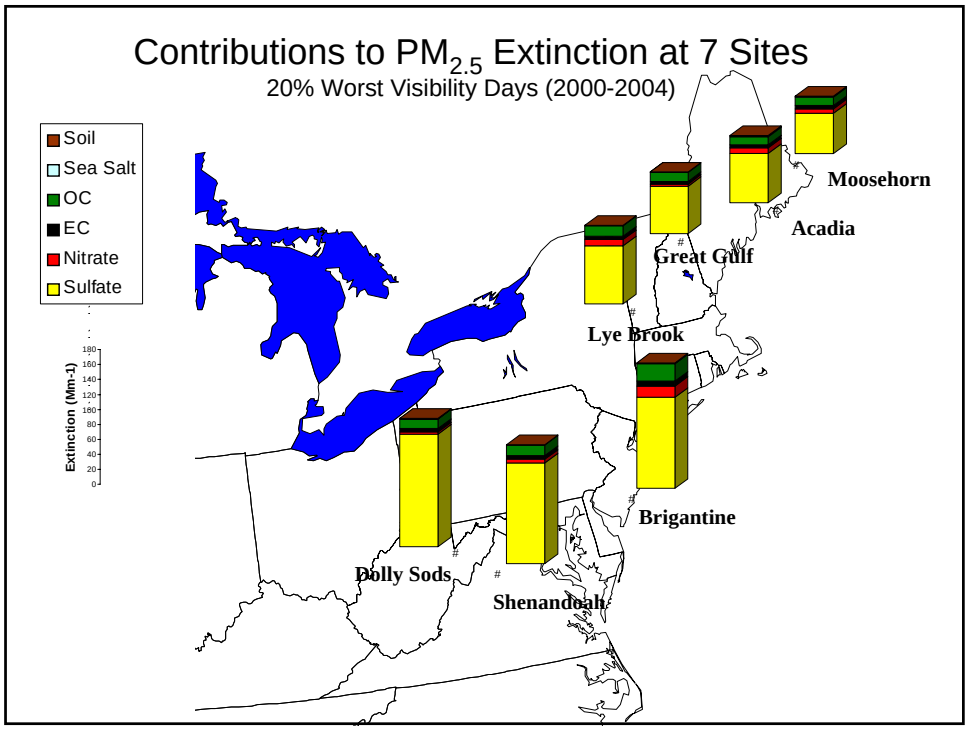
The MANE-VU states and tribes request that EPA work with the eastern Regional Planning Organizations to develop a proposal for tightening the CAIR program to achieve an additional 18% reduction in SO2 by no later than 2018.

Adopted by the MANE-VU States and Tribes on June 20, 2007

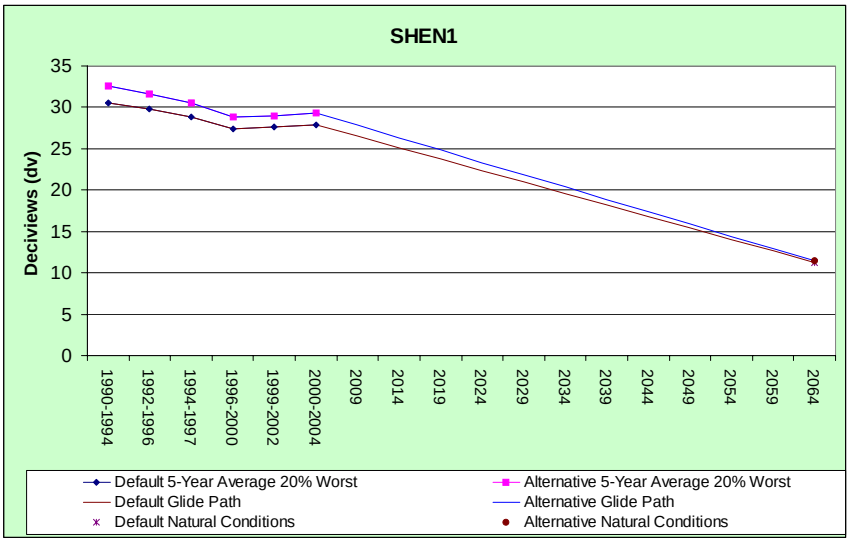
David Littell, Commissioner – Maine Dept. of Environmental Protection
Chair

Uniform Rate of Progress

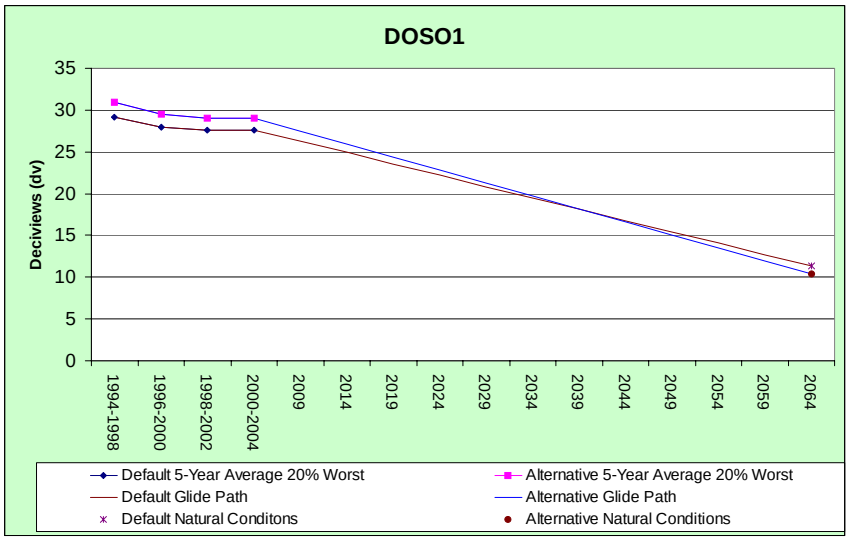

Contributions to PM2.5 Mass at 7 Sites
20% Worst Visibility Days (2000-2004)
Soil
Sea Salt
OC
EC
Nitrate
Sulfate
Mass (ug/m3)
20
15
10
5
0
Moosehorn
Acadia
Great Gulf
Lye Brook
Brigantine
Dolly Sods
Shenandoah


Contributions to PM2.5 Extinction at 7 Sites
20% Worst Visibility Days (2000-2004)
Soil
Sea Salt
OC
EC
Nitrate
Sulfate
Extinction (Mm-1)
Moosehorn
Acadia
Great Gulf
Lye Brook
Brigantine
Dolly Sods
Shenandoah

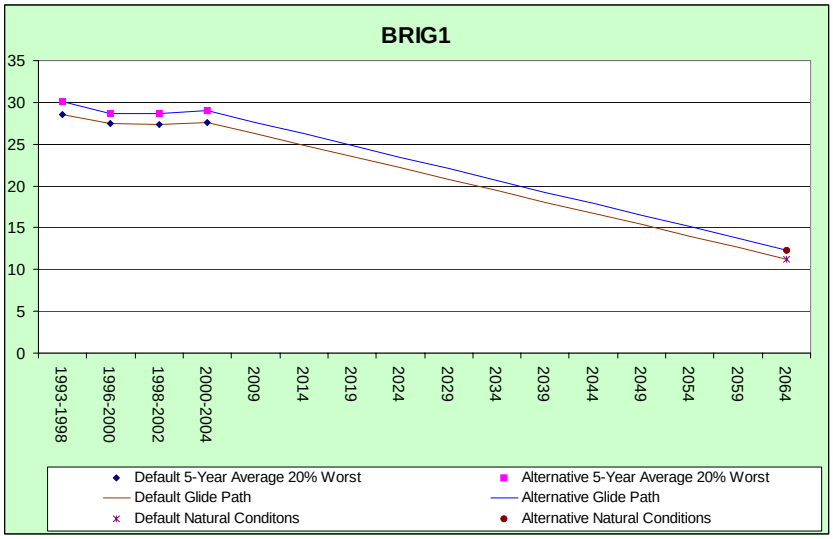
Shenandoah Glide Path to Natural Conditions 2004-2064



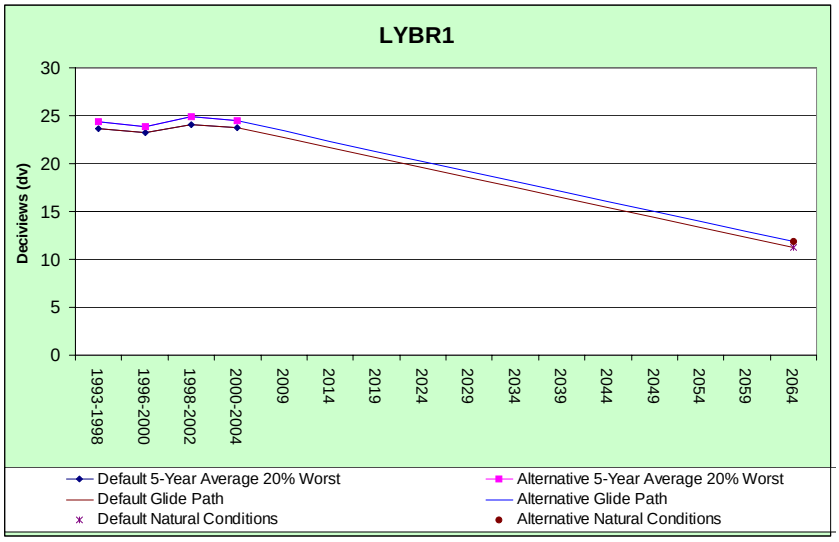
Dolly Sods Glide Path to Natural Conditions 2004-2064



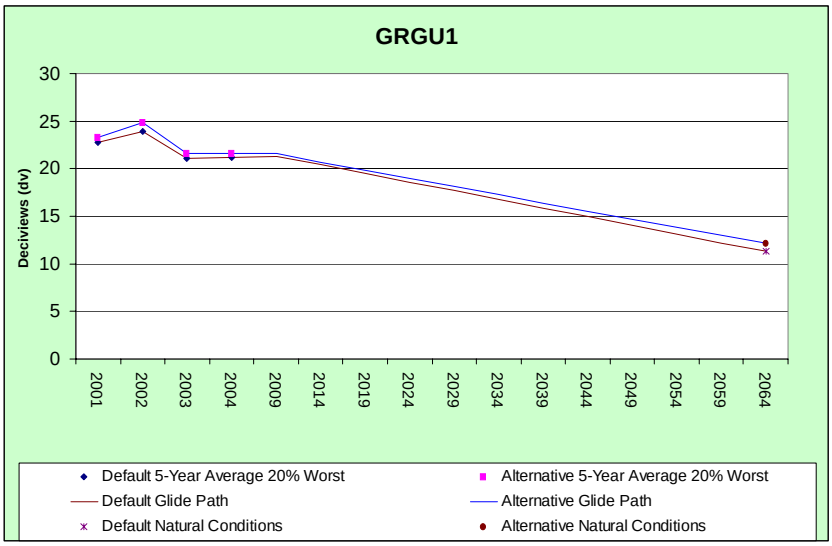
Brigantine Glide Path to Natural Conditions 2004-2064



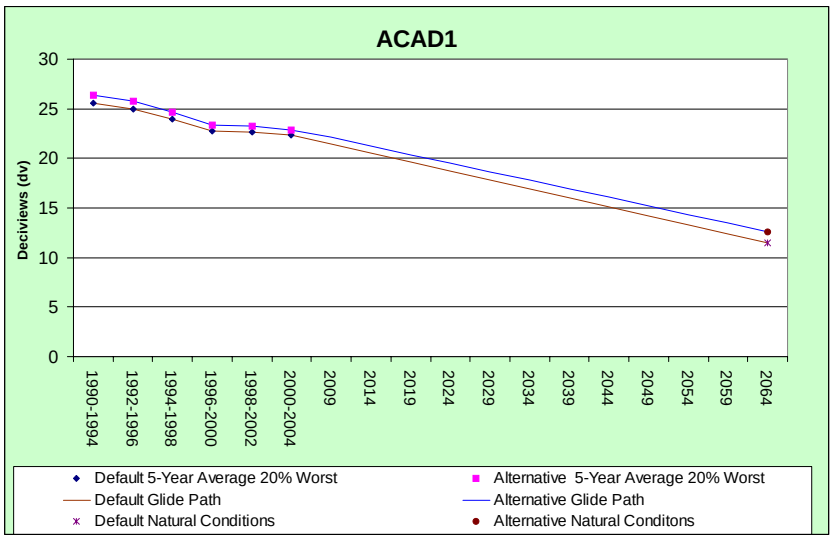
Lye Brook Glide Path to Natural Conditions 2004-2064



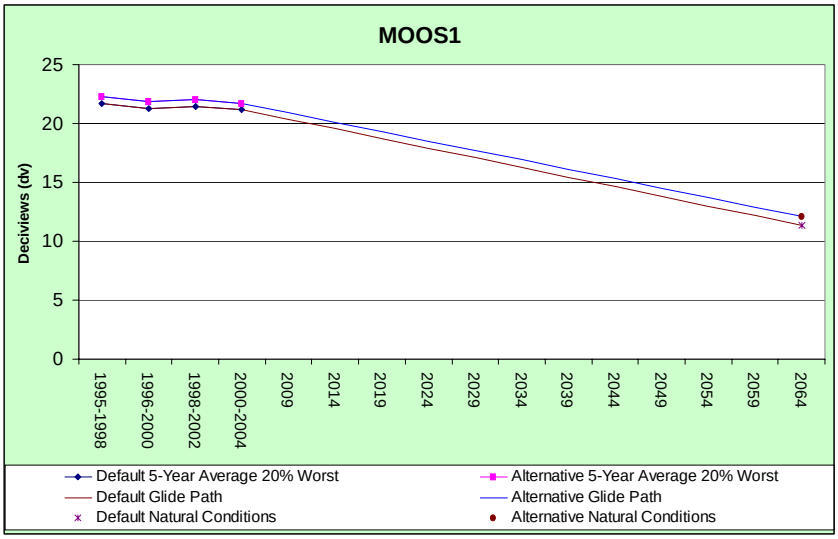
Great Gulf Glide Path to Natural Conditions 2004-2064



Acadia Glide Path to Natural Conditions 2004-2064

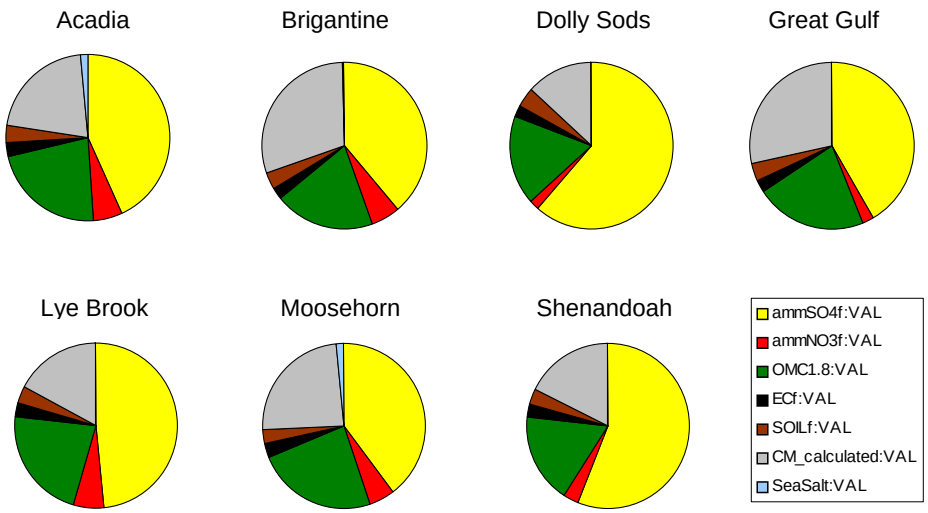


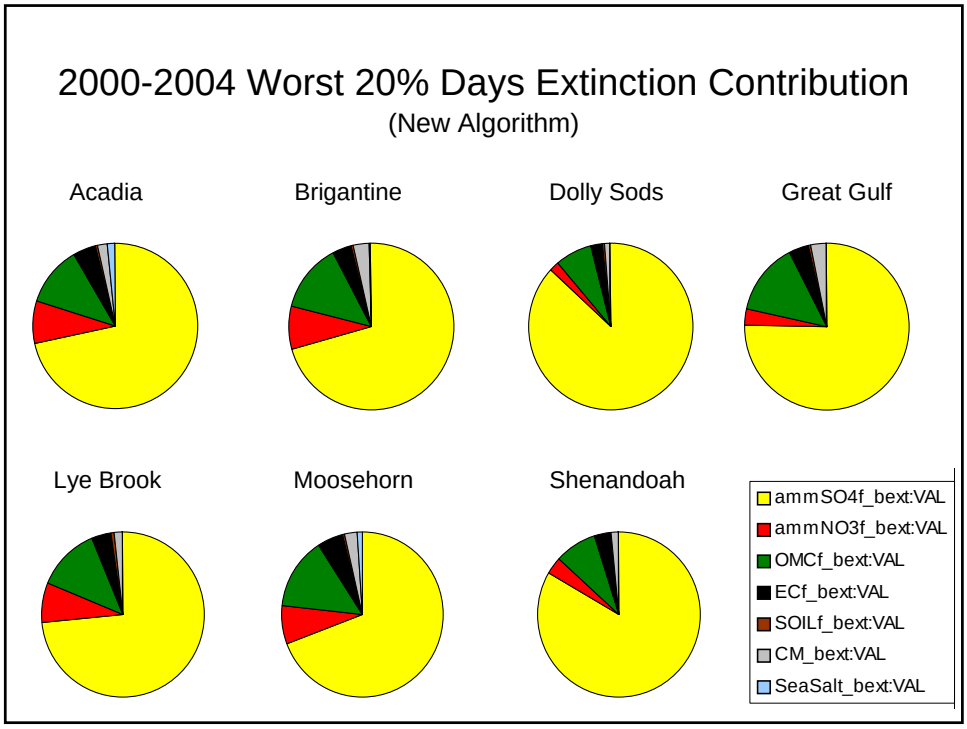
Moosehorn Glide Path to Natural Conditions 2004-2064

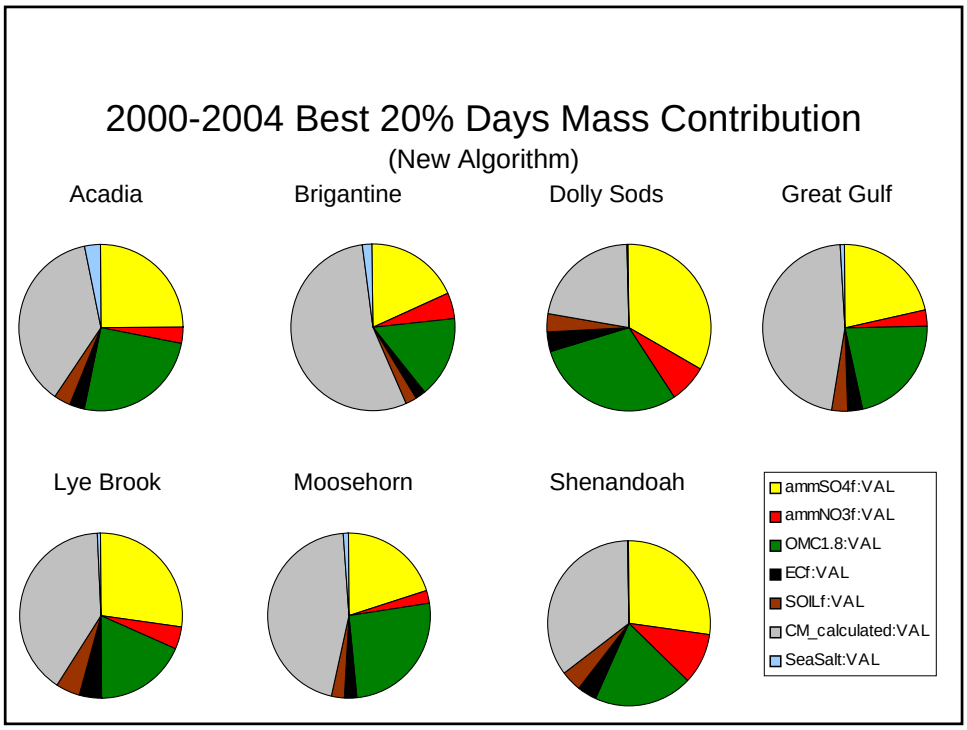


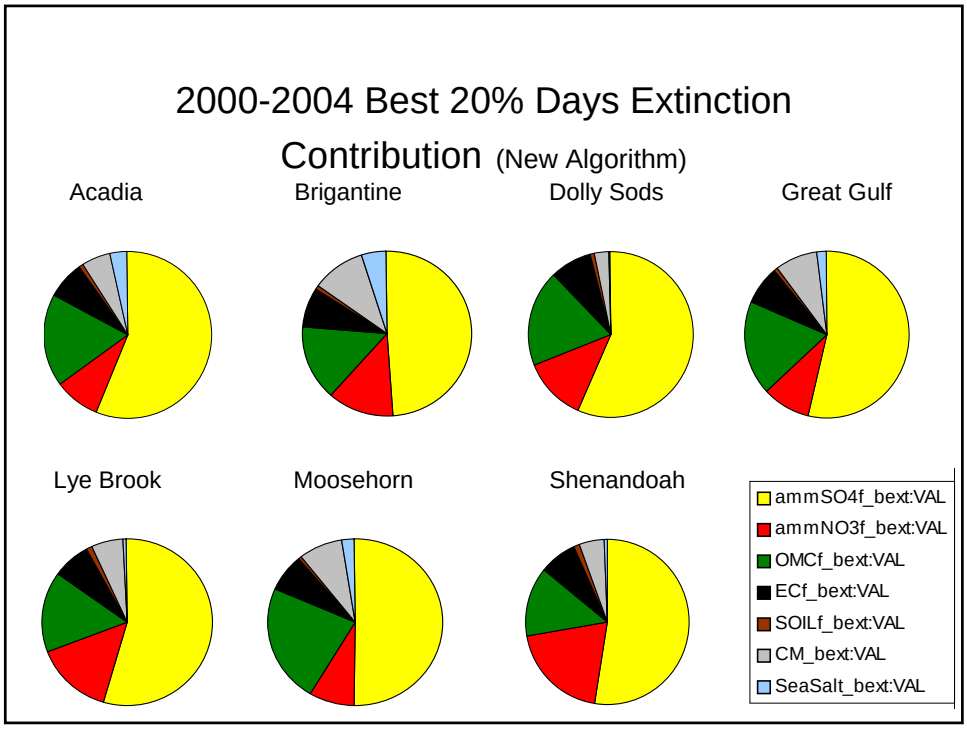
2000-2004 Worst 20% Days Mass Contribution

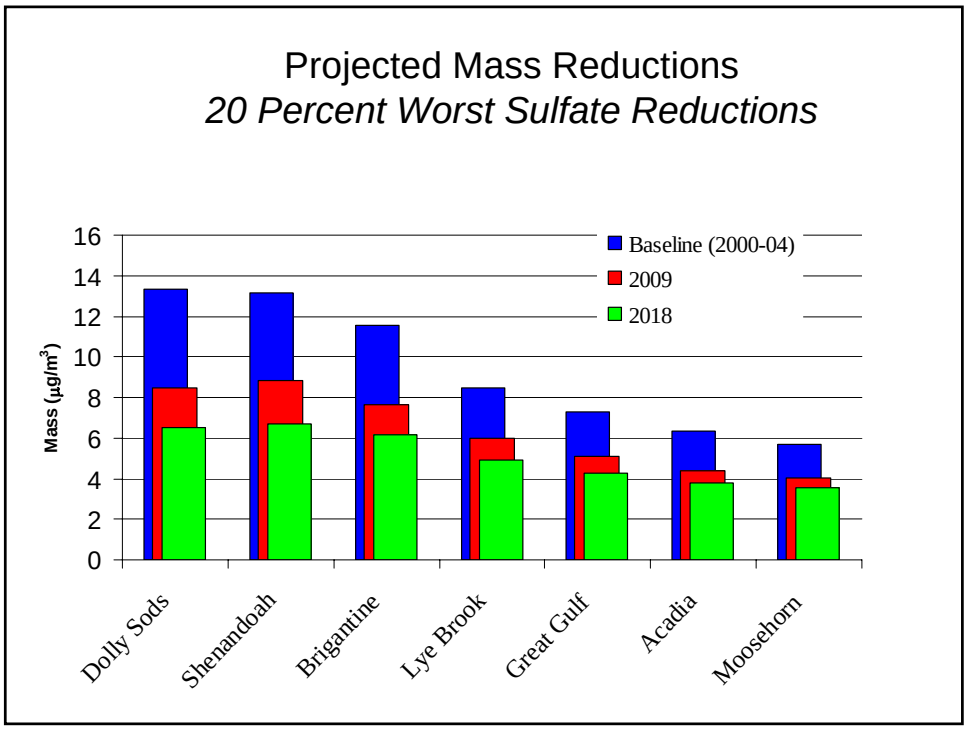
(New Algorithm)



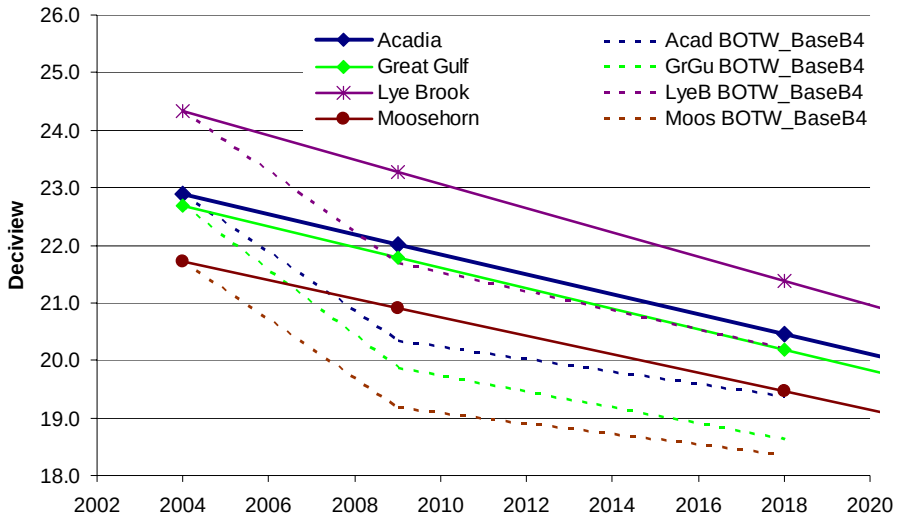

2000-2004 Worst 20% Days Extinction Contribution
(New Algorithm)
Acadia
Brigantine
Dolly Sods
Great Gulf
Lye Brook
Moosehorn
Shenandoah
ammSO4f_bext:VAL
ammNO3f_bext:VAL
OMCf_bext:VAL
ECf_bext:VAL
SOILf_bext:VAL
CM_bext:VAL
SeaSalt_bext:VAL


2000-2004 Best 20% Days Mass Contribution
(New Algorithm)
Acadia
Brigantine
Dolly Sods
Great Gulf
Lye Brook
Moosehorn
Shenandoah
ammSO4f:VAL
ammNO3f:VAL
OMC1.8:VAL
ECf:VAL
SOILf:VAL
CM_calculated:VAL
SeaSalt:VAL

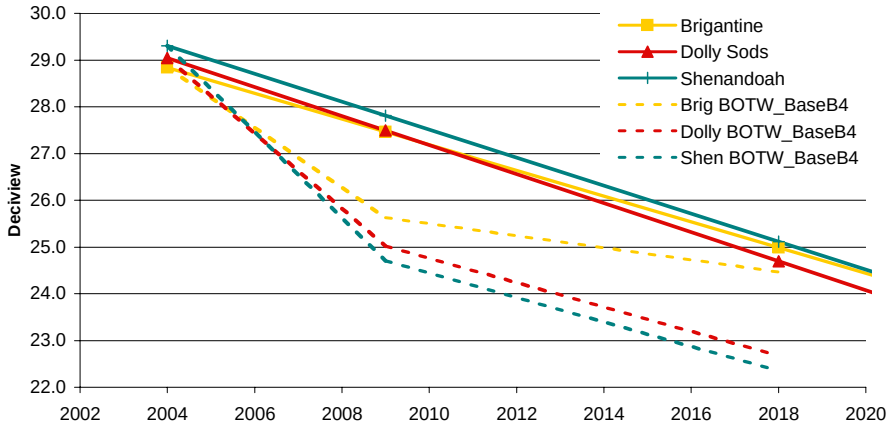

2000-2004 Best 20% Days Extinction Contribution (New Algorithm)
Acadia
Brigantine
Dolly Sods
Great Gulf
Lye Brook
Moosehorn
Shenandoah
ammSO4f_bext:VAL
ammNO3f_bext:VAL
OMCf_bext:VAL
ECf_bext:VAL
SOILf_bext:VAL
CM_bext:VAL
SeaSalt_bext:VAL


Projected Mass Reductions
20 Percent Worst Sulfate Reductions
Mass (µg/m³)
0
2
4
6
8
10
12
14
16
Baseline (2000-04)
2009
2018
Dolly Sods
Shenandoah
Brigantine
Lye Brook
Great Gulf
Acadia
Moosehorn

Relative mass reductions applied to visibility metric for New England sites



Relative mass reductions applied to visibility metric for Mid-Atlantic sites



Pollution Apportionment