ATTACHMENT J

Comments from Other Stakeholders

Attachment J

- ACCCE Comments on BenMAP study
- Comments on Draft MANE-VU Reasonable Progress Goals Document - Dominion
- Comments on Draft MANE-VU Reasonable Progress Goals Document - MOG
- Comments on Draft MANE-VU Reasonable Progress Goals Document - UARG
- Reliant Energy Comments on MANE-VU report
- Modeling for Reasonable Progress Draft Report Stakeholder Comments
- UARG Comments on MANE-VU 2018 Modeling

Eugene M. Trisko
Attorney at Law*
P.O. Box 596
Berkeley Springs, WV 25411
(304) 258-1977
(301) 639-5238 (Cell)
emtrisko@earthlink.net

*Admitted in DC

January 9, 2008

Susan Weirman
Executive Director
MARAMA
8600 LaSalle Road
Suite 636
Towson, MD 21286.

By E-Mail Transmission

Re: ACCCE Comments on "Public Health Benefits of Reducing Ground-Level Ozone and Fine Particulate Matter in the Northeastern U.S."

Dear Susan:

I am writing on behalf of the American Coalition for Clean Coal Electricity ("ACCCE") regarding the Draft Report by NESCAUM, "Public Health Benefits of Reducing Ground-level Ozone and Fine Particulate Matter in the Northeastern U.S." (November 14, 2007). ACCCE is the successor organization to CEED, effective January 1, 2008. The NESCAUM Draft Report was cited in support of various MANE-VU regional haze initiatives at the MANE-VU stakeholders meeting on November 15, 2007.

ACCCE is a national membership organization representing major U.S. railroads, coal producers, electric generators and numerous other industrial firms. ACCCE members have direct and substantial interests in the production and transportation of coal, and in coal-based electric generation in the Northeast and throughout the United States. Through CEED, ACCCE has contributed several comments to the MANE-VU regional haze planning process, and has participated in both the OTC and MANE-VU stakeholder processes.

Summary of Comments

ACCCE is pleased that all of the Class I areas within MANE-VU are expected to meet or to surpass their EPA-recommended "glide path" targets for achieving reasonable progress toward regional haze goals, based on emission reductions resulting from EPA's Clean Air Interstate Rule (CAIR) and other federal and state air quality programs.[1] We are not persuaded that any of the proposed controls on electric generating units discussed in the NESCAUM report - within MANE-VU or in other RPOs - are warranted in view of the extent of visibility improvement expected at MANE-VU Class I areas under current law.

We are more concerned about the policy implications of the NESCAUM draft report, assessing the potential health benefits of control strategies to improve visibility at Class I parks and wilderness areas, and to achieve air quality levels below those required by U.S. EPA's current and proposed ambient standards for ozone and $PM_{2.5}$. The latter analyses may be appropriate for U.S. EPA to consider in the context of its regular reviews of the adequacy of the NAAQS. Our comments here focus particularly on NESCAUM's BART and "167 Stack" analyses using the BenMAP model. We believe that NESCAUM's analyses of potential BART and "167 Stack" emission controls on electric generating units are deficient, or are otherwise objectionable, in several key respects:

1) The Clean Air Act's visibility protection program for Class I parks and wilderness areas is not intended to provide public health benefits such as those resulting from implementation of the National Ambient Air Quality Standards. As implemented through the 1999 Regional Haze Rule and related EPA regulations, the visibility protection program provides welfare-related benefits in the form of improved visibility, and protection against visibility deterioration, at protected Class I areas.

2) NESCAUM's analysis of the potential health benefits of alternative control strategies is not required or even recommended by current U.S. EPA guidance on assessing reasonable progress toward regional haze goals.

[1] See, C. Salmi and G. Kleiman, "The MANE-VU Approach to Improving Visibility," MANE-VU Stakeholder Briefing, November 15, 2007 (available at http://www.manevu.org/meetings.asp#).

3) NESCAUM's estimates of potential health benefits from BART and "167 Stack" control strategies overlook potential offsetting ambient air quality effects when emission trading is allowed.

4) NESCAUM's assumption that "CAIR-Plus" control strategies could be imposed with restrictions on emission trading is inconsistent with relevant legal precedent, would undermine the cost-effectiveness of the CAIR program, and could lead to the premature retirements of many smaller generating units that are not economic retrofit candidates.

5) NESCAUM likely has underestimated the extent of emission reductions associated with implementation of CAIR, and thus has overestimated the extent of air quality improvement resulting from its BART and "167 Stack" strategies.

Each of these issues is addressed in more detail below.

Misleading health benefits assessment

NESCAUM relies on the BenMAP desktop PC model to support claims that implementation of BART or "167 Stack" control strategies would generate significant public health benefits within and outside of the MANE-VU region.

NESCAUM's calculations suggest that the "167 Stack" strategy could generate $6.5 billion in annual health benefits within MANE-VU in 2018, primarily due to reduced premature mortality. Benefits of $2.1 billion in the VISTAS region and $2.2 billion in the Midwest RPO states also are estimated.[2]

ACCCE does not agree with the methodology or assumptions underlying the BenMAP analysis, for reasons discussed in comments previously submitted to the Midwest RPO by Cambridge Environmental,[3] and attached here. We note that similar analyses of "CAIR-Plus" strategies evaluated for MRPO by Stratus Consulting in 2006 also presented alternative modeling results based on unrestricted emission trading.

[2] NESCAUM, Draft Report at 4-11,12.
[3] Dr. Laura Green, Cambridge Environmental Inc., "Comments on 'Benefit Study of MRPO Candidate Control Options for Electricity Generation,' (November 17, 2006).

Stratus' findings for MRPO, summarized in the IPM cases modeled below, indicate that the potential downwind impacts of emissions "leakage" from the MRPO region largely offset the benefits of controls imposed within the MRPO. When unrestricted emission trading is permitted, the emission reductions resulting from CAIR-Plus controls within the MRPO region generate tradable allowances that can be sold outside the region. The Stratus analysis illustrates the effects of such trading in states outside the MPRO region, based on IPM modeling of annual $PM_{2.5}$ concentrations:

Modeled $PM_{2.5}$ Impacts from MRPO CAIR-Plus Strategies with Interstate Emissions Trading

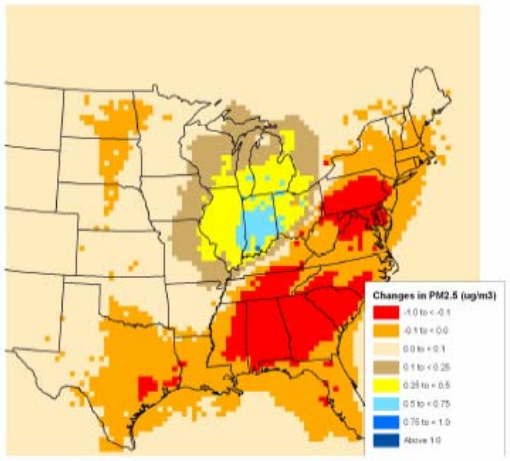


Figure ES-3. Changes in annual mean $PM_{2.5}$ with EGU1 with IPM candidate control program.

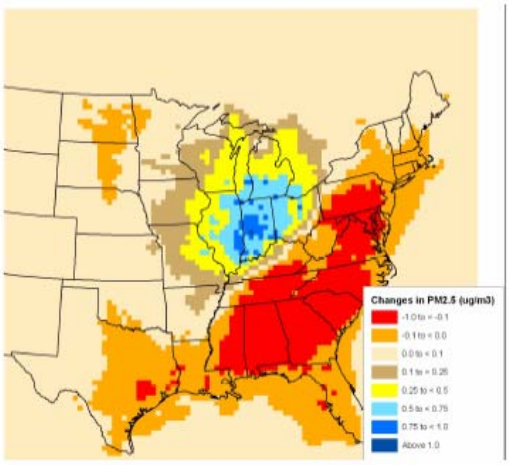


Figure ES-4. Changes in annual mean $PM_{2.5}$ with EGU2 with IPM candidate control program.

Note: Positive values indicate an improvement in $PM_{2.5}$ levels. Negative values indicate a worsening of $PM_{2.5}$ levels.

Source: Stratus Consulting, Inc. (Report prepared for MRPO, 2006).

Inconsistencies with U.S. EPA Guidance

NESCAUM's assessment of the potential health benefits of the EGU strategies is not called for by current U.S. EPA guidance on measuring reasonable progress toward regional haze goals.[4] EPA's recent guidance discusses the four statutory factors to be considered in determining appropriate source controls to achieve reasonable progress goals. In fact, EPA makes no reference whatsoever to "public health" as a consideration. The only reference to "health" is to the health of affected industries:

> "The first factor to take into consideration is the "costs of compliance." In this context we believe that the cost of compliance factor can be interpreted to encompass the cost of compliance for individual sources or source categories, and more broadly the implication of compliance costs to the health and vitality of industries within a state."[5]

ACCCE agrees that public health considerations are relevant to state strategies for attaining health-protective primary National Ambient Air Quality Standards for pollutants such as ozone and $PM_{2.5}$. However, public health is not a relevant consideration for strategies to achieve welfare-related reasonable progress toward visibility improvement goals at Class I national parks and wilderness areas.

Constraints on emissions trading

The only means to confine the emissions reductions and associated air quality benefits due to the application of "CAIR-Plus" strategies is to limit emissions trading of surplus allowances outside affected states. NESCAUM apparently has assumed just such limitations in its analyses of these strategies.[6]

---

[4] U.S. EPA, "Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program" (June 1, 2007).

[5] Id., at 18.

[6] See, e.g., NESCAUM Draft Report at Figure 4-5 (average change in 24-hour $PM_{2.5}$ due to 167 Stack emission reduction.) There is no corresponding analysis of the offsetting air quality impacts of the sale of excess allowances that may be created by the 167 Stack strategy, comparable to the IPM modeling for MRPO discussed above.

Requiring 90% emission reduction levels on 110 units (of 246 total units covered by the "167 Stack" strategy) projected by the IPM model to be uncontrolled or partially controlled in 2018 would require the retrofit of scrubbers on numerous older and smaller units that are not economic to retrofit. The cost-effectiveness of the CAIR program depends on the ability to concentrate retrofit controls on newer and larger units, using emission allowances to offset a portion of the emissions of uneconomic units.

NESCAUM should provide a credible assessment of the potential impact of its "167 Stack" proposal on the premature retirement of the older and smaller units that are not retrofitted with scrubbers in the IPM model, including impacts on natural gas utilization and system reliability. Impeding emissions trading and mandating scrubber retrofits on units that are not economic to retrofit would severely undermine the cost-effectiveness of the CAIR program while leading to potentially unintended consequences such as sharp natural gas price increases.

ACCCE also questions the legality of constraints on emissions trading in light of the decision in *Clean Air Markets Group v. Pataki*, 194 F. Supp. 2d 147, 160 (N.D.N.Y. 2002), *aff'd*, 338 F.3d 82 (2d Cir. 2003). In *Clean Air Markets Group* (*CAMG*), plaintiffs objected to a New York statute seeking to limit the geographic sale of Title IV sulfur dioxide emissions allowances to certain upwind states. Plaintiffs argued that New York's allowance trading restrictions were impermissible under the Clean Air Act and various provisions of the U.S. Constitution, including the Supremacy and Commerce clauses.

The Commerce Clause implications of potential restrictions on the trading of allowances for visibility protection need to be carefully considered by MANE-VU states. Where a state law or regulation is found to be discriminatory, courts will employ strict scrutiny, and the defendant must "show that it advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives." Notwithstanding the underlying legislative or regulatory purpose, however laudable, a statute or regulation that discriminates against commerce is protectionist and violates the Constitution. If a plaintiff can demonstrate that a regulation discriminates against interstate commerce, the burden of proof shifts to the defendant to demonstrate that there are no other non-discriminatory means to advance a legitimate local interest.

In *CAMG*, the 2d Circuit upheld the district court decision finding that New York's statute was unconstitutional and was preempted by the Clean Air Act. The 2d Circuit summarized the holdings of the lower court before affirming the decision in favor of plaintiffs:

> Because SO2 emissions can travel hundreds of miles in the wind, much of the acid deposition in the Adirondacks results not from SO2 emissions in New York, but, rather, from SO2 emissions in fourteen "upwind" states. These states include New Jersey, Pennsylvania, Maryland, Delaware, Virginia, North Carolina, Tennessee, West Virginia, Ohio, Michigan, Illinois, Kentucky, Indiana, and Wisconsin.
>
> In 2000, the New York legislature sought to address this problem by passing the Air Pollution Mitigation Law, N.Y. Pub. Serv. L. § 66-k ("section 66-k"). Pursuant to this statute, the New York State Public Service Commission ("PSC") is required to assess "an air pollution mitigation offset" upon any New York utility whose SO2 allowances are sold or traded to one of the fourteen upwind states. N.Y. Pub. Serv. L. § 66-k(2). The amount assessed is equal to the amount of money received by the New York utility in exchange for the allowances. *Id*. Moreover, the assessment is made regardless of whether the allowances are sold directly to a utility in an upwind state or are subsequently transferred there. *Id.* Accordingly, in order to avoid the assessment, New York utilities must attach a restrictive covenant to any allowances they sell that prohibits their subsequent transfer to any of the fourteen upwind states. *See* N.Y. Pub. Serv. L. § 66-k(3).
>
> With respect to preemption, the Court first determined that section 66-k is not expressly preempted by Title IV. *Id*. at 157. Next, it held that Title IV is not "sufficiently comprehensive" to preempt all state law in the field of air pollution control. *Id*. Nevertheless, the District Court concluded that section 66-k was preempted because it "actually conflicts with" Title IV by creating "an obstacle to the accomplishment and execution of the full purposes and objectives of Congress" in passing the Act. *Id*. at 158 (quoting *Hillsborough County, Florida v. Automated Med. Labs., Inc.*, 471 U.S. 707, 713 (1985) (internal quotation marks and citation omitted)). The Court reasoned that "New York's restrictions on transferring allowances to [utilities] in the Upwind States is contrary to the federal provision that allowances be tradeable to *any* other person." *Id*. It also noted that "Congress considered geographically restrict[ing] allowance transfers and rejected it," and that "[t]he EPA, in setting regulations to implement Title IV, also considered geographically restricted allowance trading and rejected it over New York State's objections." *Id*. (citations omitted).
>
> The District Court next considered CAMG's alternative argument that section 66-k violates the Commerce Clause of the Constitution. The Court

concluded that section 66-k "is a constitutionally invalid protectionist measure" because "[its] explicit restriction on the transfer of SO2 allowances to [utilities] in Upwind States erects . . . a barrier against the movement of interstate trade." *Id*. at 161; *see also City of Philadelphia v. New Jersey*, 437 U.S. 617, 624 (1978) (holding that "where simple economic protectionism is effected by state legislation, a virtually *per se* rule of invalidity has been erected"). The Court further held that, even if the statute were not merely protectionist, it would still violate the Commerce Clause because "it cannot be 'fairly . . . viewed as a law directed to legitimate local concerns, with effects upon interstate commerce that are only incidental.'" *Hillsborough*, 471 U.S. at 161 (quoting *City of Philadelphia*, 437 U.S. at 624); *see also Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970) ("Where the statute regulates evenhandedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits.").

In light of its conclusion that section 66-k violates the Supremacy Clause and the Commerce Clause of the Constitution, the District Court denied defendants' motions for summary judgment, granted CAMG's cross-motion for summary judgment, and enjoined defendants from enforcing section 66-k. …

Although section 66-k does not technically limit the authority of New York utilities to transfer their allowances, it clearly interferes with their ability to effectuate such transfers. First, by requiring utilities to forfeit one hundred percent of their proceeds from any allowance sale to a utility in an upwind state, section 66-k effectively bans such sales. Moreover, the only way for New York utilities to ensure that they will not be assessed pursuant to section 66-k is to attach to every allowance they sell a restrictive covenant that prohibits the subsequent transfer of the allowance to an upwind state. Because such a restrictive covenant indisputably decreases the value of the allowances, section 66-k clearly "restrict[s] or interfere[s] with allowance trading," 40 C.F.R.§ 72.72(a). In sum, section 66-k impermissibly "interferes with the *methods* by which [Title IV] was designed to reach [the] goal" of decreasing SO2 emissions, and therefore it "stands as an obstacle" to the execution of Title IV's objectives. *International Paper*, 479 U.S. at 494 (emphasis added).

Defendants argue that, even if section 66-k "stands as an obstacle" to the execution of Title IV's objectives, *see Hillsborough County*, 471 U.S. at 713, it does not "actually conflict" with federal law because it is expressly permitted by two other statutory provisions of the Clean Air Act. First, defendants draw our attention to 42 U.S.C. § 7416, a savings clause that preserves state authority "to

> adopt or enforce (1) any standard or limitation respecting emissions of air pollutants or (2) any requirement respecting control or abatement of air pollution." Defendants argue that section 66-k is a "requirement respecting control or abatement of air pollution," *id.*, that is not preempted because it "simply goes further than the relevant federal law." Pataki Br. at 26. But, as properly noted by the District Court, section 66-k does not set requirements for air pollution control or abatement within New York, but, rather, is an attempt to "control emissions in another state." *CAMG*, 194 F. Supp.2d at 159. Nothing in the language of 42 U.S.C. § 7416 permits such legislation.
>
> Defendants also maintain that section 66-k is authorized by 42 U.S.C. §7651b(f), which provides in relevant part that the allowance trading system "shall [not] be construed as requiring a change of any kind in any State law regulating electric utility rates and charges or affecting any State law regarding such State regulation or as limiting State regulation . . . under such a State law." But section 66-k does not regulate "utility rates and charges" and it does not "affect[] any State law regarding" the regulation of "utility rates and charges." Accordingly, 42 U.S.C. §7651b(f) does not save section 66-k from preemption.
>
> In sum, section 66-k is preempted by Title IV of the Clean Air Act Amendments of 1990 because it impedes the execution of "the full purposes and objectives" of Title IV, *see Hillsborough County*, 471 U.S. at 713, and because it is not otherwise authorized by federal law. Accordingly, section 66-k violates the Supremacy Clause of the United States Constitution."

The decision in *CAMG* is a controlling precedent against any proposed restrictions on trading of Title IV/CAIR SO2 allowances for purposes of achieving progress toward visibility protection goals. New York's purposes in restricting allowance sales to certain states to help protect its ecosystems against welfare-related acid deposition are quite similar to state objectives in limiting allowance trading for visibility protection purposes.

Underestimated Emission Reductions

ACCCE believes that the emission projections that NESCAUM relied upon to derive estimates of the reductions potentially associated with its BART and "167 Stack" strategies are inaccurate, and do not properly reflect

the extent of reductions likely to occur under CAIR and other federal and state programs by 2018.

Specifically, as other comments will attest, the estimates of emission reductions at 14 BART units do not fully account for all CAIR-related reductions likely to occur at covered EGU facilities by 2018. Similarly, NESCAUM's methodology for estimating the incremental emissions reductions from its "167 Stack" strategy underestimates the degree of controls likely to result from CAIR by 2018, because many of the scrubber installations to be accomplished in this timeframe have not yet been announced, or otherwise are not reflected in the outdated VISTAS IPM 2.1.9 inventory.

Regional Fuels Proposals

NESCAUM also has estimated the potential visibility and health benefits associated with alternative low-sulfur fuels strategies for the Northeast. These controls would reduce sulfur in home heating fuels to levels of 500 ppm (S1) or 15 ppm (S2), resulting in estimated SO2 reductions of 110,000 to 140,000 tons for distillate oil units in the Northeast.[7] Costs per ton reduced are estimated in a range of $500 to $5,000. Most of these emission reductions would occur at residential and commercial oil furnaces.

Most of the PM2.5 air quality benefits resulting from these proposals appear to result from implementation of the 500 ppm standard, with little incremental benefit from the more stringent 15 ppm alternative.[8] These benefits are concentrated in the eastern portion of MANE-VU, where most of the emission reductions would occur.

ACCCE takes no position on the need for these low-sulfur fuel strategies for visibility protection purposes, but notes that they would apply to largely unregulated sources of sulfur dioxide emissions and could produce substantial emissions reductions potentially relevant for other purposes, such as meeting PM2.5 standards. We respectfully suggest that MANE-VU states

[7] Salmi and Kleiman, supra n. 1 at 14.
[8] Id., at 17-18.

give careful consideration to the relative costs and benefits of the S1 and S2 strategies.

ACCCE appreciates the opportunity to submit these comments. Please post them on an appropriate section of the MANE-VU or MARAMA website.

Sincerely,

/s/

Eugene M. Trisko

Attachment

Cc: Anna Garcia, OTC
Gary Kleiman, NESCAUM
Tad Aburn, MDE
Joyce Epps, PADEP
Chris Salmi, NJDEP
Rob Sliwinski, NYSDEC
Richard Valentinetti, VTDEC

Pamela F. Faggert
Vice President and Chief Environmental Officer

Dominion Resources Services, Inc.
5000 Dominion Boulevard, Glen Allen, Virginia 23060
Phone: 804-273-3467

Dominion®

January 9, 2007

To: Ms. Angela King (MARAMA) via electronic submission
From: Dominion

Re: Comments on MANE-VU Draft Report: *MANE-VU Modeling for Reasonable Progress Goals* (December 10, 2007)

Dear Ms. King:

We have reviewed and appreciate the opportunity to provide comment on the draft report *MANE-VU Modeling for Reasonable Progress Goals* (December 10, 2007) prepared by the Northeast States for Coordinated Air Use Management (NESCAUM). The report identifies a number of control strategies that modeling predicts would yield visibility benefits beyond those that would result from "on the books/on the way" air quality control programs. Included among these measures is the adoption of additional controls for a list of 167 "select" electric generation units (EGU) identified by MANE-VU as "most likely to affect" visibility in certain Class I areas within the MANE-VU region. Several EGU's owned and operated by Dominion are included in this list[1].

Dominion recognizes the importance of achieving acceptable levels of visual air quality in our nation's Class I areas and supports state efforts to achieve the improvement targets established by the uniform glide paths the states have set for each Class I area. These glide paths are generally accepted by EPA as demonstrating achievement of reasonable progress requirements under the EPA regional haze rule. We offer the following observations and comments concerning the NESCAUM report and MANE-VU's "blanket" call for 90% reduction in SO2 emissions from all sources identified in the "select" list of EGU's.

First, the modeling conducted by NESCAUM to predict the impact of "on-the-books" and "on-the-way" controls implemented by the MANE-VU states and states in the neighboring regional planning organizations (RPO's) projects that **all** Class I areas within the MANE-VU region will achieve significant visibility improvements **beyond** the unified glide path by 2018. This means that emission reduction measures already in progress or that will be implemented to meet CAIR and other regulatory requirements are sufficient and in fact **exceed** requirements to demonstrate reasonable progress under EPA's regional haze regulation. We further note that while the MANE-VU analysis accounts for and captures projected visibility improvements from source-specific BART requirements in the Northeast region, it does not include the potential impact of BART-

[1] Specifically, Mt. Storm Units 1-3, Chesterfield Units 4-6, Chesapeake Energy Center Units 3&4, Yorktown Units 1-3, Brayton Point Units 1-3 and Salem Harbor Units 1-3.

specific reductions in the neighboring RPO's that could provide some additional level of visibility improvement in MANE-VU Class I areas.

Second, we question whether MANE-VU is justified in determining from a broad-based perspective that a 90% SO2 reduction for **all** EGU's identified as affecting visibility in the MANE-VU region is reasonable under the reasonable progress provisions of the regional haze rules. The 1999 regional haze rule requires the states to consider the four statutory reasonable progress factors - the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of **any** potentially affected sources. While EPA's final guidance on setting reasonable progress goals appears to provide states with some discretion in terms of evaluating the cost of compliance for individual sources or source categories, we believe each individual source should be allowed to evaluate each of the criteria of the four factor analysis. Furthermore, sources already subject to BART are in the process of completing the required BART analysis, which encompasses an assessment of the same factors that must be addressed in establishing reasonable progress. Thus, any source that has already been subject to a BART determination assessment should be exempt from any further requirements. EPA implies this conclusion in its final guidance, observing that it is not necessary for states to reassess the reasonable progress factors for sources subject to BART for which the states have already completed a BART analysis (EPA *Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program*, June 1, 2007, page 5-1).

Third, we wish to point out that Dominion is already implementing an aggressive emission reduction control program across its fossil generation fleets in the mid-Atlantic, New England and Midwest regions. This program includes the very sources identified in the MANE-VU list of 167 "select" EGU's. All three coal-fired units at Dominion's Mt. Storm Power Station in West Virginia are controlled with FGD systems that are achieving well over 90% SO2 removal efficiency. All four units at the Chesterfield facility in central Virginia will be scrubbed by 2011, with the first FGD system scheduled for operation this year. Reductions are also planned for the Chesapeake Energy Center and Yorktown Power Station coal-fired units by 2015. In the New England region, the Brayton Point Power Station has plans to implement comprehensive emission controls to comply with stringent state SO2 regulations. Dominion is also engaged in BART determination analyses with our various states for several of the sources/units identified by MANE-VU.

Finally, MANE-VU attempts to justify its call for 90% SO2 reductions from each of the EGU's identified in its select list on the basis of projected health benefits to address the new PM2.5 daily standard and yet-to-be determined new 8-hour ozone standards in a draft companion report entitled *Public Health Benefits of Reducing Ground-level Ozone and Particle Matter in the Northeast U.S.* (November 14, 2007). While we recognize states will need to address the new PM NAAQS and new levels of the ozone standard (once determined), it is premature at this point to assume that a particular level of emission reduction from a select list of sources across a broad-based region is an appropriate strategy to address these issues. The states are currently in the process of

finalizing implementation plans to address the 1997 PM NAAQS and the current 8-hour ozone standard. EPA and the states have not established attainment designations under the revised PM2.5 standards and are not required to submit plans to address the new PM2.5 standard until 2013. With respect to a new 8-hour standard, EPA has not finalized the level of the new standard, and final attainment designations and state implementation plans are still years away. Consequently, states should be provided the time needed to assess the impacts of strategies and programs already in place to address the current standards, and to evaluate and determine the appropriate mix of control strategies that will be needed to address the new standards.

For these reasons, we do not believe that the implementation of a "blanket" control strategy across a select list of sources that are either already taking measures to reduce emissions under CAIR or already undertaking BART analyses is needed to demonstrate reasonable progress. As the MANE-VU modeling analysis clearly shows, existing and planned programs already "on-the-books" and "on-the-way" will achieve progress beyond the requirements identified in the uniform glide paths the states have already set for Class I areas.

Thank you once again for the opportunity to provide comments on this draft report. If you have any questions, please call Lenny Dupuis @ 804-273-3022 or Leonard.dupuis@dom.com.

Sincerely,

Pamela F. Faggert

Pamela F. Faggert

JACKSONKELLY
ATTORNEYS AT LAW PLLC
1600 LAIDLEY TOWER • P.O. BOX 553 • CHARLESTON, WEST VIRGINIA 25322 • TELEPHONE: 304-340-1000 • TELECOPIER: 304-340-1130
www.jacksonkelly.com

skropp@jacksonkelly.com

304/340-1199

January 9, 2007

Ms. Angela King
Environmental Planner
MARAMA
8600 LaSalle Road
Suite 636
Towson, MD 21286.

Re: Draft Reports "MANE-VU Modeling for Reasonable Progress Goals" and "Public Health Benefits of Reducing Ground-level Ozone and Fine Particle Matter in the Northeast U.S."

Dear Ms. King:

The Midwest Ozone Group (MOG) has reviewed the two draft reports, titled **"MANE-VU Modeling for Reasonable Progress Goals" and "Public Health Benefits of Reducing Ground-level Ozone and Fine Particle Matter in the Northeast U.S."** As you noted in your notice of opportunity for comment, both reports were prepared by NESCAUM on behalf of MANE-VU, with the reasonable progress report being dated December 10, 2007, and the public health benefits report being dated November 14, 2007. The draft reports are generally well written and informative; however MOG offers the following comments regarding each report:

MANE-VU Modeling for Reasonable Progress Goals

MOG notes that the modeling conducted by NESCAUM to predict the results of controls implemented by the MANE-VU states and states in neighboring RPOs projects that all Class I Areas in MANE-VU will experience visibility by 2018 that is well below the uniform glide slope generally accepted by EPA as demonstrating achievement of reasonable progress requirements under the EPA Regional Haze Rule (64 Fed. Reg. 35714, July 1, 1999). MOG congratulates MANE-VU on this achievement.

The foregoing achievement notwithstanding, the executive summary of the NESCAUM report states at page viii:

> "[a]n assessment of potential control measures that would address this future contribution has identified a number of promising

> strategies that would yield significant visibility benefits beyond the uniform rate of progress and, in fact, significantly beyond the projected visibility conditions that would result from "on the books/on the way" air quality protection programs. These "beyond on the way" measures include the adoption of low sulfur heating oil, implementation of Best Available Retrofit Technology (BART) requirements, and additional electric generating unit (EGU) controls on select sources. The combined benefits of adopting all of these programs could lead to an additional benefit of between 0.38 and 1.1 deciviews at MANE-VU Class I areas on the 20 percent worst visibility days by 2018."

MOG submits that requiring the implementation of control strategies that result in visibility improvement beyond the improvement necessary to meet the uniform glide slope is neither necessary under the Regional Haze Rule nor an efficient use of resources. MOG therefore urges MANE-VU to accept the benefits of on the books control strategies, many of which not yet fully implemented and that result in attainment of reasonable progress as defined by EPA, rather than continue to press for implementation of additional control strategies that are simply unnecessary to comply with the Regional Haze Rule and, more importantly, strain an already unstable national economy.

Public Health Benefits of Reducing Ground-level Ozone and Fine Particle Matter in the Northeast U.S

The executive summary of this NESCAUM report states at page ix:

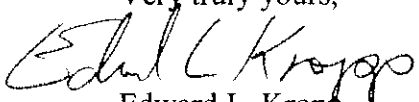
> The analysis showed that there are significant monetized health benefits in going beyond a revised ozone national ambient air quality standard (NAAQS) of 0.075 ppm, which is the upper end of EPA's range for its proposed ozone NAAQS revision (0.070 ppm – 0.075 ppm). Rolling back to a NAAQS of 0.075 ppm after CAIR+ gave an estimate of 27 to 142 avoided premature deaths over the 2018 ozone season in the OTR. When added to the benefits from avoided morbidity endpoints, we estimated monetary benefits of 192 to 918 million dollars over the 2018 ozone season. By contrast, adopting an ozone NAAQS of 0.070 ppm (i.e., the upper limit of the range recommended by the Clean Air Scientific Advisory Committee (CASAC)) increases the mortality benefits with an estimated 43 to 220 avoided premature deaths in the OTR over the 2018 ozone season. When added to the benefits from avoided morbidity endpoints, we estimate an additional monetary benefit of 107 to 498 million dollars beyond a 0.075 ppm standard (total benefit of 300 million to 1.4 billion dollars after CAIR+). Finally, adopting an ozone NAAQS at the lower end of the CASAC recommended range, 0.060 ppm, results in an increased estimate of 84 to 407 avoided premature deaths in the OTR over

the 2018 ozone season. Compared to the 0.075 ppm scenario, the modeling indicates that a NAAQS set at 0.060 ppm could net almost twice the monetary benefits by providing 394 million dollars to 1.7 billion dollars beyond a 75 ppb standard (total benefit of 530 million to 2.6 billion dollars after CAIR+)

MOG believes that the metrics used by NESCAUM in this study to monetize the health benefits of the ozone NAAQS are outdated and are not representative of the actual economics associated with a revision of the ozone NAAQS. A recent study in the European Union has concluded that excess mortality is simply not an accurate metric based on mortality data in the EU, whereas loss of life expectancy (i.e., reduced life span) is an appropriate metric. See "Interpretation of Air Pollution Mortality: Number of Deaths or Years of Life Lost?," Ari Rabl, Centre d'Energe' tique, Ecole des Mines de Paris, France, *J. Air & Waste Manage. Assoc.*, 53:41–50, January, 2003. This technical paper examines indicators for the mortality impacts of air pollution, showing that the frequently cited number of deaths is not appropriate, whereas reduced life expectancy is. Specific numbers are calculated, suggesting that a life expectancy gain of approximately four months might be a reasonable goal for the reduction of air pollution in the EU and the United States in the foreseeable future. Notably, the economics associated with loss of life expectancy calculations result in far lower monetary values that might be associated with any reduction in the ozone NAAQS. MOG believes that this research is more indicative of reality and submits that the NESCAUM work using the EPA BenMAP tool presents an unrealistic estimate of the benefits of a reduction in the ozone NAAQS.

MOG appreciates the opportunity to comment on this draft report. If you have any questions or need clarification regarding any of the comments we are providing, please contact me at your convenience.

Very truly yours,



Edward L. Kropp
Midwest ozone Group

HUNTON& WILLIAMS

HUNTON & WILLIAMS LLP
1900 K STREET, N.W.
WASHINGTON, D.C. 20006-1109

TEL 202 • 955 • 1500
FAX 202 • 778 • 2201

ANDREA BEAR FIELD
DIRECT DIAL: 202-955-1558
EMAIL: afield@hunton.com

FILE NO: 31531.010001

January 9, 2008

VIA FIRST CLASS MAIL AND EMAIL

Ms. Angela King
Environmental Planner
MARAMA
8600 LaSalle Road
Suite 636
Towson, MD 21286

Comments on MANE-VU Draft Reports: 2018 Modeling Draft Report and BenMAP Draft Report

Dear Ms. King:

These comments are submitted on behalf of the Utility Air Regulatory Group ("UARG")[1] in response to a December 12, 2007 invitation from the Mid-Atlantic/Northeast Visibility Union ("MANE-VU"), asking stakeholders to comment on two reports: "MANE-VU Modeling for Reasonable Progress Goals" (dated December 10, 2007, and hereinafter referred to as the "Draft RPG Modeling Report") and "Public Health Benefits of Reducing Ground-level Ozone and Fine Particle Matter in the Northeast U.S.: A Benefits Mapping and Analysis Program (BenMAP) Study" (dated November 14, 2007, and hereinafter the "Draft BenMAP Report"). These two reports purport to evaluate how best to "satisfy[] a number of compliance goals under the Haze State Implementation Plan" (Draft RPG Modeling Report at viii); and how to quantify the "public health and monetary benefits" of both the Regional Haze Rule and other Clean Air Act-related regulatory programs (*see* Draft BenMAP Report at viii).

MANE-VU certainly is entitled to evaluate how best to meet the requirements of the Clean Air Act's Regional Haze Rule and to conduct whatever regulatory program cost/benefit

[1] UARG is an unincorporated association of individual electric utility companies and trade associations. UARG participates in federal and precedential state proceedings arising under the federal Clean Air Act and having an impact on UARG members. In particular, UARG has participated in the planning processes of Regional Planning Organizations ("RPOs") as they guide states in the preparation of regional haze plans to be submitted to EPA.

assessments it wishes to do. We are concerned, though, with statements in the reports that mis-characterize applicable regulatory requirements and that appear -- very late in the regional haze state implementation plan ("SIP") development process -- to be asking non-MANE-VU entities to implement more measures than they are currently required to implement just because MANE-VU claims it would be "reasonable" to do so.

A quick overview of the applicable legal requirements can put UARG's concerns into context. Under Clean Air Act sections 169A and 169B and implementing regulations, in order to prevent future, and remedy existing, impairment of visibility in mandatory class I federal areas which impairment results from manmade air pollution, states have been required to develop and to submit by December 17, 2007, "SIPs" that address measures to make "reasonable progress" toward that visibility improvement goal. In particular, as explained in greater detail in EPA's June 1, 2007 "Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program," (hereinafter "June 2007 Guidance") states "must establish [reasonable progress goals ("RPGs")], measured in deciviews (dv), for each Class I area for the purpose of improving visibility on the haziest days and ensuring no degradation in visibility on the clearest days over the period of each implementation plan." June 2007 Guidance at 1-2.

The regional haze program's overall visibility protection goal is intended to be achieved by 2064, with incremental progress being made in each of several planning periods along the way (*e.g.*, the first planning period runs from 2004 until 2018). EPA's regional haze rule also establishes an analytical requirement for states in the process of establishing RPGs for each planning period. "This analytical requirement requires States to determine the rate of improvement in visibility needed to reach natural conditions by 2064, and to set each RPG taking this 'glidepath' into account." *Id.* at 1-3. Although the June 2007 Guidance then sets out a process for determining the glidepath, or uniform rate of progress ("URP"), to be achieved in the first planning period, that Guidance plainly states that the glidepath "is not a presumptive target, and States may establish a RPG that provides for greater, lesser, or equivalent visibility improvement as that described by the glidepath." *Id.* The description of the RPG-setting process in the June 2007 Guidance is consistent with EPA's regional haze rules. See 40 C.F.R. § 51.308(d)(1), (2); 64 *Fed. Reg.* 35730-34 (July 1, 1999).

The June 2007 Guidance also recognizes that for some sources that are determined to be subject to best available retrofit technology ("BART") requirements, states "will already have completed a BART analysis. Since the BART analysis is based, in part, on an assessment of many of the same factors that must be addressed in establishing the RPG, it is reasonable to conclude that any control requirements imposed in the BART determination also satisfy the

RPG-related requirements for source review in the first RPG planning period. Hence, [a state] may conclude that no additional emissions controls are necessary for those sources in the first planning period." *Id.* at 4-2 to 4-3.

EPA's Guidance also notes that although the "[d]evelopment of the RPG for each Class I area should be a collaborative process among State, local, and Tribal authorities, [RPOs], and FLMs," (*id.* at 2-1), "States may not always agree on what measures would be reasonable or on the appropriateness of a RPG." *Id.* at 2-4. Thus, although EPA encourages states to work together to try to resolve any issues, EPA makes it clear that an individual state is to have "wide latitude" in determining any control requirements it believes need to be applied to sources in that state to meet the applicable RPGs. *Id.* at 4-2.

VISTAS, CENRAP and MRPO have been working for years to develop comprehensive emission inventories and modeling platforms for evaluating combinations of emission reduction scenarios that might achieve the regulatory visibility improvement goals. After considerable effort and at great cost, these RPOs determined in the summer and early fall of 2007 that the programs that are currently on the books -- and are in the midst of being implemented -- will in virtually all cases result in sufficient emission reductions to achieve the required visibility protection goals for the first planning period. In particular, VISTAS oversaw the development of a prototype modeling/emissions reduction analysis platform and made that platform available to each of its states early last summer. Individual states in VISTAS have in fact used that platform to develop their own regional haze SIPs. Although most of the VISTAS states were unable to meet the December 17, 2007 SIP submittal deadline, each has been able to make substantial progress towards finalizing comprehensive SIPs that are likely to be submitted to EPA for review in the first quarter of 2008. The CENRAP and Midwest RPO states have made similar progress in SIP development.

In the wake of such comprehensive efforts to develop compliant regional haze SIPs, on December 12, 2007 -- just five days before the official deadline for states to submit regional haze SIPs to EPA -- MANE-VU made available and asked for comment on its two recent draft reports addressing, among other things, potential control measures that MANE-VU would like non-MANE-VU states to adopt in the first planning period. Although acknowledging that measures now on the books and to be implemented by 2018 will be sufficient in the first planning period to achieve levels of visibility improvement well beyond the URP in all MANE-VU Class I areas, MANE-VU nonetheless asks that states in VISTAS, CENRAP and MRPO consider imposing on certain sources control measures that are more stringent than those included in these other states' regional haze SIPs as currently drafted.

For the reasons set out above, it is not necessary or appropriate for MANE-VU to ask other states to change course now to include additional control measures in their regional haze SIPs. Existing measures and other measures included in the state plans that have been drafted or proposed for comment are adequate (and, in many cases, more than adequate) to achieve visibility improvements approaching or going beyond the URP for their own and other states' Class I areas. In these circumstances, neither the Clean Air Act nor EPA's rules and guidance would require states to include additional control measures in their regional haze SIPs. The fact that MANE-VU claims that additional "measures are reasonable to implement" (Draft RPG Modeling Report at 6-1) does not change anything: no EPA rules or guidance requires other RPOs at this late date to revise their draft or final regional haze plans to address or incorporate the wish-list of additional control measures included in the draft MANE-VU reports.

Once the MANE-VU states have completed and submitted their own regional haze SIPs,[2] they can certainly continue their consultations with states in the other RPOs. All such discussions, however, should take into account the numerous other initiatives now being undertaken by EPA that will involve determinations regarding possible additional emission controls to achieve other Clean Air Act requirements.

UARG appreciates this opportunity to comment on the draft MANE-VU reports and looks forward to participating as appropriate in other proceedings by RPOs to address implementation of the Clean Air Act's visibility improvement requirements.

Very truly yours,

Andrea Bear Field

cc: John E. Hornback
Jeffrey Peltola
Michael Koerber

[2] It is our understanding that none of the MANE-VU states submitted its regional haze SIP to EPA by the December 17, 2007 deadline.

121 Champion Way
Canonsburg, PA 15317

jshimshock@reliant.com
Writer's Direct Dial Number
724-597-8405

January 9, 2008

Email and Overnight Delivery
Ms. Angela King
Environmental Planner
Mid-Atlantic Regional Air Management Association, Inc.
8600 LaSalle Road, Suite 636
Towson, Maryland 21286

Re: Comments on draft MANE-VU report entitled "MANE-VU Modeling for Reasonable Progress Goals"

Dear Ms. King:

Reliant Energy, Inc. and our contractor ENSR Corporation appreciate the opportunity to comment on the draft MANE-VU report entitled "MANE-VU Modeling for Reasonable Progress Goals – Model Performance Evaluation, Pollution Apportionment and Control Measure Benefits" as prepared by Northeast States Coordinated Air Use Management (NESCAUM). Reliant Energy owns and/or operates many power plants in the United States including 18 in the Commonwealth of Pennsylvania and four in the State of New Jersey, and we are dedicated to operating all of our plants in compliance with all applicable environmental regulations and permits. We take seriously our responsibility for environment stewardship and exercise care for the communities that we are members of and serve. Details of Reliant Energy's comments to the aforementioned report are provided in the attached document – our comments can be summarized as follows:

1. Further emission reductions beyond "on-the-book / on-the-way" (OTB/OTW) regulations are unnecessary for achieving the 2018 Regional Haze Rule (RHR) milestones. Before any further emission reductions are mandated, Reliant Energy recommends that U.S. EPA plan a comprehensive assessment of the effects on measured visibility of the first RHR implementation period and a reassessment of model performance at that time.

2. A critical input to the models is the air emissions inventory. There are significant differences in the base year 2002 inventory as prepared by the various stakeholders. There also appears to be implausible estimates of sulfur dioxide (SO_2), nitrogen oxides (NOx) and fine particulate matter (primary $PM_{2.5}$) emissions in the future year's inventories. Reliant Energy welcomes the opportunity to work with MANE-VU and NESCAUM to develop a mutually-agreeable 2002 emissions inventory for our facilities, especially those located in New Jersey, Ohio and Pennsylvania, and to thoroughly

investigate and critically review the assumptions used to develop the future year's inventories. With regards to the future year's inventories, Reliant Energy understands that these do not incorporate recent New Source Review settlements that have specified the installation of control equipment and the permanent retirement of allowances which would be made available through the operation of this emissions control equipment.

3. The results from various future year model runs are presented in the draft report. In several instances, the conclusions deduced by NESCAUM do not appear to be supported by model runs.

I wish to thank-you again for your assistance in locating supporting documents to the subject report. Reliant Energy appreciates your attention to these comments as an important stakeholder in the regulatory process. If you have any questions or comments regarding this submittal, please contact me via telephone or email as listed above.

Very truly yours,

John P. Shimshock

John P. Shimshock
Sr. Air Environmental Specialist

Attachments

Cc: Mr. Robert Paine, ENSR Corporation

Comments on "MANE-VU Modeling for Reasonable Progress Goals – Model Performance Evaluation, Pollution Apportionment, and Control Measure Benefits"

Submitted by Reliant Energy, Inc. and ENSR Corporation

January 9, 2008

Reliant Energy and our contractor ENSR Corporation appreciate this opportunity to comment on a draft MANE-VU report entitled "MANE-VU Modeling for Reasonable Progress Goals" that is dated December 10, 2007 and available at http://filesharing.nescaum.org/download.php?file=31Modeling%20for%20Reasonable%20Progress%2012.10.07.doc. The Northeast States Coordinated Air Use Management (NESCAUM) has prepared the aforementioned draft report for the Mid-Atlantic / Northeast Visibility Union (MANE-VU) Regional Planning Organization (RPO) to assist states in developing strategies to address regional visibility and fine particle ($PM_{2.5}$) issues. Air quality simulations for calendar years 2002 (base year) and several future years (including 2009 and 2018, a Regional Haze Rule [RHR] milestone year) have been performed using the following widely used regional models:

- Community Multi-Scale Air Quality (CMAQ) modeling system
- Regional Modeling System for Aerosols and Deposition (REMSAD)

Reliant Energy's comments can be summarized as follows:

1. Further emission reductions beyond "on-the-book / on-the-way" (OTB/OTW) regulations are unnecessary for achieving the 2018 RHR milestones. Before any further emission reductions are mandated, Reliant Energy recommends that EPA plan a comprehensive assessment of the effects on measured visibility of the first RHR implementation period and a reassessment of model performance at that time.

2. A critical input to the models is the air emissions inventory. There are significant differences in the base year 2002 inventory as prepared by the various stakeholders. There also appears to be implausible estimates of sulfur dioxide (SO_2), nitrogen oxides (NOx) and fine particulate matter (primary $PM_{2.5}$) emissions in the future year's inventories. Reliant Energy welcomes the opportunity to work with MANE-VU and NESCAUM to develop a mutually-agreeable 2002 emissions inventory for our facilities, especially those located in New Jersey, Ohio and Pennsylvania, and to thoroughly investigate and critically review the assumptions used to develop the future year's inventories. With regards to the

future year's inventories, Reliant Energy understands that these do not incorporate recent New Source Review settlements that have specified the installation of control equipment and the permanent retirement of allowances which would be made available through the operation of this emissions control equipment.

3. The results from various future year model runs are presented in the draft report. In several instances, the conclusions deduced by NESCAUM do not appear to be supported by model runs.

4. A general format comments is that the report's pagination is not consistent and some figures are out of place or repeated in Section 2.

Details of Reliant Energy's comments are organized by section and presented below.

Comments on Section 1

Section 1 of the draft MANE-VU report describes the model pre-processing steps involving 2002 meteorological data, emissions preparation, and the modeling platforms. Section 1.3 describes emission scenarios that were modeled. A critical input to the regional models is the emissions inventory. A 2002 base year inventory was developed to assess model performance and to serve as a point of comparison for future year projections in terms of emissions reductions and air quality improvement. For emission sources located within MANE-VU region, the 2002 inventory was prepared by MANE-VU, which relied primarily on U.S. EPA's National Emissions Inventory (NEI). Future year emission inventories for all U.S. states were developed using EPA's Integrated Planning Model (IPM). Projected emission inventories for 2009 and 2018 incorporated "on the books / on the way" (OTB/OTW) emission control regulations. Other projected emission inventories for 2018 were also developed using additional emission control regulations ("beyond on the way" or BOTW) – the BOTW regulations includes the following scenarios:

- Reduced fuel oil sulfur content – maximum 500 ppmw for S-1 fuel oil strategy and maximum 15 ppmw for S-2 fuel oil strategy
- Best Available Retrofit Technology (BART) for 14 BART-eligible facilities located in the MANE-VU region
- "167 EGU Strategy" – 90 percent SO_2 control on 167 electric generating units (EGUs) located throughout the U.S

Comment #1 on Section 1 : There are significant differences in the 2002 emissions inventories as prepared by industrial facilities, local regulatory agencies, U.S. EPA and MANE-VU.

Industrial facilities submitted their 2002 emissions inventories to their pertinent regulatory agencies in early 2003. The agencies reviewed and often modified the emission estimates per their internal procedures. The agencies then forwarded the inventories to U.S. EPA, who reviewed and often modified the emission estimates per their internal procedures for ultimate compilation in the National Emissions Inventory (NEI). It is important to note the NEI included estimates of condensable PM emissions (a component of primary $PM_{2.5}$), which were not usually required to be

reported by the agencies. Lastly, MANE-VU reviewed and possibly revised the emission estimates reported in the NEI for compilation in their emissions inventory. As such, it is possible that four similar, but different, inventories were generated for the same industrial facility. It is expected that there are significant differences in condensable PM emissions as estimated by the various stakeholders. Reliant Energy welcomes the opportunity to work with MANE-VU and NESCAUM to develop a mutually-agreeable 2002 emissions inventory for our facilities, especially those located in New Jersey, Ohio and Pennsylvania.

Comment #2 on Section 1: A critical review of the 2009 and 2018 projected emissions inventories needs to be performed.

Reliant Energy understands that the projected emissions for calendar years 2009 and 2018 were derived from U.S. EPA's Integrated Planning Model (IPM). Although time constraints prevented Reliant Energy from completing a thorough review of the IPM runs, we understand that the IPM runs were conducted in accordance with the 2002 emissions inventory (which likely overestimates $PM_{2.5}$ emissions from EGUs) and the following model assumptions (reference the telephone conversation between Ms. Julie McDill of MARAMA and Mr. John Shimshock of Reliant Energy on 12-07-2007):

- Activation of new electrical generation from small sources not included in the 2002 inventory – many of these sources were assumed to be fired using renewal fuels (e.g., landfill gases, waste to energy plants
- Fuel switching from natural gas to coal for existing EGUs
- Electrical generation load switching from the Midwest to the East

A comparison of the MANE-VU 2002 inventories with the 2009 and 2018 (OTB/OTW) inventories for SO_2, NOx and primary $PM_{2.5}$ (defined as the sum of filterable $PM_{2.5}$ and condensable PM fractions) for EGUs located in New Jersey, Ohio and Pennsylvania is presented below (copies of the pertinent summaries are provided separately).

Table 1 List of EGU Emission Inventories for 2002, 2009 and 2018

New Jersey EGUs

Year	SO_2 (tons)	SO_2 % change from prior model year	NOx (tons)	NOx % change from prior model year	Primary $PM_{2.5}$ (tons)	Primary $PM_{2.5}$ % change from prior model year
2002	51,137		29,416		1286	
2009	27,509	- 46 %	12,066	- 59 %	3259	+ 153 %
2018	32,495	+ 18 %	13,636	+ 13 %	3515	+ 8 %

Ohio EGUs

Year	SO_2 (tons)	SO_2 % change from prior model year	NOx (tons)	NOx % change from prior model year	Primary $PM_{2.5}$ (tons)	Primary $PM_{2.5}$ % change from prior model year
2002	Not prepared by MANE-VU					
2009	475,671		109,254		47,712	
2018	215,501	- 55 %	83,129	- 24 %	33,323	- 30 %

Pennsylvania EGUs

Year	SO_2 (tons)	SO_2 % change from prior model year	NOx (tons)	NOx % change from prior model year	Primary $PM_{2.5}$ (tons)	Primary $PM_{2.5}$ % change from prior model year
2002	904,609		207,388		7156	
2009	242,071	- 73 %	102,313	- 51 %	32,883	+ 360 %
2018	135,946	- 44 %	82,881	- 19 %	23,756	- 28 %

Reliant Energy asserts that a 153% and a 360% percent increase in $PM_{2.5}$ emissions in 2009 from NJ and PA EGUs, respectively, is absolutely implausible considering that emissions of SO_2 and NOx are predicted to decrease by at least 46 percent. The installation of emission control devices required to achieve the predicted SO_2 and NOx reductions would also lead to co-beneficial $PM_{2.5}$ emission reductions. Consequently, primary $PM_{2.5}$ emissions should show a decrease as do $PM_{2.5}$

precursors. Importantly, the projected $PM_{2.5}$ emission increases, as predicted by the IPM, would have certainly triggered prevention of significant deterioration (PSD) or new source review (NSR) requirements for existing major sources that elected to conduct changes in their methods of operation and for new sources. Additionally, new or modified major sources located in non-attainment areas would be required to obtain emission offsets from that area at a ratio greater than one to one which would cause an overall decrease in emissions. This is especially true for sources located in the Ozone Transport Commission (OTC) region – note that the IPM inexplicably predicts a 13 percent increase in NOx emissions from 2009 to 2018 from EGUs located in New Jersey. Reliant Energy is not aware of any sources or groups of existing sources that would cause an increase in the emissions of the magnitude represented. New sources subject to NSR permitting could not conceivably result in the projected emissions increase. Reliant Energy welcomes the opportunity to work with MANE-VU and NESCAUM to thoroughly investigate and critically review the assumptions used to develop the future year's inventories.

Comments on Section 2

Section 2 of the draft MANE-VU report discusses performance evaluation findings.

Comment #1 on Section 2: Poor modeled meteorological performance during the summer period has significant implications for conclusions regarding source attribution for regional haze impacts.

The meteorological evaluation indicates that the MM5 performance is poorest during summer conditions (June-August), which is a period that corresponds to many of the worst-case regional haze days (as noted from a review of the IMPROVE data from the web site at http://vista.cira.colostate.edu/views/). Therefore, attribution of targeted emission sources that may contribute to the worst 20% days (many of which occur in summer; for example, see Figure 1) is uncertain due to the poor modeled meteorological performance (particularly with regards to the trajectory analysis). It should also be noted that the modeled meteorological performance was poorest for the southern U.S. and interior portions of the U.S. East Coast (NESCAUM states) as compared with other areas included in the model domain. This may have consequences for the accuracy of the efficacy of the BOTW regulations that are advocated by the NESCAUM report.

Figure 1 Composition Plot of Regional Haze at Lye Brook Wilderness Area, 2005

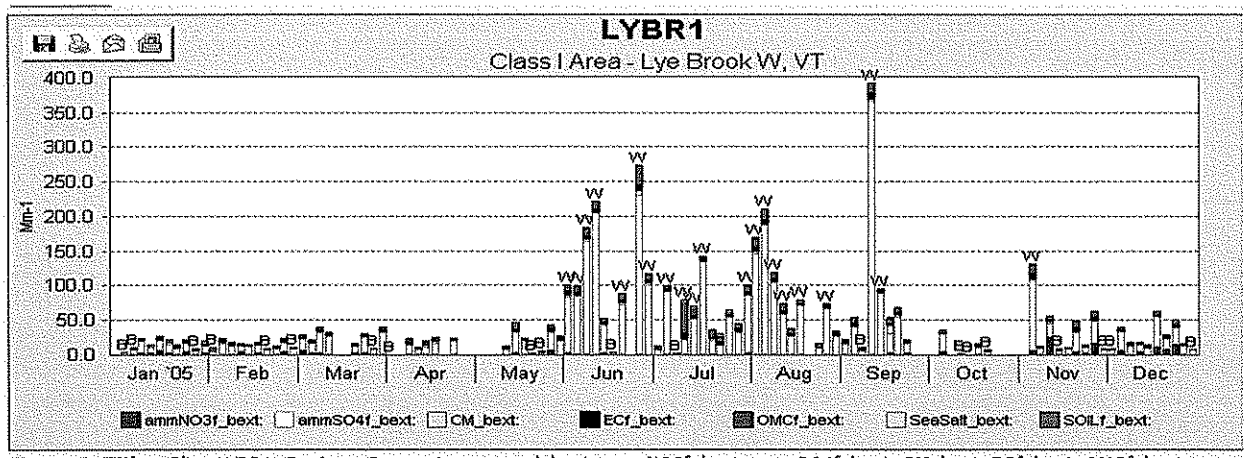


Figure 1. Title - Site: LYBR1. **Series** - Parameter: aerosol_bext, ammNO3f_bext, ammSO4f_bext, CM_bext, ECf_bext, OMCf_bext, SeaSalt_bext, SOILf_bext. **Metadata** - Program: IRHR2, Method: RHR Dataset, Poc: 1, Aggregation: Not aggregated

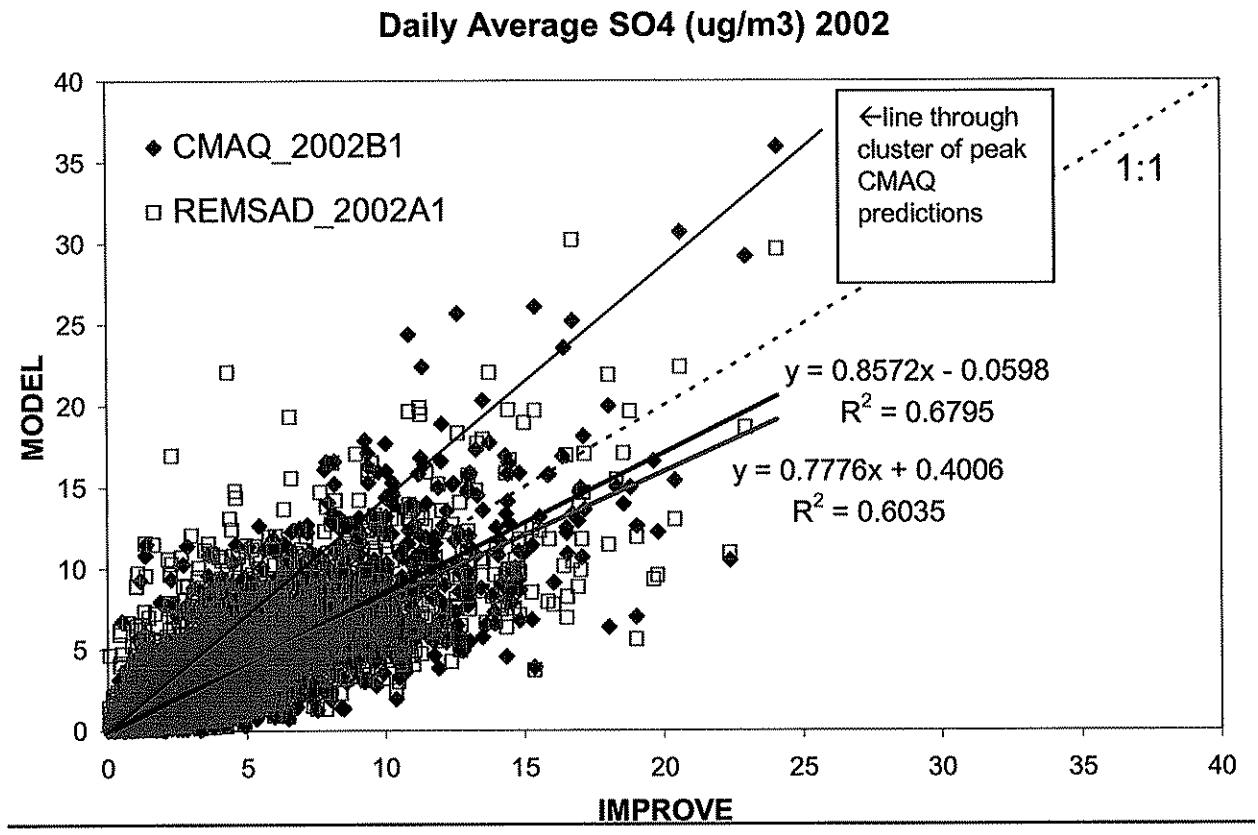
Comment #2 on Section 2: There are several areas of less than acceptable wind speed and direction correlation between modeling and measurements, especially during summer months.

Page 2-24 of the document describes quarterly correlation coefficients in the range of 0.5-0.7 as being "acceptable." Correlation coefficients below 0.5 are not described, but can be presumed to be "less than acceptable". A review of Figures 2-3 and 2-4 shows several areas of grey squares associated with these poor performances. As noted above, poor modeled meteorological performance yields uncertainty with regards to the trajectory analysis and attribution of targeted emission sources that may contribute to the worst 20% days. Reliant Energy requests NESCAUM to address the confidence of the transport of emissions through these areas, especially with regards to emissions from the EGUs included in the "167 EGU Strategy" list.

Comment #3 on Section 2: The regression lines and slopes attributed to the model performance plots do not match the peak prediction areas in some cases.

Some of the figures presented in the report (components of Figure 2-11 and Figure 2-16) have best fit lines drawn in the figures that do not appear to match the line one would eyeball that would pass through the peak values. Since the peak values are most important in determining the trend of the worst 20% regional haze days, it makes sense to reconsider the best-fit lines for this purpose. For example, Figure 2 shows the sulfate particulate predictions vs. observations from the report's Figure 2-11. The blue best fit line far from the area of peak predictions, which are better matched by an alternative line added to Figure 2.

Figure 2 $PM_{2.5}$ Sulfate Performance Plot from Draft MANE-VU Report



Similar eyeballed best-fit lines through the peak CMAQ predictions are added to Figures 3 and 4. These alternative slopes lead to conclusions that the CMAQ model's peak predictions are too high (i.e., the model is over-responding, especially on the worst 20% regional haze days), and can result in a conclusion that certain emission components have an exaggerated effect on visibility.

Figure 3 $PM_{2.5}$ Elemental Carbon Performance Plot from Draft MANE-VU Report

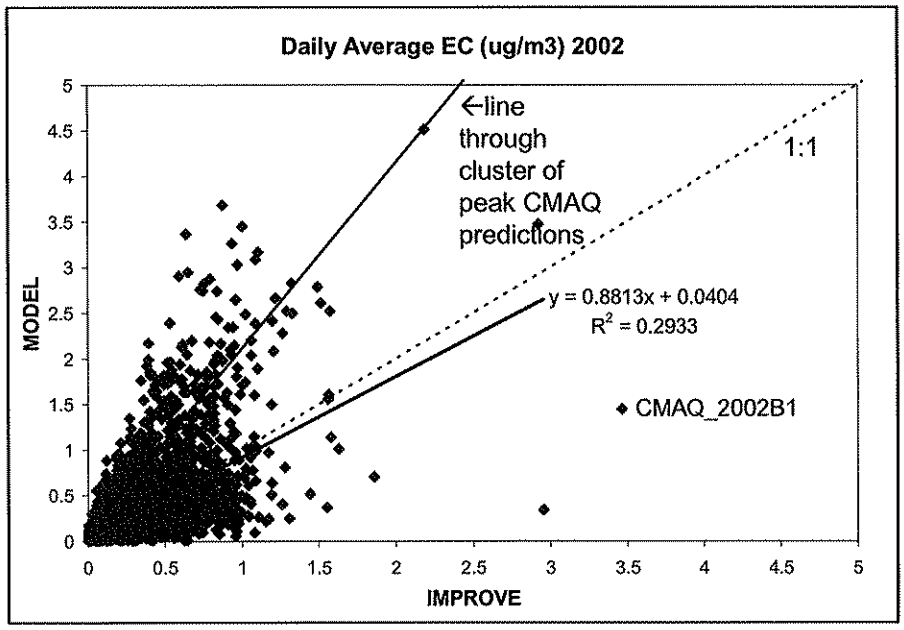
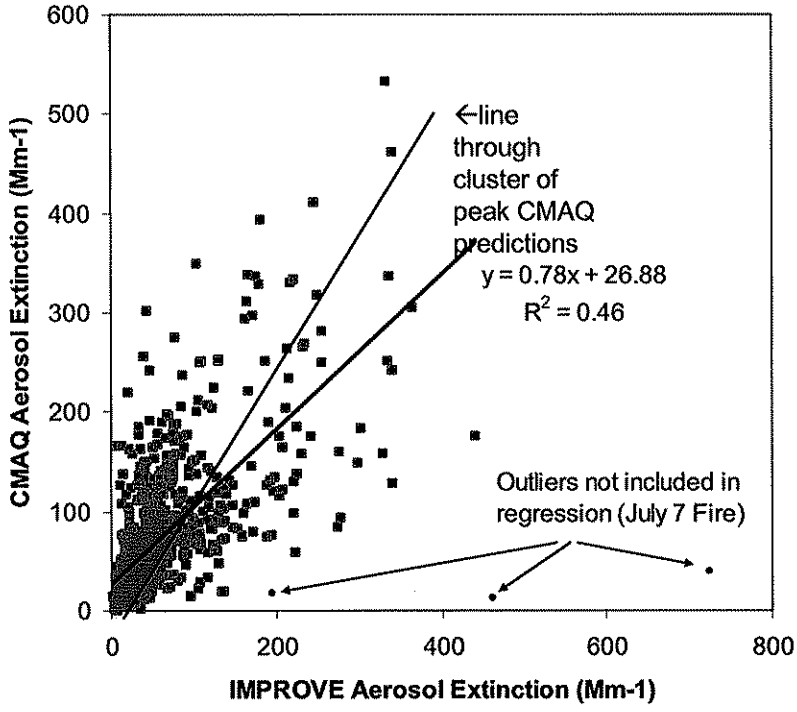


Figure 4 Paired Comparison of Extinction Coefficient Plot from Draft MANE-VU Report



Comments on Section 3

The report shows projected improvement in visibility for the BOTW-1 emission scenario at several Northeastern and Mid-Atlantic sites in Figures 3-1 and 3-2 of the report. The report also shows the projected improvement in visibility for the OTB/OTW scenario in Figures 5-6 through 5-13, and these figures indicate that the visibility improvement by the year 2018 is in excess of the uniform rate of progress "glidepath."

Comment #1 on Section 3: Further emission reductions beyond OTB/OTW are unnecessary for achieving the 2018 RHR milestones. Before any further emission reductions are mandated, a review of the actual visibility improvements attained and the performance of the prediction models needs to be conducted based upon the OTB/OTW emission reductions.

The visibility improvement by 2018 represents the results of substantial SO_2 and NOx (and co-beneficial $PM_{2.5}$) emission control strategies targeted toward EGUs. As noted previously, reductions in $PM_{2.5}$ precursor emissions should also result in a decrease in primary $PM_{2.5}$ emissions. U.S. EPA and other regional analyses have shown that control strategies targeted to reduce SO_2 and NO_x emissions are most effective at reducing $PM_{2.5}$. These OTB/OTW emission control strategies include the following:

- Clean Air Interstate Rule (CAIR)
  - CAIR Phase I NOx reductions in 2009 with both ozone season and non-ozone season budgets
  - CAIR Phase I SO_2 reductions from 2002 budget by 50% in 2010 through 2:1 allowance surrender ratio
  - CAIR Phase II NOx reduced in 2015
  - CAIR Phase II SO_2 reduced from 2002 budget by 65% in 2015 through 2.86:1 allowance surrender ratio
- NOx SIP Call – Effective in 2003, built upon the progress achieved by OTC
- Clean Air Mercury Rule (CAMR) and the more stringent state specific Mercury (Hg) Rules – Phase I Hg reductions begin in 2010, Phase II Hg reductions begin in 2015
- NSR settlements and state programs – The various NSR settlements have specified the installation of control equipment and the permanent retirement of allowances which would be made available through the operation of this emissions control equipment. Additionally, there are state programs, such as North Carolina's "Clean Smokestacks" program that require the surrender of allowances made available due to the installation of control equipment which are part of a rate base.

Due to the large model uncertainties and biases shown in Section 2 of the draft NESCAUM report, inevitable improvements in emission control equipment over the next few years, and the need re-evaluate future regional models with better meteorological databases after the initial visibility improvements are in place, Reliant Energy recommends that EPA plan a comprehensive assessment of the effects on measured visibility of the first RHR implementation period and a

reassessment of model performance at that time. This periodic evaluation is required under the RHR – please reference 40 CFR 51.306 as summarized below:

§ 51.306 - Long-term strategy requirements for reasonably attributable visibility impairment

(a)(1) For the purposes of addressing reasonably attributable visibility impairment, each plan must include a long-term (10–15 years) strategy for making reasonable progress toward the national goal specified in § 51.300(a).

(c) The plan must provide for periodic review and revision, as appropriate, of the long-term strategy for addressing reasonably attributable visibility impairment.

(e) The State must consider, at a minimum, the following factors during the development of its long-term strategy:

(1) Emission reductions due to ongoing air pollution control programs,
(2) Additional emission limitations and schedules for compliance,

Comment #2 on Section 3: The issue of how natural background is determined for the PSD Class I areas should be re-evaluated.

The draft NESCAUM report indicates that ammonium sulfate is identified as the largest contributor to haze at MANE-VU Class I areas. Virtually all ammonium sulfate is apparently assumed to be the result of man-made emissions. However, the contribution of natural biogenic sources of ammonia, organic carbon and sulfates may not be properly considered in the determination of naturally-occurring background visibility. Natural decay of the abundant vegetation in saltwater marshes such as those at Brigantine can release significant quantities of ammonia as a result of the reducing environment and the anaerobic biodegradation that takes place in the soils and marine sediments. Likewise, sulfates are released in large quantities from both sea water (where sulfate ions comprise 7.7 wt% of the total salts present in all seawater) and from phytoplankton that release large amounts of sulfates to the atmosphere. These and other related components of natural background should be properly accounted for and represented before any further RHR milestone assessments are attempted.

Comments on Section 4

Section 4 discusses 2002 vs. 2018 apportionment of source area contributions to regional haze.

Comment #1 on Section 4: Results from both CMAQ and REMSAD are shown, but there is little discussion regarding the consistency of these modeling results.

Comment #2 on Section 4: An important "region" for Acadia especially is "SE_BC", but the meaning of this term and others in the figures needs more explanation.

Comments on Section 5

This section presents an evaluation of the effects of various control strategies, as noted above.

Comment #1 on Section 5: There may be double-counting of benefits with the "167 EGU Strategy"

The OTB/OTW emissions scenario should include CAIR SO_2 and NO_x reductions for large EGUs in CAIR states. The CAIR states include multiple states upwind of the MANE-VU region. The discussion does not present sufficient details about the specific controls in items 1 and 5 listed in Section 1.3.5 of the draft report to determine whether item 5 double counts controls already accounted for in CAIR (i.e., several of the EGUs identified in the 167 EGU strategy have elected to install SO_2 and NOx emission control devices in response to Phase I CAIR) . We suspect that this is the case, and if so, the benefits claimed for the "167 Stack Strategy" are overestimated.

Comment #2 on Section 5: All of the control strategies tested result in insignificant changes in $PM_{2.5}$ concentrations, even though the report mentions that the 167 EGU emission reductions will result in "significant reductions."

NESCAUM has suggested that 24-hour average $PM_{2.5}$ concentrations less than 0.13 and 2.0 $\mu g/m^3$ for Class I and Class II areas, respectively, should be considered as "insignificant" per permitting of new sources (see http://www.nescaum.org/topics/permit-modeling). This means that emission changes that result in changes in daily average $PM_{2.5}$ concentrations less than 2.0 $\mu g/m^3$ in Class II areas provide insignificant changes. All of the figures in Section 5 of the MANE-VU draft report show changes in $PM_{2.5}$ concentrations that are less than 2.0 $\mu g/m^3$. Additionally, the projected changes are less than 0.15 $\mu g/m^3$ in most cases and areas in the NESCAUM states. As noted in other comments, the modeled effectiveness of the 167 EGU strategy is likely to be overstated because of double-counting of CAIR emission reductions and also because the CMAQ model overpredicts peak visibility impacts.

Comment #3 on Section 5: The projected rates of visibility improvement do not appear to account for SO_2 and NOx emission reductions required under Phase II CAIR.

The NESCAUM report includes multiple summaries that present the projected rates of visibility improvement at selected Class I areas (please reference Figures 5-6 through 5-14). In all summaries, the projected rate of visibility improvement for the 2002 through 2009 time period, which apparently accounts for the OTB/OTW emission control strategies, exceeds the target uniform rate of visibility improvement (i.e., there is a steeper slope of visibility improvement). However, for the 2009 through 2018 time period, there is a significant retarding in the rate of visibility improvement (i.e., the slope of the line decreases, at some Class I areas the slope is less than the uniform rate). It appears that the model runs do not account for the decreases in SO_2 and NOx (and co-beneficial $PM_{2.5}$) emissions required under Phase II CAIR (begins January 1, 2015). In their support of the CAIR regulations, U.S. EPA has projected a decrease in the number and severity of ozone and $PM_{2.5}$ non-attainment areas in 2015 as compared with 2010 (please see the summary presented in the following link: http://www.epa.gov/cair/charts_files/nonattain_maps.pdf). Nearly all of these emission reductions are projected to occur in states located immediately upwind of the MANE-VU region. Reliant Energy requests NESCAUM to provide a detailed explanation regarding these model runs.

Comment #4 on Section 5: For the "167 EGU Strategy", there are apparent inconsistencies between the average change in 24-hour $PM_{2.5}$ concentrations and projected visibility improvement at selected Class I areas located in the northern NESCAUM states.

NESCAUM conducted a model run in which incorporated a 90 percent control of SO_2 emissions from 167 target EGUs. One-half (83 of 167) of the 167 target EGUs are located in the upwind Ohio River Valley states (Indiana, Kentucky, Ohio, Pennsylvania and West Virginia). The results of the 2018 model run, which are presented in Figure 5-5 of the NESCAUM report, show that the largest change in average 24-hour $PM_{2.5}$ concentrations are projected to occur in those Ohio River Valley States. Ambient air monitoring data collected under U.S. EPA's Clean Air Status and Trends Network (CASTNET) appears to support these model results – ambient air concentrations of SO_2 and particulate sulfate are higher in these areas as compared with the NESCAUM states (please reference the 2005 CASTNET annual report presented in the following link: http://www.epa.gov/castnet/library/annual05/annual_report_2005.pdf). However, although the model results as presented in Figure 5-5 show little or no change in average 24-hour $PM_{2.5}$ concentrations in the northern NESCAUM states and New Brunswick - Canada, the visibility improvement at some selected Class I areas, such as Acadia National Park, is projected to be large (~ 0.5 deciview change) and comparable to that in more southern areas such as Brigantine National Wildlife Refuge – see Figures 5-6 and 5-7. Reliant Energy requests NESCAUM to provide a detailed explanation regarding these apparently inconsistent modeling results.

Comment #5 on Section 5: The NESCAUM report should note that the U.S. EPA has determined that CAIR satisfies the BART requirements for SO_2 and NO_x.

The Pennsylvania Department of Environmental Protection (PA DEP) identified five Reliant Energy facilities located in Pennsylvania that were considered to be BART-eligible. The PA DEP agrees with U.S. EPA that participation in the CAIR trading program satisfies the SO_2 and NO_x BART requirements for Pennsylvania EGUs. With regards to PM_{10} emissions from Reliant Energy's BART-eligible facilities, the PA DEP agrees with our conclusion that additional emissions controls for PM_{10} are not warranted considering the insignificant impacts these sources have on visibility in Class I areas. PA DEP is a participating member of MANE-VU and MARAMA.

Comment #6 on Section 5: There are insufficient details regarding the modeling runs, such as those conducted under a reduced sulfur fuel content control strategy.

The NESCAUM report does not provide details regarding the number and location of sources potentially impacted by an emissions control strategy that limits fuel oil sulfur content to a maximum of 500 parts per million by mass. (In general, the details of emissions inputs to all of the modeling runs described in the report need to be made available to the public.) The results of the 2018 model run, as presented in Figures 5-1 and 5-2, show the largest change in average 24-hour $PM_{2.5}$ concentrations are projected to occur in Delaware and coastal New England, while other populated areas inexplicably show much lower impacts. In the absence of details regarding the number and location of sources potentially impacted by this strategy, it is impossible to gauge the plausibility of the modeled results. As such, Reliant Energy requests NESCAUM to provide a detailed explanation regarding these puzzling modeling results.

2002 MANE-VU Emissions Inventory Summary for PM25 Emissions – New Jersey

Source Category	SCC	Source Type	ANNUAL	
			Emissions (tons/year)	Percent of Total
Stationary Source Fuel Combustion-Residential	2104	Area	11,088	35
Paved Roads	2294	Area	2,570	8
Off-highway Vehicle Diesel	2270	Nonroad	2,376	8
Industrial Processes-Food and Kindred Products: SIC 20	2302	Area	2,226	7
Miscellaneous Area Sources-Other Combustion	2810	Area	1,367	4
External Combustion Boilers-Electric Generation	1010	Point	1,286	4
Highway Vehicles-Gasoline	2201	Onroad	1,264	4
Highway Vehicles-Diesel	2230	Onroad	1,205	4
Off-highway Vehicle Gasoline, 2-Stroke	2260	Nonroad	781	2
Stationary Source Fuel Combustion-Commercial/Institutional	2103	Area	773	2
Marine Vessels, Commercial	2280	Nonroad	732	2
Industrial Processes-Miscellaneous Manufacturing Industries	399	Point	709	2
Pleasure Craft	2282	Nonroad	604	2
Industrial Processes-Mineral Products	305	Point	518	2
Internal Combustion Engines-Electric Generation	2010	Point	476	2
Mobile Sources-Unpaved Roads	2296	Area	428	1
Industrial Processes-Mining and Quarrying: SIC 14	2325	Area	413	1
Top Categories			28,817	90.0
Total PM25-PRI Emissions			**31,595**	**100**

2002 MANE-VU Emissions Inventory Summary for SO2 Emissions – New Jersey

Source Category	SCC	Source Type	ANNUAL	
			Emissions (tons/year)	Percent of Total
External Combustion Boilers-Electric Generation	1010	Point	51,137	56
Marine Vessels, Commercial	2280	Nonroad	11,444	13
Stationary Source Fuel Combustion-Residential	2104	Area	6,901	8
Industrial Processes-Petroleum Industry	306	Point	4,281	5
Stationary Source Fuel Combustion-Commercial/Institutional	2103	Area	3,348	4
Off-highway Vehicle Diesel	2270	Nonroad	3,198	4
Highway Vehicles-Gasoline	2201	Onroad	2,759	3
Industrial Processes-Chemical Manufacturing	301	Point	1,864	2
External Combustion Boilers-Industrial	1020	Point	1,137	1
Top Categories			86,069	96.0
Total SO2 Emissions			**91,295**	**100**

2002 MANE-VU Emissions Inventory Summary for NOx Emissions – New Jersey

Source Category	SCC	Source Type	ANNUAL	
			Emissions (tons/year)	Percent of Total
Highway Vehicles-Gasoline	2201	Onroad	111,610	38
Highway Vehicles-Diesel	2230	Onroad	40,466	14
External Combustion Boilers-Electric Generation	1010	Point	29,416	10
Off-highway Vehicle Diesel	2270	Nonroad	25,558	9
Stationary Source Fuel Combustion-Residential	2104	Area	15,685	5
Marine Vessels, Commercial	2280	Nonroad	10,981	4
Stationary Source Fuel Combustion-Commercial/Institutional	2103	Area	9,232	3
LPG	2267	Nonroad	6,920	2
Off-highway Vehicle Gasoline, 4-Stroke	2265	Nonroad	6,705	2
Railroad Equipment	2285	Nonroad	5,721	2
Internal Combustion Engines-Electric Generation	2010	Point	5,211	2
Top Categories			267,504	91.0
Total NOx Emissions			**293,840**	**100**

State Level Summary of Annual, Summary and Winter Season, and Summer Day Emissions for Scenario #M02

StateLevelSummaryM02.xls -- Emissions, 08/04/05

NJ

FIPS State	Pollutant Code	Start Date	End Date	"NIF" Emissions	"NoNIF" Emissions	Total Emissions	Emission Unit
34	CO	20090101	20091231	3,645.28	1,828.07	5,473.35	TON
34	CO	20090501	20090930	1,535.00	627.94	2,162.94	TON
34	CO	20090721	20090721	14.42	6.33	20.75	TON
34	CO	20091001	20090430	2,110.23	1,200.07	3,310.30	TON
34	NH3	20090101	20091231	254.18	142.97	397.15	TON
34	NH3	20090501	20090930	106.47	49.06	155.53	TON
34	NH3	20090721	20090721	0.99	0.48	1.47	TON
34	NH3	20091001	20090430	147.68	93.87	241.55	TON
34	NOX	20090101	20091231	11,284.63	781.71	12,066.34	TON
34	NOX	20090501	20090930	4,921.94	308.40	5,230.34	TON
34	NOX	20090721	20090721	43.05	3.13	46.18	TON
34	NOX	20091001	20090430	6,362.75	473.35	6,836.10	TON
34	PM10-PRI	20090101	20091231	3,610.96	147.16	3,758.12	TON
34	PM10-PRI	20090501	20090930	1,546.78	50.59	1,597.37	TON
34	PM10-PRI	20090721	20090721	13.20	0.53	13.73	TON
34	PM10-PRI	20091001	20090430	2,064.17	96.58	2,160.75	TON
34	PM25-PRI	20090101	20091231	3,112.21	147.16	3,259.37	TON
34	PM25-PRI	20090501	20090930	1,326.96	50.59	1,377.55	TON
34	PM25-PRI	20090721	20090721	11.34	0.53	11.87	TON
34	PM25-PRI	20091001	20090430	1,785.24	96.58	1,881.82	TON
34	SO2	20090101	20091231	27,509.10	0.00	27,509.10	TON
34	SO2	20090501	20090930	11,819.89	0.00	11,819.89	TON
34	SO2	20090721	20090721	100.27	0.00	100.27	TON
34	SO2	20091001	20090430	15,689.22	0.00	15,689.22	TON
34	VOC	20090101	20091231	248.42	46.78	295.20	TON
34	VOC	20090501	20090930	106.91	16.07	122.98	TON
34	VOC	20090721	20090721	0.90	0.13	1.03	TON
34	VOC	20091001	20090430	141.48	30.73	172.21	TON

StateLevelSummaryM01.xls -- Emissions, 07/29/05

FIPS State	Pollutant Code	Start Date	End Date	"NIF" Emissions	"NoNIF" Emissions	Total Emissions	Emission Unit
34	CO	20180101	20181231	4,790.82	2,820.34	7,611.16	TON
34	CO	20180501	20180930	2,332.89	1,278.44	3,611.33	TON
34	CO	20180721	20180721	22.63	12.83	35.46	TON
34	CO	20181001	20180430	2,457.91	1,541.99	3,999.90	TON
34	NH3	20180101	20181231	343.43	220.59	564.02	TON
34	NH3	20180501	20180930	168.61	99.98	268.59	TON
34	NH3	20180721	20180721	1.59	0.97	2.56	TON
34	NH3	20181001	20180430	174.86	120.59	295.45	TON
34	NOX	20180101	20181231	12,438.77	1,197.46	13,636.23	TON
34	NOX	20180501	20180930	5,833.00	598.67	6,431.67	TON
34	NOX	20180721	20180721	52.41	6.06	58.47	TON
34	NOX	20181001	20180430	6,605.74	598.77	7,204.51	TON
34	PM10-PRI	20180101	20181231	3,789.59	227.03	4,016.62	TON
34	PM10-PRI	20180501	20180930	1,694.58	102.92	1,797.50	TON
34	PM10-PRI	20180721	20180721	14.51	0.97	15.48	TON
34	PM10-PRI	20181001	20180430	2,095.02	124.12	2,219.14	TON
34	PM25-PRI	20180101	20181231	3,288.30	227.03	3,515.33	TON
34	PM25-PRI	20180501	20180930	1,472.67	102.92	1,575.59	TON
34	PM25-PRI	20180721	20180721	12.62	0.97	13.59	TON
34	PM25-PRI	20181001	20180430	1,815.63	124.12	1,939.75	TON
34	SO2	20180101	20181231	32,495.10	0.00	32,495.10	TON
34	SO2	20180501	20180930	14,384.13	0.00	14,384.13	TON
34	SO2	20180721	20180721	122.06	0.00	122.06	TON
34	SO2	20181001	20180430	18,110.97	0.00	18,110.97	TON
34	VOC	20180101	20181231	279.79	72.21	352.00	TON
34	VOC	20180501	20180930	129.28	32.70	161.98	TON
34	VOC	20180721	20180721	1.06	0.32	1.38	TON
34	VOC	20181001	20180430	150.52	39.52	190.04	TON

StateLevelSummaryM02.xls -- Emissions, 08/04/05

OH

FIPS State	Pollutant Code	Start Date	End Date	"NIF" Emissions	"NoNIF" Emissions	Total Emissions	Emission Unit
39	CO	20090101	20091231	11,400.84	8,837.55	20,238.39	TON
39	CO	20090501	20090930	4,901.06	3,784.63	8,685.69	TON
39	CO	20090721	20090721	33.98	39.56	73.54	TON
39	CO	20091001	20090430	6,499.81	5,053.21	11,553.02	TON
39	NH3	20090101	20091231	684.50	590.35	1,274.85	TON
39	NH3	20090501	20090930	294.24	252.76	547.00	TON
39	NH3	20090721	20090721	2.00	2.73	4.73	TON
39	NH3	20091001	20090430	390.11	337.06	727.17	TON
39	NOX	20090101	20091231	71,741.01	37,512.63	109,253.64	TON
39	NOX	20090501	20090930	29,583.42	14,955.58	44,539.00	TON
39	NOX	20090721	20090721	204.67	106.96	311.63	TON
39	NOX	20091001	20090430	42,157.56	22,557.09	64,714.65	TON
39	PM10-PRI	20090101	20091231	36,927.57	20,711.16	57,638.73	TON
39	PM10-PRI	20090501	20090930	15,627.65	8,426.39	24,054.04	TON
39	PM10-PRI	20090721	20090721	108.06	59.34	167.40	TON
39	PM10-PRI	20091001	20090430	21,299.81	12,284.12	33,583.93	TON
39	PM25-PRI	20090101	20091231	30,083.47	17,628.39	47,711.86	TON
39	PM25-PRI	20090501	20090930	12,668.16	7,116.04	19,784.20	TON
39	PM25-PRI	20090721	20090721	87.61	50.28	137.89	TON
39	PM25-PRI	20091001	20090430	17,415.21	10,511.68	27,926.89	TON
39	SO2	20090101	20091231	312,348.12	163,322.62	475,670.74	TON
39	SO2	20090501	20090930	130,313.71	66,581.17	196,894.88	TON
39	SO2	20090721	20090721	901.38	460.56	1,361.94	TON
39	SO2	20091001	20090430	182,034.41	96,741.46	278,775.87	TON
39	VOC	20090101	20091231	1,354.34	768.67	2,123.01	TON
39	VOC	20090501	20090930	580.92	326.73	907.65	TON
39	VOC	20090721	20090721	3.98	2.56	6.54	TON
39	VOC	20091001	20090430	773.43	441.88	1,215.31	TON

StateLevelSummaryM01.xls -- Emissions, 07/29/05

FIPS State	Pollutant Code	Start Date	End Date	"NIF" Emissions	"NoNIF" Emissions	Total Emissions	Emission Unit
39	CO	20180101	20181231	12,252.98	11,579.25	23,832.23	TON
39	CO	20180501	20180930	5,379.33	4,664.14	10,043.47	TON
39	CO	20180721	20180721	37.39	49.29	86.68	TON
39	CO	20181001	20180430	6,873.68	6,915.23	13,788.91	TON
39	NH3	20180101	20181231	860.00	912.50	1,772.50	TON
39	NH3	20180501	20180930	375.50	366.22	741.72	TON
39	NH3	20180721	20180721	2.58	3.79	6.37	TON
39	NH3	20181001	20180430	484.31	545.74	1,030.05	TON
39	NOX	20180101	20181231	51,597.98	31,531.21	83,129.19	TON
39	NOX	20180501	20180930	22,349.70	13,538.08	35,887.78	TON
39	NOX	20180721	20180721	154.74	98.92	253.66	TON
39	NOX	20181001	20180430	29,248.28	17,993.20	47,241.48	TON
39	PM10-PRI	20180101	20181231	27,405.02	15,349.01	42,754.03	TON
39	PM10-PRI	20180501	20180930	11,982.87	6,676.27	18,659.14	TON
39	PM10-PRI	20180721	20180721	82.83	47.41	130.24	TON
39	PM10-PRI	20181001	20180430	15,422.08	8,672.27	24,094.35	TON
39	PM25-PRI	20180101	20181231	20,794.14	12,528.73	33,322.87	TON
39	PM25-PRI	20180501	20180930	9,072.77	5,433.37	14,506.14	TON
39	PM25-PRI	20180721	20180721	62.72	38.85	101.57	TON
39	PM25-PRI	20181001	20180430	11,721.25	7,094.94	18,816.19	TON
39	SO2	20180101	20181231	135,078.02	80,423.05	215,501.07	TON
39	SO2	20180501	20180930	58,398.14	34,993.39	93,391.53	TON
39	SO2	20180721	20180721	403.97	242.07	646.04	TON
39	SO2	20181001	20180430	76,679.93	45,429.68	122,109.61	TON
39	VOC	20180101	20181231	1,401.50	852.64	2,254.14	TON
39	VOC	20180501	20180930	615.83	363.11	978.94	TON
39	VOC	20180721	20180721	4.21	2.82	7.03	TON
39	VOC	20181001	20180430	785.71	489.32	1,275.03	TON

2002 MANE-VU Emissions Inventory Summary for PM25-PRI Emissions – Pennsylvania

Source Category	SCC	Source Type	ANNUAL	
			Emissions (tons/year)	Percent of Total
Stationary Source Fuel Combustion-Residential	2104	Area	14,034	13
Mobile Sources-Paved Roads	2294	Area	12,478	11
Miscellaneous Area Sources-Agricultural Production-Crops	2801	Area	10,074	9
Open Burning-Waste Disposal, Treatment, and Recovery	261	Area	9,505	9
Mobile Sources-Unpaved Roads	2296	Area	8,317	8
Industrial Processes-Construction: SIC 15-17	2311	Area	7,695	7
External Combustion Boilers-Electric Generation	1010	Point	7,156	7
Industrial Processes-Mineral Products	305	Point	3,990	4
Off-highway Vehicle Diesel	2270	Nonroad	3,792	3
Highway Vehicles-Diesel	2230	Onroad	3,474	3
Industrial Processes-Mining and Quarrying: SIC 14	2325	Area	3,201	3
Industrial Processes-Food and Kindred Products: SIC 20	2302	Area	3,045	3
Stationary Source Fuel Combustion-Commercial/Institutional	2103	Area	2,829	3
External Combustion Boilers-Industrial	1020	Point	2,108	2
Top Categories			91,698	85.0
Total PM25-PRI Emissions			**108,812**	**100**

2002 MANE-VU Emissions Inventory Summary for SO2 Emissions – Pennsylvania

Source Category	SCC	Source Type	ANNUAL	
			Emissions (tons/year)	Percent of Total
External Combustion Boilers-Electric Generation	1010	Point	904,609	84
External Combustion Boilers-Industrial	1020	Point	39,296	4
Stationary Source Fuel Combustion-Residential	2104	Area	30,333	3
Industrial Processes-Mineral Products	305	Point	21,907	2
Stationary Source Fuel Combustion-Commercial/Institutional	2103	Area	19,235	2
Top Categories			1,015,381	95.0
Total SO2 Emissions			**1,077,693**	**100**

2002 MANE-VU Emissions Inventory Summary for NOx Emissions – Pennsylvania

Source Category	SCC	Source Type	ANNUAL	
			Emissions (tons/year)	Percent of Total
External Combustion Boilers-Electric Generation	1010	Point	207,388	26
Highway Vehicles-Gasoline	2201	Onroad	181,610	23
Highway Vehicles-Diesel	2230	Onroad	164,861	21
Off-highway Vehicle Diesel	2270	Nonroad	39,321	5
Industrial Processes-Mineral Products	305	Point	32,817	4
Railroad Equipment	2285	Nonroad	29,292	4
Stationary Source Fuel Combustion-Residential	2104	Area	22,495	3
External Combustion Boilers-Industrial	1020	Point	17,830	2
Stationary Source Fuel Combustion-Commercial/Institutional	2103	Area	14,169	2
LPG	2267	Nonroad	12,893	2
Top Categories			722,676	92.0
Total NOx Emissions			**795,266**	**100**

State Level Summary of Annual, Summary and Winter Season,
and Summer Day Emissions for Scenario #M02

StateLevelSummaryM02.xls -- Emissions, 08/04/05

FIPS State	Pollutant Code	Start Date	End Date	"NIF" Emissions	"NoNIF" Emissions	Total Emissions	Emission Unit
42	CO	20090101	20091231	33,781.33	6,688.89	40,470.22	TON
42	CO	20090501	20090930	14,282.02	2,844.84	17,126.86	TON
42	CO	20090721	20090721	103.15	20.82	123.97	TON
42	CO	20091001	20090430	19,499.32	3,844.04	23,343.36	TON
42	NH3	20090101	20091231	915.29	732.76	1,648.05	TON
42	NH3	20090501	20090930	393.31	311.87	705.18	TON
42	NH3	20090721	20090721	2.81	1.20	4.01	TON
42	NH3	20091001	20090430	522.01	420.90	942.91	TON
42	NOX	20090101	20091231	89,296.30	13,016.72	102,313.02	TON
42	NOX	20090501	20090930	38,053.12	5,657.07	43,710.19	TON
42	NOX	20090721	20090721	274.62	9.08	283.70	TON
42	NOX	20091001	20090430	51,243.17	7,359.74	58,602.91	TON
42	PM10-PRI	20090101	20091231	39,767.15	801.48	40,568.63	TON
42	PM10-PRI	20090501	20090930	17,013.85	341.75	17,355.60	TON
42	PM10-PRI	20090721	20090721	122.22	1.29	123.51	TON
42	PM10-PRI	20091001	20090430	22,753.32	459.70	23,213.02	TON
42	PM25-PRI	20090101	20091231	32,151.32	731.58	32,882.90	TON
42	PM25-PRI	20090501	20090930	13,682.05	311.47	13,993.52	TON
42	PM25-PRI	20090721	20090721	98.27	1.27	99.54	TON
42	PM25-PRI	20091001	20090430	18,469.24	420.11	18,889.35	TON
42	SO2	20090101	20091231	241,357.14	714.19	242,071.33	TON
42	SO2	20090501	20090930	101,525.83	316.14	101,841.97	TON
42	SO2	20090721	20090721	729.73	2.27	732.00	TON
42	SO2	20091001	20090430	139,831.29	398.05	140,229.34	TON
42	VOC	20090101	20091231	1,662.19	186.10	1,848.29	TON
42	VOC	20090501	20090930	721.65	78.90	800.55	TON
42	VOC	20090721	20090721	5.15	0.40	5.55	TON
42	VOC	20091001	20090430	940.49	107.21	1,047.70	TON

StateLevelSummaryM01.xls -- Emissions, 07/29/05

FIPS State	Pollutant Code	Start Date	End Date	"NIF" Emissions	"NoNIF" Emissions	Total Emissions	Emission Unit
42	CO	20180101	20181231	33,351.26	8,094.22	41,445.48	TON
42	CO	20180501	20180930	15,022.89	3,795.39	18,818.28	TON
42	CO	20180721	20180721	109.11	28.22	137.33	TON
42	CO	20181001	20180430	18,328.30	4,298.98	22,627.28	TON
42	NH3	20180101	20181231	947.48	842.84	1,790.32	TON
42	NH3	20180501	20180930	430.87	386.32	817.19	TON
42	NH3	20180721	20180721	3.14	1.84	4.98	TON
42	NH3	20181001	20180430	516.68	456.50	973.18	TON
42	NOX	20180101	20181231	69,291.66	13,589.07	82,880.73	TON
42	NOX	20180501	20180930	30,281.79	6,047.42	36,329.21	TON
42	NOX	20180721	20180721	220.42	12.63	233.05	TON
42	NOX	20181001	20180430	39,009.83	7,541.81	46,551.64	TON
42	PM10-PRI	20180101	20181231	30,665.89	914.51	31,580.40	TON
42	PM10-PRI	20180501	20180930	13,355.00	418.19	13,773.19	TON
42	PM10-PRI	20180721	20180721	95.99	2.00	97.99	TON
42	PM10-PRI	20181001	20180430	17,310.87	496.30	17,807.17	TON
42	PM25-PRI	20180101	20181231	22,911.09	844.61	23,755.70	TON
42	PM25-PRI	20180501	20180930	9,935.47	387.91	10,323.38	TON
42	PM25-PRI	20180721	20180721	71.42	1.98	73.40	TON
42	PM25-PRI	20181001	20180430	12,975.62	456.71	13,432.33	TON
42	SO2	20180101	20181231	135,231.53	714.19	135,945.72	TON
42	SO2	20180501	20180930	58,270.92	316.14	58,587.06	TON
42	SO2	20180721	20180721	418.85	2.27	421.12	TON
42	SO2	20181001	20180430	76,960.55	398.05	77,358.60	TON
42	VOC	20180101	20181231	1,697.33	222.26	1,919.59	TON
42	VOC	20180501	20180930	751.10	103.25	854.35	TON
42	VOC	20180721	20180721	5.37	0.55	5.92	TON
42	VOC	20181001	20180430	946.19	118.95	1,065.14	TON

Summary of Stakeholder Comments on the Reasonable Progress Modeling Draft Report

January 29, 2008

The draft report entitled, "*MANE-VU Modeling for Reasonable Progress Goals*" was completed by NESCAUM on December 10, 2007. On December 12, 2007, MARAMA requested comments from MANE-VU Stakeholders by January 9, 2008. Six stakeholders have commented on the document and their comments are summarized below. Comments were received from the following: the Council of Industrial Boiler Owners (CIBO) via John Woolf of Bracewell and Giuliani LLP, Dominion Resources Services, Inc., Midwest Ozone Group (MOG) via Edward Kropp of Jackson Kelly PLLC, John Shimshock of Reliant Energy, Inc., Utility Air Regulatory Group (UARG) via Andrea Field of Hunton and Williams, and MARAMA via Angela King.

Comments

UARG stated that it is not necessary or appropriate for MANE-VU to ask other states to change course now to include additional control measures in their regional haze SIPs, especially since these regulatory requirements come up very late in the regional haze state implementation plan (SIP) development process. Existing measures and other measures included in the state plans that have been drafted or proposed for comment are adequate (and, in some cases, more than adequate) to achieve visibility improvements approaching or going beyond the uniform rate of progress for their own and other states' Class I areas. In these circumstances, neither the Clean Air Act nor EPA's rules and guidance would require states to include additional control measures in their regional haze SIPs. The fact that MANE-VU claims that additional "measures are reasonable to implement" (Draft RPG Modeling Report at 6-1) does not change anything: no EPA rules or guidance requires other regional planning organizations at this late date to revise their draft or final regional haze plans to address or incorporate the list of additional control measures included in the draft MANE-VU reports.

MOG stated that requiring the implementation of control strategies that result in visibility improvement beyond the improvement necessary to meet the uniform glide slope is neither necessary under the Regional Haze Rule nor an efficient use of resources. MOG therefore urges MANE-VU to accept the benefits of on the books control strategies, many of which not yet fully implemented and that result in attainment of reasonable progress as defined by EPA, rather than continue to press for implementation of additional control strategies that are simply unnecessary to comply with the Regional Haze Rule and, more importantly, strain an already unstable economy. CIBO agrees with MOG, stating controls beyond those required to meet already stringent standards is neither justified by applicable law, nor by the significant additional burden on sources that will result. Sources have made significant capital investments to meet mandatory measures and the resulting environmental benefits will likewise be significant.

Reliant stated that further emission reductions beyond "on-the-books/on-the-way" regulations are unnecessary for achieving the 2018 regional haze rule milestones. Before any further emission reductions are mandated, Reliant Energy recommends that U.S. EPA plan a comprehensive assessment of the effects on measured visibility of the first Regional Haze Rule implementation period and a reassessment of model performance at that time.

Dominion noted that all Class I areas within the MANE-VU region will achieve significant visibility improvements beyond the uniform glide path by 2018. Therefore emission reduction measures already in progress or that will be implemented to meet CAIR and other regulatory requirements are sufficient and in fact exceed requirements to demonstrate reasonable progress under EPA's Regional Haze Regulation.

Dominion also stated that while the MANE-VU analysis accounts for and captures projected visibility improvements from source-specific BART requirements in the Northeast region, it does not account for the potential impact of BART-specific reductions in neighboring regional planning organizations (RPOs) that could provide some additional level of visibility improvement in MANE-VU Class I areas.

Dominion questions whether MANE-VU is justified in determining from a broad-based perspective that a 90 percent sulfur dioxide (SO_2) reduction for all electric generating units (EGUs) identified as affecting visibility in the MANE-VU region is reasonable under the reasonable progress provisions of the regional haze rules. Furthermore, sources already subject to BART are in the process of completing the required BART analysis, which encompasses an assessment of the same factors that must be addressed in establishing reasonable progress. Thus, any source that has already been subject to a BART determination assessment should be exempt from any further requirements. EPA implies this conclusion in its final guidance, observing that it is not necessary for states to reassess the reasonable progress factors for sources subject to BART for which the states have already completed a BART analysis (EPA *Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program*, June 1, 2007, page 5-1).

Dominion noted that several of the EGUs identified by MANE-VU as "most likely to affect" visibility in certain Class I areas within the MANE-VU region are owned and operated by Dominion. Specifically, Mt. Storm Units 1-3, Chesterfield Units 4-6, Chesapeake Energy Center Units 3 and 4, Yorktown Units 1-3, Brayton Point Units 1-3, and Salem Harbor Units 1-3.

Dominion stated it is already implementing an aggressive emission reduction control program across its fossil generation fleets in the Mid-Atlantic, New England, and Midwest regions. This program includes the very sources identified in the MANE-VU list of 167 "select" EGUs. For more information on the controls and the specific facilities and units see the Dominion comment.

Dominion does not believe that the implementation of a "blanket" control strategy across a select list of sources that are either already taking measures to reduce emissions under

CAIR or already undertaking BART analyses is needed to demonstrate reasonable progress. According to Dominion, as the MANE-VU modeling analysis clearly shows, existing and planned programs already "on-the-books" and "on-the-way" will achieve progress beyond the requirements identified in the uniform glide paths the states have already set for Class I areas.

Reliant is concerned that MANE-VU's base year 2002 inventory is different from emissions estimates originally submitted to the states by industrial facilities. They stated that some estimates of sulfur dioxide, nitrogen oxides (NOx), and fine particulate matter (primary $PM_{2.5}$) emissions in the future year inventories appear to be implausible. Reliant would welcome the opportunity to work with MANE-VU and NESCAUM to develop a mutually-agreeable 2002 emission inventory for their facilities and to investigate and critically review the assumptions used to develop the future year's inventories. With regards to the future year inventories, Reliant Energy understands that these do not incorporate recent New Source Review settlements that have specified the installation of control equipment and the permanent retirement of allowances which would be made available through the operation of this emissions control equipment.

Reliant stated that results from various future year model runs are presented in the report and in several instances, the conclusions deduced by NESCAUM do not appear to be supported by the model runs.

Section 1

Reliant stated that a critical review of the 2009 and 2018 projected emissions inventories needs to be performed. Reliant asserts that a 153 percent and a 360 percent increase in $PM_{2.5}$ emissions in 2009 from New Jersey and Pennsylvania EGUs, respectively, is implausible considering that emissions of SO_2 and NO_x are predicted to decrease by at least 45 percent.

Section 2

Reliant stated that poor modeled meteorological performance during the summer period has significant implications for conclusions regarding source attribution for regional haze impacts.

Reliant stated that some of the figures presented in the report have best fit lines drawn in that do not appear to match the line one would eyeball that would pass through the peak values. Since the peak values are most important in determining the trend of the worst 20 percent regional haze days, it makes sense to reconsider the best-fit lines for this purpose. These alternative slopes lead to conclusions that the CMAQ model's peak predictions are too high (i.e., the model is over-responding, especially on the worst 20 percent regional haze days), and can result in a conclusion that certain emission components have an exaggerated effect on visibility.

Section 3

Reliant stated that the issue of how natural background is determined for the PSD Class I areas should be re-evaluated. The report indicates that ammonium sulfate is identified as the largest contributor to haze at MANE-VU Class I areas and virtually all ammonium sulfate is assumed to be the result of man-made emissions. However, the contribution of natural biogenic sources of ammonia, organic carbon, and sulfates may not be properly considered in the determination of naturally-occurring background visibility.

Section 5

Reliant stated that there may be double-counting of benefits with the "167 EGU Strategy."

Reliant stated that all the control strategies tested result in insignificant changes in $PM_{2.5}$ concentrations, even though the report mentions that the 167 EGU emission reductions will result in "significant reductions."

Reliant stated that the projected rates of visibility improvement do not appear to account for SO_2 and NO_x emission reductions required under Phase II CAIR.

Reliant stated that for the "167 EGU Strategy," there are apparent inconsistencies between the average change in 24-hour $PM_{2.5}$ concentrations and projected visibility improvement at selected Class I areas located in the northern NESCAUM states.

Reliant stated that there are insufficient details regarding the modeling runs, such as those conducted under the reduced sulfur fuel content control strategy. The details of emissions inputs to all of the modeling runs described in the report need to be made available to the public.

Minor Changes

MARAMA pointed out that on page 1-3, footnote number 3 should be moved to page 1-2.

MARAMA stated that on page 1-11, the password for the MARAMA ftp site needs to be included so that the MANE-VU inventory can be accessed. The password is "exchange." Please make this change throughout the document (i.e. page 1-12, regarding MRPO's BaseK inventory).

MARAMA stated that on page 1-15, the password for the second MARAMA ftp site needs to be included so that the CENRAP point source inventory can be accessed. The password is "emisdata." Please make this change through the document.

MARAMA noted that on page 1-19, sub-section 1.3.5, in number 5, the word "into" should be change to "in."

MARAMA noted that after page 1-21, the page numbers are inconsistent (i.e. chapter 2 begins with page 2-22, in chapter 2 page 28 does not have a chapter number, section 2.2 starts on page 2-1, section 3 begins with page 3-10, etc).

MARAMA stated that at the bottom of page 2-2, the second to last paragraph is repeated.

MARAMA stated that on page 2-3, Figures 2-16 and 2-17 are numbered incorrectly.

Reliant stated that in section 4, results from both CMAQ and REMSAD are shown, but there is little discussion regarding the consistency of these modeling results.

Reliant stated that section 4 says that an important "region" for Acadia especially is "SE_BC", but the meaning of this term and others in the figures needs more explanation.

HUNTON& WILLIAMS

HUNTON & WILLIAMS LLP
1900 K STREET, N.W.
WASHINGTON, D.C. 20006-1109

TEL 202 • 955 • 1500
FAX 202 • 778 • 2201

ANDREA BEAR FIELD
DIRECT DIAL: 202-955-1558
EMAIL: afield@hunton.com

FILE NO: 31531.010001

April 25, 2008

VIA FIRST CLASS MAIL AND EMAIL

Ms. Angela King
Environmental Planner
MARAMA
8600 LaSalle Road
Suite 636
Towson, MD 21286

Comments on MANE-VU's 2018 Visibility Projections Draft Report

Dear Ms. King:

These comments are submitted on behalf of the Utility Air Regulatory Group ("UARG")[1] in response to the April 4, 2008 email invitation from the Mid-Atlantic/Northeast Visibility Union ("MANE-VU"), asking stakeholders to comment on its "2018 Visibility Projections" Draft Report (hereinafter "2018 Visibility Projections Draft Report"). As explained in that email invitation, the 2018 Visibility Projections Draft Report provides information on MANE-VU's efforts to quantify the "visibility impacts of those measures that are being actively considered by MANE-VU states as a result of the regional haze consultation process . . . [and] will be useful to the MANE-VU states as they establish reasonable progress goals and develop their long-term emissions management strategies for Class I areas under the federal Regional Haze Rule."

[1] UARG is an unincorporated association of individual electric utility companies and trade associations. UARG participates in federal and precedential state proceedings arising under the federal Clean Air Act and having an impact on UARG members. UARG has participated in the planning processes of Regional Planning Organizations ("RPOs") as they guide states in the preparation of regional haze plans to be submitted to EPA.

MANE-VU's 2018 Visibility Projections Draft Report attempts to describe the complicated process that MANE-VU followed to evaluate what the impact on visibility would be in 2018 if, by that year (1) electric generating units ("EGUs") in the states in MANE-VU, VISTAS and the Midwest Regional Planning Organization ("MRPO") implement the emission reductions required by the Clean Air Interstate Rule ("CAIR") (as projected by IPM version 2.1.9 modeling); (2) those states also implement certain additional emission reductions from non-EGU sectors (including best available retrofit technology ("BART") emission controls at a limited number of non-EGU sources); and (3) certain emission reductions (described below) occur from EGUs in Ontario. Given the very summary description of the MANE-VU analysis provided in the draft report, some aspects of the analysis are unclear and should be explained in more detail in the final version of the report.[2]

Most important, however, is the conclusion provided in the draft report, *i.e.*, that under the emission reduction scenario used in the analysis "[a]ll MANE-VU [Class I area] sites are projected to meet or exceed the uniform rate of progress goal for 2018 on the 20 percent worst days." 2018 Visibility Projections Draft Report, Section 3. In addition, the draft report concludes that, under that scenario, there is no projected worsening of visibility on the 20 percent best days. *Id.*

Given these conclusions -- and findings by other RPOs that, in general, Class I areas in the eastern half of the country for the most part will meet or exceed their uniform rates of progress for 2018 -- we believe it is appropriate for states in the affected RPOs to continue to develop regional haze state implementation plans ("SIPs") for the first planning period that (1) reflect the emission reduction levels for EGUs that result from compliance with CAIR, and (2) do not

---

[2] For example, the draft report fails to explain why the analysis (1) subtracted 75,809 tons from "one hypothetical stack in the [MANE-VU] region" to satisfy the "shortfall" between projected 2018 EGU emissions at those MANE-VU EGU stacks that are among the "167 top EGU stacks" and MANE-VU's 90-percent reduction target for those stacks, but then (2) added back that same number of tons at the same hypothetical MANE-VU stack. Why was that procedure used for EGUs in the MANE-VU region while another procedure was used for EGUs in VISTAS and MRPO states (where the analysis apparently used information related to actual stacks and actual EGUs and applied a somewhat more geographically refined emission "add-back")? 2018 Visibility Projections Draft Report, Section 2.1.

include additional emission reduction requirements for EGUs. We also believe that EPA would be justified in approving any such SIPs.

In presenting its analysis, MANE-VU refers (in Section 2 of the 2018 Visibility Projections Draft Report) to "a number of additional potentially reasonable control measures," including "additional SO_2 emissions reductions at electric generating units (EGUs)." Presumably, this is a reference to MANE-VU's "top 167 stacks" scenario. For the reasons described above, it is neither necessary nor appropriate, as part of the current regional haze SIP development process, to impose -- or to ask other states to impose -- additional control measures on EGUs. The above-described MANE-VU modeling projections show that no such additional control measures are needed to meet or exceed the uniform rate of progress for 2018 at MANE-VU Class I areas.

Any effort to evaluate what visibility improvements may be needed or appropriate should take into account, in a much more systematic way than the draft report does, the impact of non-U.S. anthropogenic emissions. MANE-VU appropriately considers in its analysis the impact of SO_2 emission reductions that are expected to occur from six coal-burning EGUs in Ontario that are scheduled to be shut down and replaced with nine natural gas turbine units with NOx controls. *See* 2018 Visibility Projections Draft Report, Section 2.4. As MANE-VU recognizes by its consideration of this factor, emissions from Canadian sources plainly can have significant effects on visibility in the MANE-VU states. SO_2 emissions from the six Ontario EGUs considered by MANE-VU in its analysis, however, are merely a subset of non-U.S. anthropogenic emissions of visibility-impairing pollutants that likely contribute to visibility impairment in MANE-VU Class I areas. UARG believes that if MANE-VU (and the other RPOs) address the effects of such emissions in a more systematic way in their 2018 visibility projections,[3] that would further demonstrate the sufficiency of current and planned emission controls to achieve reasonable progress goals.

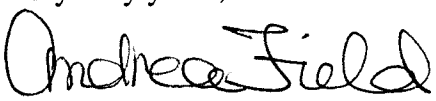
---

[3] Attached is a copy of a paper by the Electric Power Research Institute ("EPRI") concerning a method for taking the effect of these emissions into account in visibility analyses. Also attached is a white paper providing further information on the method described by EPRI. UARG urges MANE-VU to apply the approach described by EPRI, or a similar technically justified approach, to assess in a comprehensive way the impact of emissions from non-U.S. anthropogenic sources on projected 2018 visibility in MANE-VU Class I areas. UARG encourages MANE-VU to present that assessment in the final version of its report.

HUNTON& WILLIAMS

UARG appreciates this opportunity to comment on the draft MANE-VU report and looks forward to participating as appropriate in other proceedings by RPOs to address implementation of the Clean Air Act's visibility improvement provisions.

Very truly yours,



Andrea Bear Field

cc: John E. Hornback
Annette Sharp
Michael Koerber

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Effect of Transboundary Pollution on Visibility A Case Study for Northern Class I Areas

Technical Brief

Introduction

The Regional Haze Rule (RHR) was promulgated by the U.S. Environmental Protection Agency (EPA) in 1999 to address mitigation of regional haze in the United States. The RHR calls for states to establish reasonable goals and emission reduction strategies for improving visibility in mandatory Class I areas (national parks and wilderness areas), striving to achieve "natural visibility conditions" by 2064. The RHR requires that the visibility at these Class I areas on the 20% worst haze days (expressed in deciviews) should improve along a "uniform rate of progress" (URP). EPA has prescribed that the URP be calculated exclusively from the difference between the 20% worst haze conditions in the 2000–2004 baseline period and under natural conditions in 2064. The URP serves as a reference in determining a state's progress toward achieving the 2064 goal. States are required to develop plans every 10 years to meet the reasonable progress goals (RPG) based on the URP. The plans for the first implementation period that call for meeting the RPG in 2018 are due in 2008.

EPA defines natural conditions as those that would exist "in the absence of human caused impairment." From a practical point of view, reaching this goal of natural conditions in the United States is impossible because air pollution from other countries gets transported across the border and increases the U.S. pollutant concentrations above the natural level. According to EPA, a contribution from transboundary transport is not to be considered when setting the 2064 natural conditions goal, even though a major fraction of the actual visibility impairment at some near-border Class I areas may be due to transboundary transport of pollution. However, if a state has difficulty achieving visibility improvement progress along the URP line, it may present transboundary transport as a mitigating reason, if appropriate. A state has to first estimate the impact of transboundary pollution on the visibility impairment at a Class I area of interest.

Figure 1 illustrates a conceptual method to quantify the effect of transboundary pollution when determining whether an RPG has been met for a particular site. Point "A" represents the 2018 progress goal calculated via the URP "glide slope" and point "X" represents the estimated 2018 design value (that is, the model estimated value accounting for emissions reductions by 2018). If transboundary pollution can explain the difference between values at points, A and X, a state can still show it has made "reasonable" progress toward meeting the EPA-prescribed URP.

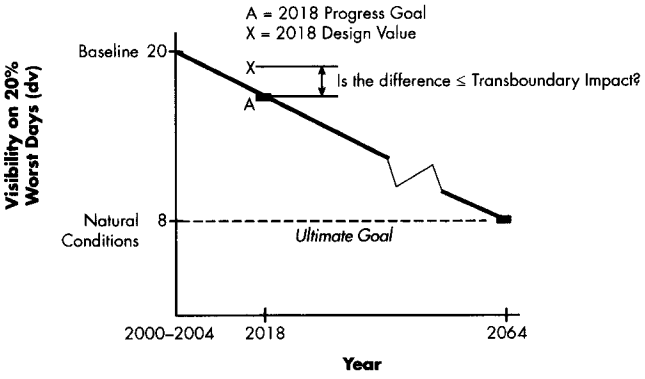


Figure 1. Illustration of a Way to Account for Transboundary Pollution.

Estimating Transboundary Pollution

Global chemical transport modeling offers a means of estimating the contributions of transboundary pollution. With EPRI support, Harvard University used a global chemical transport model, GEOS-Chem, to assess the amount of transported pollutants coming from outside the United States and their impact on meeting the RHR. An important finding from that work was that the current transboundary transport of ammonium sulfate is significantly higher than the default natural concentrations. This transport is mostly from Canada and Mexico, but there is also a non-negligible contribution from Asia. Other haze-causing pollutants whose transboundary influence was significant included organic carbon, dust, and ammonium nitrate (at the northern Class I areas in the upper Midwest).

The Harvard simulations were performed for 2001, whereas most states are using 2002 as the base year for modeling for developing their implementation plans for the RHR. Using the same principles as used by Harvard, VISTAS (Visibility Improvement State and Tribal Association of the Southeast) has estimated transboundary pollution at all Class I areas in the United States for 2002 using the EPA's CMAQ (Community Multiscale Air Quality) model. The model was run for three configurations by VISTAS:

- Run 1: Base case with all emissions
- Run 2: Simulation with no U.S. anthropogenic emissions
- Run 3: Simulation with no global anthropogenic emissions

For each of these simulations, boundary conditions were provided by the GEOS-Chem model that was also run separately for each scenario. The transboundary anthropogenic impact was calculated by subtracting concentrations obtained using Run 3 from those obtained using Run 2.

Effect of Transboundary Pollution at Northern Class I Areas

Four Class I areas (Voyagers National Park, MN; Seney National Wildlife Refuge, MI; Boundary Waters Canoe Area Wilderness, MN; and Isle Royale National Park, MI) were chosen to examine the effect of transboundary pollution on meeting the RPG for 2018. This was done by first calculating the URP for each site and then estimating points "A" and "X" (as shown in Figure 1). The data for calculating the base case (2000–2004) visibility conditions, 2064 natural conditions, and the 2018 design values were obtained from the Midwest Regional Planning Organization (MRPO). For each site, MRPO provided the observed conditions (species concentrations) for all the 20% worst haze days occurring from 2000 to 2004, average natural visibility conditions for the 20% worst haze days, and the 2018 relative reduction factors (RRFs) for each species for the corresponding 20% worst haze days in 2002.

The following steps were undertaken to estimate the effect of transboundary pollution at these sites:

1. The base case visibility in deciviews was calculated by averaging the deciviews for the 20% worst haze days occurring from 2000 to 2004. The new IMPROVE equation was used to convert species concentrations to light extinction.

2. The 2018 RPG (in deciviews) was calculated assuming a linear progression from the base case visibility in 2004 (calculated in Step 1) to the natural visibility in 2064.

3. The 2018 design value was calculated by first multiplying the 2018 RRFs for each species with the corresponding concentration of that species from 2000 to 2004 to estimate the future concentrations of those species. The new IMPROVE equation was then used to convert the species concentrations to light extinction. The deciviews were calculated for each day (corresponding to the 20% worst haze days from 2000 to 2004) and then averaged to calculate the 2018 design value.

4. The transboundary concentrations (obtained from VISTAS) corresponding to the 20% worst haze days in 2002 were averaged to get an average value for each species. These concentrations were subtracted from the corresponding concentrations calculated for the future year (2018) in Step 3. The resulting concentrations for each species for each of those days were converted to light extinction using the new IMPROVE equation and then converted to a revised design value for 2018.

If the design value calculated in Step 3 is below the URP, then the state has achieved the RPG for that Class I area. However, if the design value is above the URP, then the revised design value calculated in Step 4 can be examined. If the revised design value is below the URP, the argument can be made that transboundary pollution is responsible for that Class I area not meeting its URP, and the state can cite that as a mitigating reason.

Results

Figure 2 shows the glide slope calculation and the 2018 design values for the Boundary Waters Class I area. The solid blue line denotes the URP with the solid diamond in 2018 showing the RPG. The light blue open rectangle shows the 2018 design value. In this case, the design value is above the URP line; therefore, it fails to meet the RPG for 2018. However, the red open triangle shows that the revised 2018 design value (removing the effect of transboundary pollution) is below the URP line; thus, the state is able to meet the "reasonable" progress goal.

Figures 3, 4, and 5 show similar plots for Isle Royale, Voyagers, and Seney. As the data show, in each case, removing the effect of the transboundary pollution allows each of these Class I areas to achieve the 2018 RPG (although it is still slightly above the URP at Voyagers).

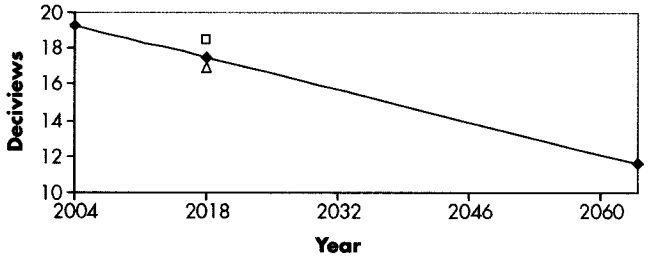


Figure 2. Glide Slope Calculation for Boundary Waters Canoe Area Wilderness

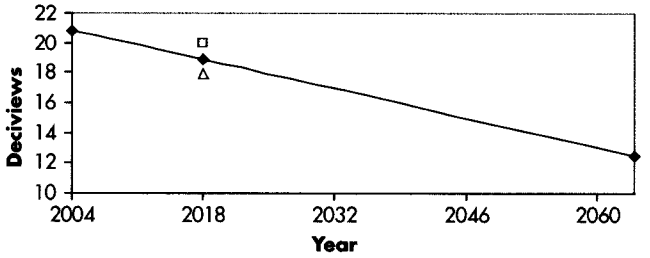


Figure 3. Glide Slope Calculation for Isle Royale National Park

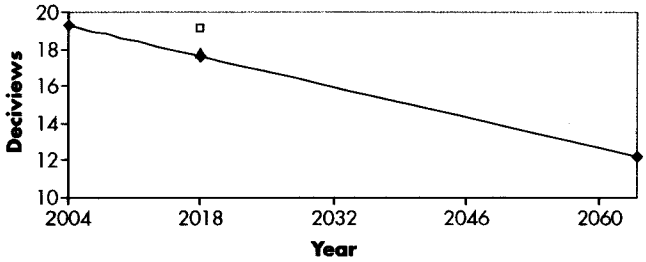


Figure 4. Glide Slope Calculation for Voyagers National Park

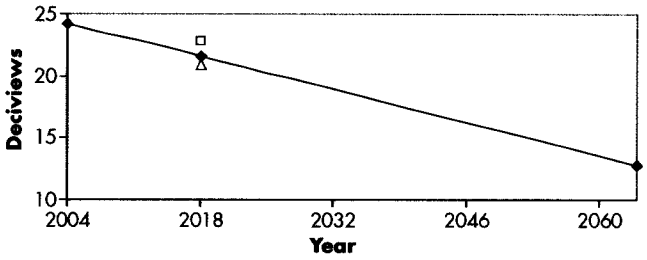


Figure 5. Glide Slope Calculation for Seney National Wildlife Refuge

Export Control Restrictions

Access to and use of EPRI Intellectual Property is granted with the specific understanding and requirement that responsibility for ensuring full compliance with all applicable U.S. and foreign export laws and regulations is being undertaken by you and your company. This includes an obligation to ensure that any individual receiving access hereunder who is not a U.S. citizen or permanent U.S. resident is permitted access under applicable U.S. and foreign export laws and regulations. In the event you are uncertain whether you or your company may lawfully obtain access to this EPRI Intellectual Property, you acknowledge that it is your obligation to consult with your company's legal counsel to determine whether this access is lawful. Although EPRI may make available on a case-by-case basis an informal assessment of the applicable U.S. export classification for specific EPRI Intellectual Property, you and your company acknowledge that this assessment is solely for informational purposes and not for reliance purposes. You and your company acknowledge that it is still the obligation of you and your company to make your own assessment of the applicable U.S. export classification and ensure compliance accordingly. You and your company understand and acknowledge your obligations to make a prompt report to EPRI and the appropriate authorities regarding any access to or use of EPRI Intellectual Property hereunder that may be in violation of applicable U.S. or foreign export laws or regulations.

The Electric Power Research Institute (EPRI), with major locations in Palo Alto, California; Charlotte, North Carolina; and Knoxville, Tennessee, was established in 1973 as an independent, nonprofit center for public interest energy and environmental research. EPRI brings together members, participants, the Institute's scientists and engineers, and other leading experts to work collaboratively on solutions to the challenges of electric power. These solutions span nearly every area of electricity generation, delivery, and use, including health, safety, and environment. EPRI's members represent over 90% of the electricity generated in the United States. International participation represents nearly 15% of EPRI's total research, development, and demonstration program.

Together...Shaping the Future of Electricity

1015251 May 2007

Electric Power Research Institute
3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com

October 2007

ASSESSING VISIBILITY EFFECTS OF INTERNATIONAL EMISSIONS UNDER THE CLEAN AIR ACT REGIONAL HAZE PROGRAM

A recurring issue in implementation of the Clean Air Act regional haze program concerns how to account for effects of international emissions, particularly man-made emissions, on visibility in the United States. This issue has generated discussion recently among federal and state officials and others addressing regional haze implementation. This paper summarizes an approach that many states (including states in the VISTAS and CENRAP regional planning organizations (RPOs)) are using to account appropriately for effects of non-U.S. emissions. As discussed below, that approach is consistent with EPA's regional haze rules and, contrary to some recent suggestions, does not "redraw" the uniform rate-of-progress "glidepath" for visibility improvement.

Accounting for Foreign-Source Manmade Emissions

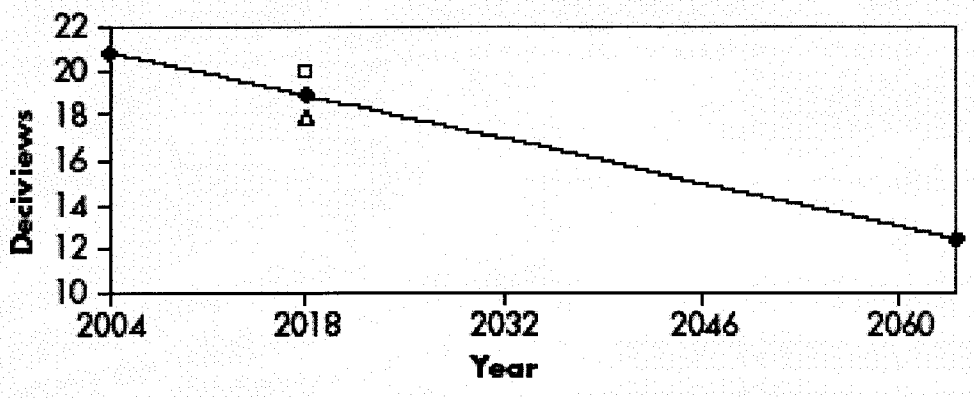
The regional haze program's overarching "national goal" is "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." (Clean Air Act § 169A(a)(1).) States must develop, and submit by December 17, 2007, state implementation plans (SIPs) to make "reasonable progress" toward that goal. These SIPs must state, and explain, reasonable progress goals (RPGs) for 2018 for relevant Class I areas.

EPA has long recognized the obvious fact that states have no power to control emissions from sources located outside the United States, and states cannot be expected to offset the visibility effects of foreign-source manmade, or anthropogenic, emissions through additional emission reductions at domestic sources. In developing their SIPs, however, states need some reasonable way to account for those effects. A method to do so is described in a May 2007 report by the Electric Power Research Institute (EPRI).[1] This method relies on available data and models, such as the GEOS-Chem model, to assess visibility-impairing emissions from non-U.S. sources and the effects of those emissions on the ability to meet RPGs for Class I areas. As the report discusses, this method also has been used in VISTAS, the southeastern states' RPO, which used EPA's Community Multiscale Air Quality (CMAQ) model in its analysis.

[1] The report is available at http://my.epri.com/portal/server.pt?Abstract_id=000000000001015251.

This method allows a comparison between: (1) projected visibility conditions (in deciviews) at a given Class I area in 2018 reflecting the modeled effects of all emissions regardless of type or location of source (*i.e.*, U.S. anthropogenic emissions, non-U.S. anthropogenic emissions, and emissions from natural sources both inside and outside the U.S); and (2) the visibility conditions that would be projected to exist at that area in 2018 if non-U.S. anthropogenic emissions were removed from the emission inventory. The modeled visibility values for 2018 can be plotted on a graph that also displays the "uniform rate of progress" (URP) glidepath for the area in question. (The URP, which states must consider under the regional haze rules, is a steady rate of visibility improvement at the Class I area from the 2000-2004 baseline period to the 2064 "natural conditions" target date described in the rules.)

Shown below is an example, from the EPRI report, of a graphic presentation of the results of this kind of assessment. This example shows projected values for Isle Royale National Park in Michigan.[2] The straight blue line shows the URP for that Class I area. The blue square shows the projected 2018 deciview level reflecting the effects of all emissions, including non-U.S. anthropogenic emissions. The red triangle shows the projected 2018 deciview level if non-U.S. anthropogenic emissions are removed. In this example, the projected deciview level with all emissions included (the blue square) is above the URP, meaning that projected visibility is worse than the visibility represented by the URP. But the projected deciview level with non-U.S. anthropogenic emissions excluded (the red triangle) is lower than the URP, meaning that projected visibility would be better than the URP if non-U.S. anthropogenic emissions were removed.



[2] The report describes results of analyses showing significant transboundary impact in four Class I areas in the Northern Midwest (Seney National Wildlife Refuge, Boundary Waters Canoe Area Wilderness, and Voyageurs National Park, in addition to Isle Royale). Though not discussed in the report, EPRI and VISTAS modeling results also show that transboundary emissions can have significant effects on visibility impairment in Class I areas near the Mexican border.

Consistency with EPA's Rules and Guidance

As can be seen from the illustration on the preceding page, this approach does *not* modify the URP glidepath. Instead, it shows projected deciview levels -- both levels with and levels without the visibility effects of non-U.S. anthropogenic emissions -- in 2018. That is important because the regional haze rules indicate, and EPA has reiterated in guidance, that the URP is to be set using only baseline conditions and projected natural conditions in 2064. Thus, it seems clear that states may not *change* the URP by, for instance, increasing the 2064 "natural conditions" deciview level to account for the effects of non-U.S. anthropogenic emissions (which would in turn increase the 2018 point on the "adjusted" URP).

The approach discussed in the EPRI report is consistent with EPA's statements about how states may account for international emissions' effects on Class I area visibility. For example, in the preamble to its final regional haze rules, EPA responded to commenters' "concerns that EPA should take into account that States are not able to control international sources in reviewing a State's proposal for a reasonable progress target":

> EPA agrees that the projected emissions from international sources will in some cases affect the ability of States to meet reasonable progress goals. The EPA *does not expect States to restrict emissions from domestic sources to offset the impacts of international transport* of pollution. We believe that States *should evaluate the impacts of current and projected emissions from international sources* in their regional haze programs, particularly in cases where it has already been well documented that such sources are important. At the same time, EPA will work with the governments of Canada and Mexico to seek cooperative solutions on transboundary pollution problems.

64 Fed. Reg. 35714, 35736 col. 3 (July 1, 1999) (emphasis added). In informal guidance issued in 2006, EPA elaborated on states' authority to evaluate and take into account the effects of foreign emissions. For example, EPA stated:

> Both in explaining RPGs and in assessing whether current implementation plan strategies are achieving them, States can take into account the nature of international emissions. For instance, after having applied the four statutory factors [that states must consider in determining reasonable progress] and calculated their RPGs, states can at their discretion, quantify the effects of international emissions

> on their ability to reach RPGs. However, States should not directly consider the effects of international emissions when calculating their uniform rates of progress by either adding the effects of international emissions to their estimates of natural conditions, or by subtracting international emissions from current conditions. Either of these approaches conflicts with the basic definition of "current conditions" (baseline conditions for the first SIP) and "natural conditions," as described in the 1999 [regional haze rules].

EPA, "Additional Regional Haze Questions" (Sept. 27, 2006 Revision) at 19.

The approach that is described in the EPRI report and that is being used by a number of states to account for non-U.S. anthropogenic emissions does not change the definition or calculation of current or natural visibility conditions. Thus, it does not change the deciview values used in determining the URP and does not change the URP itself. Rather, that approach is simply a tool to use in "explaining [the] RPGs" that states select and in "quantify[ing] the effects of international emissions on their ability to reach RPGs," consistent with EPA guidance.[3]

Recently, certain statements have been made by staff members in EPA regional offices and at Federal land manager (FLM) agencies, among others, regarding the approach described in the EPRI report that appear to reflect a misunderstanding of that approach. For example, responding to a VISTAS state's presentation in a September 2007 inter-RPO conference call about that state's evaluation of international-emission effects (conducted along the lines of the approach described in EPRI's report), one EPA-region staff member initially said that that approach appeared to involve redrawing the URP. A similar comment was made later by another EPA-region staff member, who suggested the approach seems to involve setting a new glidepath. And an FLM analyst indicated he

---

[3] It is important to note that EPA's rules do not require a state to determine that the URP is the RPG for a given area; states may, for example, properly determine that the RPG should be less ambitious than the URP. 40 C.F.R. § 51.308(d)(1)(ii); 64 Fed. Reg. at 35732 cols. 2-3; EPA, Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program, at p. 1-3 (June 1, 2007) ("The glidepath is not a presumptive target, and States may establish a RPG that provides for greater, lesser, or equivalent visibility improvement as that described by the glidepath."). Because EPA does not require or expect states to restrict domestic sources' emissions to offset the impacts of international transport, it would seem that states have discretion to consider effects of non-U.S. manmade emissions as a "relevant factor[ ]"in "determin[ing] what additional control measures would be reasonable," which is one of the steps in the state's selection of the rate of progress that is reasonable. *Id.* at p. 2-3. Doing so would not change the URP but may result in establishing an RPG that is less ambitious than the URP.

thought this approach reflected an inappropriate technique for accounting for non-U.S. emissions.

For the reasons discussed above, it seems clear that these criticisms reflect a fundamental misunderstanding of this approach, which does not call for any redrawing or other adjustment of the glidepath. The following points should be kept in mind -- and articulated -- in any discussion of this issue:

- **The approach described by EPRI does not recalculate the Uniform Rate of Progress (URP) glidepath. Calculation of the glidepath is based only on the 2000-2004 observed conditions (the "current," or baseline, conditions) and the 2064 natural conditions. The 2018 URP is calculated from the glidepath.**

- **This approach does not add transboundary impact (*i.e.*, visibility impact from non-U.S. anthropogenic sources) to either the baseline or the 2064 "natural conditions" end point.**

- **This approach is consistent with and, in fact, uses transboundary contribution estimates from VISTAS.**

- **The 2018 Reasonable Progress Goal (RPG) for a given Class I area is calculated as the visibility conditions (in deciviews) that an area is projected to achieve in 2018 from implementation of a reasonable set of emission controls selected by the state, based on the state's consideration of the statutory "reasonable progress" factors.**

- **Assessing transboundary impact may be particularly important if the 2018 RPG selected by the state is at a higher deciview level than the 2018 URP level. In such cases, this approach can be useful for the state in understanding and explaining: (1) the extent to which the deciview difference between the 2018 RPG and the 2018 URP may be accounted for by transboundary impact on the Class I area at issue; (2) why, for that area, meeting the URP would require unreasonably rapid progress; and (3) why the progress goal selected by the state is reasonable.**

- **For the Northern Midwest Class I areas, an EPRI analysis using this approach showed that the transboundary impact is significant. EPRI and VISTAS modeling results also show that the transboundary impact can be significant for Class I areas near Mexico.**