

Appendix F-4d

NC's Comments on New Hampshire's Initial Draft 2019 RH SIP

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NORTH CAROLINA
Environmental Quality

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December 20, 2019

Craig A. Wright, Director
New Hampshire Department of Environmental Services
Air Resources Division
29 Hazen Drive, P.O. Box 95
Concord, NH 03302

Subject: New Hampshire's Draft Regional Haze SIP (2018-2028)

Dear Mr. Wright:

The North Carolina (NC) Division of Air Quality (DAQ) appreciates the opportunity to review New Hampshire's (NH) proposed *Regional Haze Plan, Periodic Comprehensive Revision, DRAFT 10/31/2019*. This letter provides the DAQ's comments on NH's proposed SIP.

Background

NH incorporated the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Inter-RPO Ask in its proposed regional haze SIP.¹ The Inter-RPO Ask identifies NC as reasonably anticipated to contribute to visibility impairment in MANE-VU Class I areas including the Great Gulf and Presidential Range-Dry River (GGPRDR) Wilderness Areas located in New Hampshire's White Mountain National Forest. MANE-VU considered the results of a weight-of-evidence approach based on emissions (tons per year) divided by distance (kilometers) (Q/d) calculations, CALPUFF modeling, and HYSPLIT back trajectories to identify upwind states reasonably anticipated to contribute to visibility impairment at a MANE-VU Class I area. States that contributed $\geq 2\%$ of the visibility impairment to a Class I area and had an average mass impact of over 1% (0.01 microgram per cubic meter), were identified for consultation, and included in the Inter-RPO Ask. Based on these results, MANE-VU concluded that its modeling and trajectory analyses appear to support NC as being a 2% contribution state.² Consequently, for NC, NH modeled potential emissions reductions associated with the Inter-RPO Ask control measures and included the emissions reductions in the control case for defining the long-term strategy (LTS) and reasonable progress goals (RPGs) for 2028 for the GGPRDR Wilderness Areas.

The DAQ participated in the consultation calls MANE-VU held with states included in the Inter-RPO Ask. The DAQ also submitted comments documenting significant concerns with MANE-VU's methodologies used to determine that NC as reasonably anticipated to contribute to visibility impairment in MANE-VU Class I areas. The DAQ reviewed MANE-VU's responses to the DAQ's questions and comments and believes that the technical questions the DAQ offered regarding the short-comings of

¹ *Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) States Concerning a Course of Action in Contributing States Located Upwind Of MANE-VU Toward Assuring Reasonable Progress for the Second Regional Haze Implementation Period (2018-2028)*, August 25, 2017.

² *Selection of States for MANE-VU Regional Haze Consultation (2018)*, MANE-VU Technical Support Committee, Sept. 5, 2017.



MANE-VU's analyses were not adequately addressed by MANE-VU.³ As articulated in the DAQ's comments on the Ask, the DAQ still believes that the MANE-VU methodologies resulted in inaccurate conclusions that emissions from NC are "reasonably anticipated" to contribute to visibility impairment in MANE-VU Class I areas. The DAQ has included its comments on the MANE-VU Inter-RPO Ask as an attachment to this letter, and requests that NH consider these comments in its final regional haze SIP.

The following comments on the NH SIP address (1) why NH should not include in the LTS/RPG for the GGPRDR Wilderness Areas control measures identified in the MANE-VU Ask for upwind states such as NC, and (2) why the DAQ believes that NC is not "reasonably anticipated" to contribute to visibility impairment for the GGPRDR Wilderness Areas.

Long-Term Strategy (LTS) and Reasonable Progress Goals (RPG)

As stated on pages 16 and 27 of NH's proposed SIP, NH identified NC as a state reasonably anticipated to contribute to visibility impairment at the GGPRDR Wilderness Areas and, therefore, included in the LTS/RPG for these areas control measures originating from the MANE-VU Inter-RPO Ask.⁴ The DAQ strongly disagrees with the inclusion of the control measures for NC in the LTS/RPG for the GGPRDR Wilderness Areas because the DAQ has not agreed to adopt any of the measures and, for this reason, would be inconsistent with the regional haze rule and U.S. Environmental Protection Agency's (EPA) regional haze guidance.

Section 51.308(f)(2) of the Regional Haze Rule requires SIPs to include *...enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress as determined pursuant to (f)(2)(i) through (iv).*" With respect to consultation with upwind states, Section 51.308(f)(2)(ii)(A) of the rule requires that: *The state must demonstrate that it has included in its implementation plan all measures agreed to during state-to-state consultations or a regional planning process, or measures that will provide equivalent visibility improvement.*⁵

In addition, EPA's regional haze guidance document reinforces the need for a downwind and an upwind state to agree on control measures for the upwind state before the upwind state control measures are to be included in the downwind state's LTS/RPGs. Under Step 6 of EPA's guidance, in Footnote #80, EPA states that: *...If another contributing state has not yet even determined the measures that are necessary to make reasonable progress at the jointly affected Class I area, then the state with the Class I area must set the RPGs based on whatever measures that the contributing state has actually adopted to meet the requirements for the first implementation period and other CAA requirements. The state with the Class I area may not base its RPGs on speculation about what another state will do.*⁶

The DAQ has not agreed with NH or any other MANE-VU state to include any control measures, including those included in the Inter-RPO Ask, in any LTS for setting RPGs for the GGPRDR Wilderness Areas or any other MANE-VU Class I Federal area. Therefore, the DAQ requests that NH revise its LTS/RPG for the GGPRDR Wilderness Areas to exclude the control measures identified in the Inter-RPO Ask and NH's proposed regional haze SIP. Should NH decide to include the Inter-RPO Ask control measures for NC in the final SIP for the GGPRDR Wilderness Areas, doing so will be inconsistent with the requirements of Section 51.308(f)(2) of the regional haze rule because the measures will not be federally enforceable.

³ *MANE-VU Regional Haze Consultation Report*, July 27, 2018, MANE-VU Technical Support Committee.

⁴ See Chapter 3 (Regional Planning and Consultation), Section 3.2.1 (Selection of States for MANE-VU Inter-RPO Regional Haze Consultation) of NH's proposed Regional Haze SIP.

⁵ 40 CFR § 51.308(f) - Regional haze program requirements, requirements for periodic comprehensive revisions of implementation plans for regional haze.

⁶ *Guidance on Regional Haze State Implementation Plans for the Second Implementation Period*, EPA-457/B-19-003, August 2019.

Upwind State Contributions to the GGPRDR Wilderness Areas

The DAQ documented in its comments on the Inter-RPO Ask several technical concerns with the screening methodologies explaining why it is inappropriate for MANE-VU to use the results to draw any conclusions regarding NC’s contribution to visibility impairment in any of the MANE-VU Class I areas. Instead, the DAQ recommended that MANE-VU conduct state-of-the-art photochemical grid and source apportionment modeling to evaluate upwind state contributions to visibility impairment in Class I areas.

MANE-VU completed Community Multiscale Air Quality (CMAQ) photochemical grid modeling for 2011 and 2028 for regional haze but did not conduct zero-out runs to evaluate upwind state contributions to the GGPRDR Wilderness Areas and other MANE-VU Class I areas.⁷ In addition, EPA and the Visibility Improvement - State and Tribal Association of the Southeast (VISTAS) recently completed separate regional haze modeling studies using the Comprehensive Air Quality Model with Extensions (CAMx) photochemical grid model. The following table compares the uniform rate of progress (URP) and the modeling results from each study for the GGPRDR Wilderness Areas in 2028 for the 20% most impaired days. The three modeling studies predict impacts below the URP for the GGPRDR Wilderness Areas in 2028. VISTAS modeling shows an impact that is 0.81 dv and 0.77 dv above the MANE-VU and EPA modeling results, respectively. The modeling results are reasonably close given the different modeling platforms and year of meteorology data used in these studies.

Comparison of URP and Photochemical Grid Modeling of Visibility Impairment for the GGPRDR Wilderness Areas in 2028 for 20% Most Impaired Days

Conditions	Deciviews
Unadjusted Uniform Rate of Progress for 2028 (EPA) ⁸	17.07
MANE-VU/OTC – CMAQ/2011 Meteorological Data ⁹	12.13
VISTAS – CAMx/2011 Meteorological Data	12.94
EPA – CAMx/2016 Meteorological Data ¹⁰	12.17

For each VISTAS state, VISTAS also conducted Particulate Matter Source Apportionment Technology (PSAT) source apportionment modeling for sulfate and nitrate to evaluate statewide contributions of emissions to visibility impairment in Class I areas. Sulfate and nitrate were evaluated because these two pollutants currently account for the majority of the visibility impairment associated with anthropogenic sources in the VISTAS and MANE-VU regions. Figure 1 shows the combined impact of sulfate and nitrate on visibility impairment for the GGPRDR Wilderness Areas in 2028. As these results show, NC’s total sulfate and nitrate contribution to visibility impairment in 2028 to the GGPRDR Wilderness Areas is 0.18% for the 20% most impaired days and 0.03% for the 20% clearest days.

Documentation of the VISTAS modeling and results is currently undergoing review by the VISTAS state and local agencies and tribal authorities. Although the modeling results are considered preliminary, VISTAS does not anticipate that the over-arching conclusions (e.g., NC is not a significant contributor to visibility impairment to the GGPRDR Wilderness Areas or any other MANE-VU Class I area) will change. Once finalized, VISTAS will make the modeling results and documentation available to the public.

⁷ NH’s proposed Regional Haze SIP containing the document titled: *Ozone Transport Commission/Mid Atlantic Northeastern Visibility Union 2011 Based Modeling Platform Support Document October 2018 Update*, 2nd Version October 18, 2018.

⁸ From Table 3-3 in *Technical Support Document for EPA’s Updated 2028 Regional Haze Modeling*, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, September 2019.

⁹ Modeled without the MANE-VU Ask measures, see Table 12-8 in Appendix V (file named "r-ard-19-01-appendix-v.pdf") of NH’s proposed regional haze SIP.

¹⁰ From Table 3-2 in *Technical Support Document for EPA’s Updated 2028 Regional Haze Modeling*, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, September 2019.

Relative to the screening methodologies used by MANE-VU, photochemical grid and source apportionment models are regarded as superior to other techniques like Q/d and CALPUFF for determining statewide contributions because the models account for meteorological conditions and photochemistry over long distances that are not fully addressed by the screening methodologies. In addition, state contributions to visibility impairment in Class I areas should be calculated for 2028, not 2015, to allow states to coordinate regional haze planning with other regulatory programs including, but not limited to, the 2010 1-hour SO₂ National Ambient Air Quality Standard (NAAQS), the 2012 annual PM_{2.5} NAAQS, the 2015 8-hour ozone NAAQS, and the Mercury and Air Toxics Standards (MATS) rule.¹¹ This point is supported by EPA’s regional haze guidance which recommends the use of 2028 year emissions for calculating baseline visibility impacts before selecting sources for further analysis.¹²

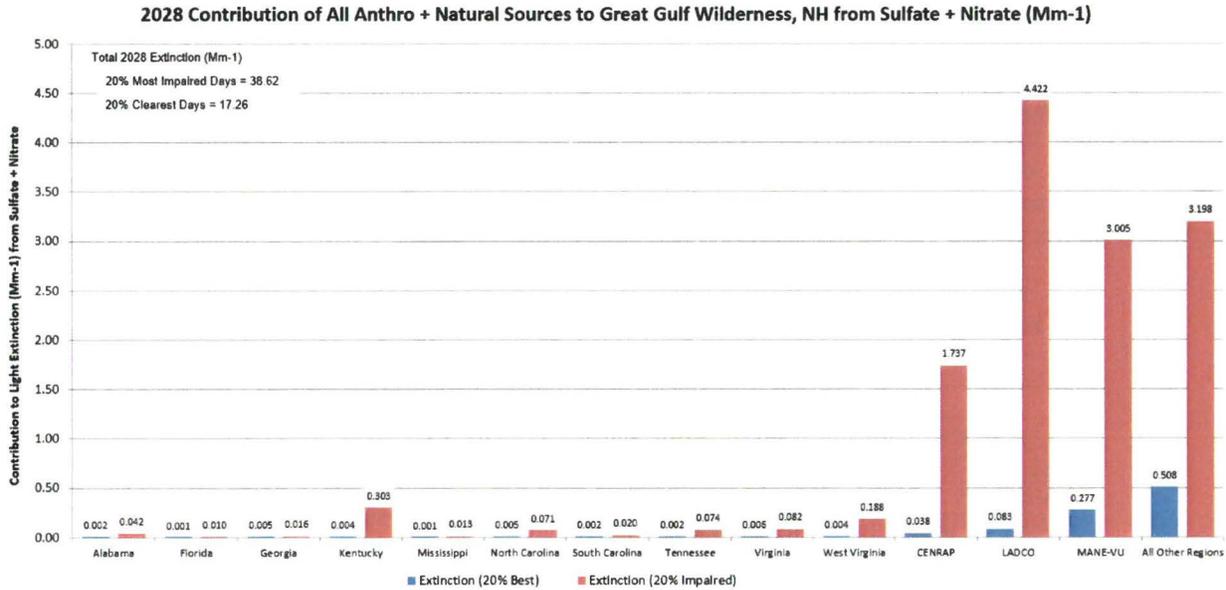


Figure 1. Contribution of All Sources to GGPRDR Wilderness Areas from Sulfate and Nitrate (Mm-1)

The DAQ believes that use of photochemical and source apportionment models such as CAMx/PSAT provide a much more accurate estimate of statewide contributions to visibility impairment in Class I areas than the screening methodologies used by MANE-VU to identify contributing states. Given the VISTAS modeling results, NC’s contribution to visibility impairment to the GGPRDR Wilderness Areas is well below the 2% threshold established by MANE-VU and; therefore; the DAQ requests that NC be removed from NH’s list of states considered to be reasonably attributing to visibility impairment at the GGPRDR Wilderness Areas.

¹¹ EPA extended the deadline for states to submit their second-round regional haze SIPs from July 31, 2018 to July 31, 2021 to provide states the opportunity to coordinate development of regional haze SIPs with other federal regulatory programs. See *Protection of Visibility: Amendments to Requirements for State Plans*, Final rule, 82 FR 3117.

¹² *Guidance on Regional Haze State Implementation Plans for the Second Implementation Period*, EPA-457/B-19-003, August 2019. See Step 3(a) “Estimating baseline visibility impacts for source selection”, page 17.

Conclusions

Based on the CAMx/PSAT modeling conducted by the VISTAS states, NC's statewide contribution to visibility impairment in the GGPRDR Wilderness Areas is significantly below the 2% contribution threshold that the MANE-VU states used to identify upwind states as reasonably anticipated to contribute to visibility impairment in MANE-VU Class I areas. As the DAQ noted in its comments on the MANE-VU Inter-RPO Ask, the DAQ believes that MANE-VU's screening methodologies are flawed in several areas and overstate upwind contributions to downwind state Class I areas. The DAQ also strongly disagrees with NH applying the MANE-VU Inter-RPO Ask control measures in the LTS/RPG for the GGPRDR Wilderness Areas as doing so would be inconsistent with the regional haze rule and guidance.

Thank you for the opportunity to comment on the Inter-RPO Ask. I hope that these comments are helpful, and I look forward to continuing to work with you and the MANE-VU states to develop reasonable regional haze SIPs. Please contact Randy Strait (randy.strait@ncdenr.gov) of my staff at 919-707-8721 if you have any questions regarding this matter.

Sincerely,

A handwritten signature in blue ink that reads "Michael A. Abraczinskas". The signature is fluid and cursive, with a long, sweeping horizontal line extending to the right.

Michael A. Abraczinskas, Director
Division of Air Quality, NCDEQ

MAA/rps

Attachment

cc: Michael Pjetraj, NCDAQ
Randy Strait, NCDAQ



ROY COOPER
Governor

MICHAEL S. REGAN
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MICHAEL A. ABRACZINSKAS
Director

February 16, 2018

David Foerter
Ozone Transport Commission
444 N Capitol St NW Ste 322
Washington DC 20001-1529

Re: MANE-VU Regional Haze Consultation

Dear Mr. Foerter:

As you know, the Mid-Atlantic/Northeast Visibility Union (MANE-VU) identified North Carolina as one of 14 upwind states that may reasonably contribute to visibility impairment at MANE-VU Federal Class I areas located in Maine, New Hampshire, New Jersey, and Vermont (hereafter referred to as the “Inter-Regional Planning Organization (Inter-RPO) Ask or Ask”).¹ At your invitation, the North Carolina Division of Air Quality (DAQ) has participated in each of the consultation calls MANE-VU held with the states identified in the Inter-RPO Ask.² These consultation calls have been helpful for understanding the technical analyses MANE-VU completed to identify states that may reasonably contribute to visibility impairment at MANE-VU Class I areas. The DAQ has also reviewed the technical documentation supporting the Ask. In the spirit of the consultation process, the DAQ is submitting this letter to share information, and express North Carolina’s concerns with MANE-VU’s analytical approach and conclusions as well as the timing for regional haze state implementation plan (SIP) submittals.

I. KapStone Kraft Paper Corporation (Facility ID 8048011 (3708300007), Unit ID ST-1,2 (ES-11-CU-001) - No. 1 Power Boiler)

The power boiler at Kapstone was identified in the MANE-VU Ask as having the potential for a 6.0 inverse megameter (Mm^{-1}) light extinction impact on MANE-VU Class I areas based on CALPUFF modeling of the facility’s 2011 sulfur dioxide (SO_2) and nitrogen oxide (NO_x) emissions. The DAQ reviewed the modeling documentation and found that the maximum potential light extinction impact modeled for the power boiler was 0.28 Mm^{-1} for MANE-VU Class I areas and 0.47 Mm^{-1} for Class I areas near the MANE-VU region (see Table 1). On January 31, 2018, the DAQ confirmed with Mr. David Healy, New Hampshire Department of Environmental Services, that the 6.0 Mm^{-1} extinction value shown in the Inter-RPO Ask for Kapstone Unit ST-1,2 is wrong. Mr. Healy confirmed that the extinction values shown in Table 1 below are correct for the power boiler and that the unit should not be included in the Ask. Therefore, we request that MANE-VU remove Kapstone from the Inter-RPO Ask.

¹ Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) States Concerning a Course of Action in Contributing States Located Upwind of MANE-VU Toward Assuring Reasonable Progress for the Second Regional Haze Implementation Period (2018-2028), August 25, 2017.

² Letter from Foerter, Dave, Executive Director, MANE-VU/OTC to Regan, Michael, Secretary, NCDEQ, October 16, 2017.

Table 1. Summary of Potential Visibility Impacts on MANE-VU and Nearby Federal Class I Areas Modeled for the KapStone Kraft Paper Corporation Power Boiler¹

Region	Class I Area	Estimated Extinction (Mm ⁻¹)			
		Maximum Potential Visibility Impact	Met Year 2002	Met Year 2011	Met Year 2015
MANE-VU	Acadia National Park, ME	0.08	0.076	0.07	0.07
	Brigantine Wilderness Area, NJ	0.28	0.22	0.24	0.28
	Great Gulf Wilderness Area, NH	0.07	0.05	0.04	0.07
	Lye Brook Wilderness Area, VT	0.12	0.05	0.08	0.12
	Moosehorn Wilderness Area, ME	0.07	0.07	0.06	0.06
	Presidential Range Dry River Wilderness Area, NH	0.08	0.058	0.05	0.08
	Roosevelt Campobello International Park, ME/NB, Canada	0.06	0.06	0.06	0.05
	Near MANE-VU	Dolly Sods Wilderness Area, WV	0.15	0.1	0.15
	James River Face Wilderness Area, VA	0.47	0.47	0.26	0.3
	Otter Creek Wilderness Area, WV	0.12	0.12	0.11	0.1
	Shenandoah National Park, VA	0.32	0.25	0.32	0.23

¹ Reference: 2016 MANE-VU Source Contribution Modeling Report, CALPUFF Modeling of Large Electrical Generating Units and Industrial Sources, Appendix F, April 4, 2017. CALPUFF modeling was performed using meteorological data for 2002, 2011, and 2015 and the highest light extinction impact was used as the maximum potential visibility impact.

In addition, the Kapstone facility has significantly reduced its SO₂ and NO_x emissions since 2011. This would result in extinction values much lower than the modeling showed based on 2011 emissions.

- From 2011 to 2016, total facility SO₂ emissions have decreased by 94% (from 881 tons in 2011 to 55 tons in 2016) primarily due to SO₂ reductions from the No. 1 power boiler. The No. 1 power boiler accounted for 91% (803 tons) of total facility SO₂ emissions in 2011, and 68% (37 tons) in 2016.
- From 2011 to 2016, total facility NO_x emissions have decreased by 13% (from 1,413 tons in 2011 to 1,232 tons in 2016). The No. 1 power boiler accounted for 71% (1,005 tons) of total facility NO_x emissions in 2011, and 67% (820 tons) in 2016.

The DAQ will submit the latest 2016 emissions data for this facility to MANE-VU to support future modeling updates.

II. Statewide Contribution Assessment

The DAQ reviewed the following two documents in an effort to understand MANE-VU's statewide contribution assessment:

1. Selection of States for MANE-VU Regional Haze Consultation (2018), MANE-VU Technical Support Committee, Sept. 5, 2017.
2. MANE-VU Updated Q/d*C Contribution Assessment, MANE-VU Technical Support Committee, April 6, 2016.

As noted in these documents, MANE-VU considered the results of a weight-of-evidence approach based on emissions (tons per year) divided by distance (kilometers) (Q/d) calculations, CALPUFF modeling, and HYSPLIT back trajectories to determine which upwind states may reasonably contribute to visibility impairment at a MANE-VU Class I area. States that contributed 2 percent or more of the visibility impairment to a Class I area, and had an average mass impact of over 1 percent (0.01 microgram per cubic meter ($\mu\text{g}/\text{m}^3$)), were identified for consultation, and, therefore, included in the Inter-RPO Ask. Sulfur dioxide and NOx emissions for 2015 for all anthropogenic sources were considered in the assessment. The results for North Carolina are provided in Tables 2 and 3.

Table 2. Percent Mass-Weighted Sulfate and Nitrate Contributions from North Carolina to MANE-VU Class I Areas in 2015

Maximum	Acadia	Brigantine	Great Gulf	Lye Brook	Moosehorn	Mass Factor
2.7%	2.7%	2.7%	2.1%	2.3%	2.2%	0.34

Table 3. Percentage of Trajectories from North Carolina in 2015 on 20% Most Impaired Visibility Days¹

Acadia	Brigantine	Great Gulf	Lye Brook	Moosehorn
0.55%	2.00%	0.00%	1.84%	1.22%

¹ 500 meter (m) trajectories were modeled using the HYSPLIT model, and 72-hour back trajectories were created 4 times per day at 3AM & PM and 9AM & PM. 2015 trajectories used the Eta Data Assimilation System (EDAS) 40-kilometer (km) meteorology. Trajectory points were mapped and counted within 25 x 25 mile grid cells.

Based on these results, MANE-VU concluded that, “*Modeling and trajectory analyses appear to support Alabama, North Carolina and Tennessee as being 2% contribution states. Each has sufficient emissions to cause some degree of visibility impact in the MANE-VU area and the trajectories suggest a connection on 20% most impaired visibility days, even if they are not as frequent as other states.*”

Although the DAQ was unable to fully understand the methodologies that MANE-VU applied due to a lack of documentation in the two references reviewed, the following identifies serious technical limitations with the information presented.

Q/d Screening Tool

The Q/d screening methodology yields conservatively high estimates of potential impacts for the following reasons:

1. Q/d does not account for the formation of secondary particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}) through chemical reactions as a function of distance. Consequently, Q/d assumes 100 percent conversion of SO₂ and NOx to ammonium sulfate ((NH₄)₂SO₄) and ammonium nitrate ((NH₄)NO₃), respectively, which is overly conservative and yields unrealistic estimates.³
2. Q/d does not account for wind direction or residence time (i.e., the amount of time a pollutant impacts a given area). MANE-VU attempted to correct for this limitation, in part, by developing wind-

³ US EPA, Interagency Work Group on Air Quality Modeling Phase 3 Summary Report: Near-Field Single Source Secondary Impacts. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Analysis Division, Air Quality Modeling Group, Research Triangle Park, NC, EPA-454/P-15-002, July 2015, pages 23-24.

direction-specific constants for each IMPROVE monitor (based on prior CALPUFF modeling for point sources) to “scale” Q/d results. However, the details of this methodology is not documented in the references we reviewed; consequently, the DAQ cannot determine if this is a reasonable approach for screening purposes. The Brigantine Wilderness Area in New Jersey, which is the closest MANE-VU Class I area to North Carolina, is located about 507 km (315 miles) from the centroid of the closest point to North Carolina, and 635 km (394 miles) from the centroid of North Carolina. The DAQ does not believe that the MANE-VU screening methodology is robust enough to determine visibility impairment attribution at these long distances.

3. For the stationary non-point and mobile source sectors, MANE-VU did not provide documentation of how it prepared 2015 year emissions. The DAQ requests that MANE-VU provide this documentation for review and comment by the upwind states. Furthermore, MANE-VU cited several references justifying the use of Q/d as a screening tool for assessing potential visibility impacts of these sources on Class I areas. The DAQ reviewed these references and found that they all focus on using Q/d as a screening tool for large point sources only; not surface emissions from stationary non-point and mobile sources.^{3,4,5,6} The DAQ believes that Q/d applied to the sum of total statewide annual emissions for stationary non-point and mobile sources at the state centroid results in significantly high impacts especially since Q/d does not account for atmospheric dispersion or residence time of pollutants impacting a Class I area.

Back-Trajectory Analysis

MANE-VU modeled back trajectories for the 20 percent most impaired visibility days during 2002, 2011 and 2015 at each of the MANE-VU Class I areas. MANE-VU used the back-trajectory results to qualitatively cross-check with the screening results to justify including states in MANE-VU Inter-RPO Ask. If an upwind state was determined to have a 2 percent or more impact on a MANE-VU Class I area and it had at least one trajectory originating from the upwind state, MANE-VU included the state in the Ask. The MANE-VU documentation does not identify the days during which or the number of trajectories originating from North Carolina. Given the low percentage of trajectories originating from North Carolina in 2015 (see Table 3), the DAQ believes that the back-trajectory analysis shows that North Carolina should not be considered as reasonably attributing to visibility impairment in any of MANE-VU’s Class I areas, particularly when the screening analysis overestimates potential impacts. For distant-source regions, the trajectory threshold should be much higher to definitively assign culpability.

The DAQ further questions why MANE-VU used the course Eta Data Assimilation System (EDAS) 40-km meteorology for its 2011 and 2015 analysis, and EDAS 89-km meteorology for its 2002 analysis, instead of using the North American Mesoscale Forecast System (NAM) model with a 12-km grid for HYSPLIT trajectory modeling. The NAM model has become the model of choice not just for DAQ but also for EPA and other air quality agencies and RPOs for HYSPLIT trajectory modeling. Furthermore, the DAQ questions MANE-VU’s selective use of meteorological years 2002, 2011 and 2015, instead of across consecutive years (e.g., 2011-2015). The DAQ believes that use of more current year emissions and meteorology would significantly improve the contribution assessment for MANE-VU Class I areas.

⁴ National Association of Clean Air Agencies, *PM2.5 Modeling Implementation for Projects Subject to National Ambient Air Quality Demonstration Requirements Pursuant to New Source Review*, Report from NACAA PM2.5 Modeling Implementation Workgroup, January 7, 2011, page 2-4 and Appendix E.

⁵ Baker, K. R. and Foley, K. M., “A Nonlinear Regression Model Estimating Single Source Concentrations of Primary and Secondarily Formed PM2.5,” July 2011.

⁶ Federal Land Managers’ Air Quality Related Values Work Group (FLAG) Phase I Report—Revised (2010) Natural Resource Report NPS/NRPC/NRR—2010/232, US Forest Service, National Park Service, and U.S. Fish and Wildlife Service, October 2010.

Basis for Determining Reasonable Attribution

The documentation the DAQ reviewed did not explain the technical basis for the visibility impairing thresholds that MANE-VU used to include states in the Inter-RPO Ask. This is important for states such as North Carolina to understand and to have the opportunity to address since MANE-VU is claiming that North Carolina is reasonably attributing to visibility impairment in one or more of MANE-VU's Class I areas. Given the significant uncertainty associated with the Q/d screening tool, the weakness of the back-trajectory analysis, and lack of documentation explaining how MANE-VU arrived at the contribution results shown in Table 2, the DAQ believes it is inappropriate for MANE-VU to use these results to draw any conclusions regarding North Carolina's contribution to visibility impairment in any of the MANE-VU Class I areas. The DAQ requests that MANE-VU provide additional documentation explaining the basis for the thresholds.

IV. Timing of SIP Submittals

We request that MANE-VU states seriously consider delaying submittal of their regional haze state implementation plans (SIPs) from July 2018 to July 2021. As EPA noted in its final regional haze rule,⁷ extension of the SIP submittal date to July 2021 "...will allow states to coordinate regional haze planning with other regulatory programs, including but not limited to the Mercury and Air Toxics Standards,⁸ the 2010 1-hour SO₂ NAAQS,⁹ the 2012 annual PM_{2.5} NAAQS¹⁰ and the Clean Power Plan,¹¹ with the further expectation that this cross-program coordination would lead to better overall policies and enhanced environmental protection." In addition, EPA has yet to release its final regional haze guidance document which, when released, may contain significant revisions to the draft guidance document released on June 30, 2016 that would affect the process for identifying state(s) as reasonably attributing to visibility impairment in downwind state Class I areas.¹² It is for these reasons that North Carolina is working with the nine other Visibility Improvement - State and Tribal Association of the Southeast (VISTAS) states to complete our regional haze modeling analysis in mid-2019 and regional haze SIP by July 2021. The differing schedules have resulted in seven VISTAS states being asked to assess the MANE-VU analysis without the benefit of the forthcoming VISTAS technical work. Accounting for the emission reduction benefits associated with the federal programs EPA cited in its rule and following the final regional haze guidance issued by EPA will help to ensure that upwind states such as North Carolina are not falsely implicated as contributing to visibility impairment at MANE-VU Class I areas.

In addition, on January 18, 2018, EPA announced its decision to revisit aspects of the 2017 regional haze rule.¹³ While the extent of the review is uncertain, the potential exists that EPA could modify certain regional haze provisions prior to the July 2021 SIP submittal deadline that may affect state obligations under the rule. The MANE-VU states should allow time for EPA to complete its revisit to the rule and for the VISTAS analysis to be completed and shared before submitting SIPs incorporating any new emission control presumptions directed at the VISTAS states.

⁷ 82 FR 3116-3118, January 10, 2017.

⁸ 77 FR 9304, February 16, 2012.

⁹ 75 FR 35520, June 22, 2010.

¹⁰ 78 FR 3086, January 15, 2013.

¹¹ 80 FR 64662, October 23, 2015. The Clean Power Plan was stayed by the Supreme Court for the duration of litigation. Order in Pending Case, *West Virginia v. EPA*, No. 15A773 (February 9, 2016). As a result, states have no compliance obligations with respect to the Clean Power Plan at this time.

¹² Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period, June 30, 2016.

¹³ EPA's Decision to Revisit Aspects of the 2017 Regional Haze Rule Revisions, <https://www.epa.gov/visibility/epas-decision-revisit-aspects-2017-regional-haze-rule-revisions>.

In our SIP, North Carolina will rely on VISTAS II regional-scale modeling for 2028 using the Comprehensive Air Quality Model with Extensions (CAMx) model with the Particulate Matter Source Apportionment Technology (PSAT) source apportionment method for assessing source contributions to Class I areas. This work will also be used to determine if North Carolina has a significant anthropogenic emissions source contribution to visibility impairment in each of MANE-VU's Class I areas. By delaying submittal of MANE-VU state regional haze SIPs until July 2021, North Carolina will be able to share more current emissions and modeling data with the MANE-VU states to determine if North Carolina emissions reasonably contribute to visibility impairment in any of the MANE-VU Class I areas.

IV. Summary and Conclusions

In closing, the DAQ welcomes the opportunity to consult with MANE-VU on the quality of data and analytical techniques used to determine reasonable attribution in MANE-VU Class I areas. As previously noted, the DAQ has serious concerns with the information included in the Inter-RPO Ask for North Carolina. First, I request that MANE-VU revise the Inter-RPO Ask to exclude the power boiler at Kraft Paper Corporation that was incorrectly included in the Ask.

Second, the statewide contribution assessment contains significant uncertainty associated with the Q/d screening tool (especially applied to stationary non-point and mobile source emissions) and back-trajectory analysis, and the technical documentation lacks clarity on how MANE-VU arrived at the contribution results shown in Table 2. For these reasons, the DAQ believes it is inappropriate for MANE-VU to use these results to draw any conclusions regarding North Carolina's contribution to visibility impairment in any of the MANE-VU Class I areas. In addition, the DAQ believes that MANE-VU has not demonstrated the need for North Carolina to pursue adoption and implementation of the emissions management measures MANE-VU included in its Inter-RPO Ask.

Finally, North Carolina recommends that MANE-VU take the additional time allowed by EPA to conduct CAMx and PSAT modeling such as VISTAS II is doing to determine if North Carolina reasonably attributes to visibility impairment in MANE-VU's Class I areas. Meanwhile, North Carolina is working with the VISTAS states to complete its CAMx and PSAT modeling and will rely on this modeling to assess its visibility impact on in-state and downwind state Class I areas. North Carolina will share this information with MANE-VU when it becomes available in 2019.

Thank you for the opportunity to comment on the Inter-RPO Ask. I hope that these comments are helpful and I look forward to continuing to work with you and the MANE-VU states to develop reasonable regional haze SIPs.

Sincerely,



Michael Abraczinskas, Director
Division of Air Quality, NCDEQ

MAA/rps

cc: Michael Pjetraj, DAQ
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