March 2, 2017
From: MANE-VU Technical Support Committee
To: MANE-VU Air Directors

Re: Recommendation on Approaches to Selecting the 20% Most Impaired Days

On January 10, 2017 US EPA published final revisions to regional haze SIPs regulations in the federal register (US EPA 2017). One aspect of the new regulations would be a change from using the "20% worst days" in terms of visibility impairment to "20% most impaired days." This change affects a good bit of the technical underpinnings of the Regional Haze SIP, including, but not limited to, analyses of progress, modeling techniques, and determinations of which sources are reasonable to control. Much of the work involved in the SIP cannot be finalized without having the selection of the "20% most impaired days" completed.

An approach for states to use in determining the "20% most impaired days" was provided in the draft guidance document (US EPA 2016). However, there are some issues with using it as it was drafted and the TSC will need to recommend an approach for dealing with the unresolved problems.

Issues

20% Most Impaired Days

The guidance document is in draft form and the final guidance document may have a different technique all together. Furthermore the final guidance document is not expected to be published until the end of the year, if it even is finalized, further compounding the potential delays.

Another issue it that MANE-VU did not concur that the approach outlined in the draft guidance, finding the days with the greatest ratio of natural impairment to anthropogenic impairment, was appropriately determining the days that are most impaired by anthropogenic emissions as the regulation requires. This will result in days being selected that aren't necessarily the most impacted by anthropogenic emissions since those typically occur on summer days, when wildfire are more likely to have an impact as well.

Determining Anthropogenic Impacts

The draft guidance also proposed a methodology for determining what light extinction is attributable to anthropogenic impacts. MANE-VU commented that EPA's approach likely attributed some anthropogenic impairment from organic carbon to natural impairment since secondary organic aerosols form as the result of SO2 pollution in the east are not being accounted for. This is also the case for coarse particulate matter where the lack of consideration of diesel vehicles likely under attributes impairment to anthropogenic sources. Other RPOs also raised concerns about the methods proposed as

well. There is a reasonable chance that the approaches EPA provided for determining anthropogenic impacts in the draft guidance could change when finalized leaving work needing to be redone.

Approaches

Approach 1: Use 20% Worst Days

Analyses could be completed using the approach to selecting the "20% worst days" that was used before and make the case that natural sources impact the Eastern United States so minimally that the "20% worst days" and the "20% most impaired days" are the same selection of dates.

- **Pros:** The analyses that have already been completed, including the determinations to focus on sulfate emissions and base case modeling would not need to change. Does not depend on a change in EPA's anthropogenic impairment determination.

- **Cons:** EPA has specifically changed the language in the rule to focus on a new direction and OAQPS and FLMs have pushed to use new methodologies, which means this approach will likely get the most push back and probably is not viable. Analysis would need to be undertaken to demonstrate that it is indeed the case that the "20% worst days" and the "20% most impaired days" are the same data set. *Under the final rule states retain the option to also present "20% worst days" visibility data but* ***only for public information purposes****.*

Approach 2: Use 20% Worst Days with Wildfire Days Removed

The existing analyses could be used, except that a qualitative analysis to determine which days are impacted by fire could be removed from consideration and replaced with additional days until 20% of the days have been selected.

- **Pros:** We would be relying on data that is already produced, including the qualitative analysis of wildfire impacts on 20% worst days. Does not depend on a change in EPA's anthropogenic impairment determination.

- **Cons:** Days that are currently in the next percentile of days beyond "20% worst" have not been analyzed for wildfire impacts and that would have to be completed. This would not go to solve our underlying issue with EPA's proposed approach in the draft guidance since we would be removing high wildfire days without regard to anthropogenic impact. We would need EPA and FLM buy-in on this approach. Developing a method to remove wildfire days that is acceptable to EPA and the FLM's may be problematic.

Approach 3: Use 20% Most Impaired Days based on Light Extinction

This was the approach that we had recommended in MANE-VU's comments on EPA's draft guidance.

- **Pros:** This would be a quantitative way to determine the most impaired days and the data has been provided. It would be the best case for standing up to scrutiny and match the wording in the rule.

- **Cons:** Buy-in from EPA and the FLMs will be necessary to obtain. This option depends on EPA's anthropogenic impairment determination, which has the potential to be changed.

Approach 4: Use 20% Most Impaired Days based on Deciviews

This was the approach that EPA included in the draft guidance.

- **Pros:** This would be a quantitative way to determine the most impaired days and the data has been provided. It would be the most acceptable to EPA & FLMs. The modeling being conducted by EPA will be completed with this method in mind.

- **Cons:** This would disagree with the reading of the regional haze rule that we need to focus on the days with the most anthropogenic impairment. Brigantine in particular will have problems with this approach since many days will be excluded due to coarse mass from construction resulting in a stark shift from summer sulfate to winter nitrate. This option depends on EPA's anthropogenic impairment determination, which has the potential to be changed.

Approach 4a: Wait for final guidance

- **Pros:** It would be acceptable to EPA & FLM's

- **Cons:** The longer EPA waits to finalize guidance will jeopardize states being able to submit SIPs by July 31, 2018 leaving the use of 2011 as a base year inventory in question if states submit SIPs after July 31, 2018.

Approach 5: Include Several Approaches

Much of the work for the four approaches has already been completed in terms of selecting days, some more than others.

- **Pros:** Allows the decisions to be made later in the process and for us to analyze several different methods. Minimal additional workload will be required concerning the date selection. Maintaining Approach 1 will ease retrospective work.

- **Cons:** See individual cons.

Recommendation

The MANE-VU TSC recommends pursuing Approach 5 with the focus on Approach 4 while including data from Approach 1 in cases where including two sets of data is not problematic and does not substantially increase workload. The TSC believes that Approach 4 is very likely what EPA will choose in the final guidance. It is also what is available through the IMPROVE system. Using this approach will maintain consistency with other regions and not increase workload. Going with Approach 4 will also allow us to complete work in a timely fashion. Keeping Approach 1 in some reports will also be useful in the case where the Regional Haze 2017 SIP Revision Rule is vacated by the courts or does not go into effect for some other reason and will also be useful for historical comparisons to work conducted in the previous planning cycle.

References

US EPA 2016, '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',.

Protection of Visibility: Amendments to Requirements for State Plans, 82 (United States|US [Final Rule] 2017).