

Attachment

Ambient data analysis, Chapter 5 (Step 1)

We appreciate that EPA has made an attempt to distinguish anthropogenic impacts from natural impacts at Class 1 areas. Our November, 2015 proposal to EPA focused on separating NO_x and SO_x from other sources of visibility impairment.¹ Decisions to include or exclude data in the manner in which EPA is proposing is a novel approach for the treatment of monitoring data in a regulatory context. Considering the complexity of the proposed guidance, WESTAR does not have a specific recommendation about the alternative to the ambient data analysis EPA is proposing. We do believe that further review, including formal peer review, is needed. We also believe that states must be able to use the data in a manner that recognizes anthropogenic impacts unique to each Class I area.

In our comments on the regional haze rule proposal, WESTAR commented extensively on the quantification and treatment of ‘natural visibility conditions’. We agree with the guidance statement that recognizes that “attaining natural visibility conditions by the end of 2064 is not an enforceable requirement of the regional haze program” (page 7 of the guidance). We also commented to a lesser extent on the impacts of changing the ‘baseline period’. EPA has not provided an adequate justification as to why the baseline period must be recreated to draw a new glide path. States should have the option to start at ‘current visibility conditions’ to determine the glide path to the ‘natural conditions’ endpoint, on a site-by-site basis. States must be able to determine the starting point for defining the Uniform Rate of Progress (URP) glide path. The WRAP Regional Haze Data Analysis and Decision Support System (TSS), developed specifically for the regional haze program metric tracking in the west, should be financially supported by EPA to produce these calculations of natural and anthropogenic contributions for states.

General Comments/Issues:

- It is possible to have a negative estimate of natural conditions visibility as a result of the conversion from extinction to deciduous at high elevation sites.
- International emissions are included in the anthropogenic component and thus are included in the glide path, but cannot be controlled by states.
- International emissions and prescribed fires are an estimated increment that will change over time. After 10 years, that increment is likely to change in absolute value and/or in percent of overall impact, for many reasons related to the global economy, prescribed fire budgets, and meteorological conditions. It is not clear if that ‘increment’ is added to 2064 assumptions for natural conditions, or should

¹ Letter to EPA from the WESTAR Council, November 16, 2015

also remain in the baseline or current conditions. The glide slope changes depending on whether the increment is added to the end point, taken out of the start point, or remains in the start point. There should be an option to make the adjustment in each planning period so as to use the most accurate data for that time.

- Even though the natural conditions levels are meant to represent ‘routine’ natural conditions, they are based on empirical data collected in the 20th century (page 37). Natural conditions have changed since then. States should have the option to use natural conditions calculated from current data, using Trijonis’s method or another suitable method. ‘Worst days’ was set at a standard deviation above the mean rather than looking at the pattern and range of actual distribution of ‘best’ to ‘worst’ days for each species at each site. If states recalculate natural conditions, they should have the option of using updated species contributions at each site for calculating the daily splits.
- The threshold of 95 percent for detecting wildfire and dust conditions is insufficient to capture the extreme episodic events (e3 days) of the west. Each year, if the values for OC+EC and FS+CM on all days are plotted highest to lowest, normally more than five percent of the days will likely be fire- or dust-impacted days. Furthermore, the distribution of days with the same values is rarely normal. Every year has wildfires, many years have dust storms; it depends on which events impact the monitors and when. In the guidance, EPA assumes it is easiest to use statistical means to separate out the e3 days, but the threshold for a normal distribution for eastern U.S. days cannot be applied to a skewed distribution of arid western summer days and produce accurate results. Western states should be allowed to use different thresholds, including thresholds lower than 95 percent based on a site-specific analysis of species distribution over the recent 10-15 year period. This site-by-site analysis may also capture the seasonal increase in biogenic emissions (natural emissions that are otherwise unaccounted for in the guidance), especially in the many forested wilderness Class I areas. Biogenic emissions may be an important seasonal cause of haze, depending on the type of vegetation and location of the Class 1 area.
- Regarding Step D²: Calculation of “2003 Annual Average Light Extinction (Excluding Episodic Events) (Mm-1)” in Table 5.6 (page 37). In order to duplicate the numbers that appear in the table, it is necessary to remove all days with any missing data, regardless of whether data is available for the specific PM species. For example, for OMC at Mesa Verde in 2003, there are 113 valid values (out of 121 total observations), resulting in an annual average of 3.12 Mm-1. However, within those 113 values, 8 days are missing values for another species

² Section 5.5 Step D: Further split the remaining OMC, LAC, Fine Soil and CM light extinction into “natural (routine)” and “anthropogenic based in part on the NC-II estimate.”

(such as CM). If only using the remaining 105 values are used, then the value is 3.19 Mm⁻¹ which is presented in Table 5.6. Is a QA/QC marker missing somewhere that could be used to limit what days should be used for this annual average? Data handling protocols should be clearly delineated in the guidance. Furthermore, in the interest of transparency, all data must be available for review.

- In Step E³ of the ambient data analysis (page 38), annual average light extinction is replaced with natural (routine) conditions when the NC-II values are greater than the annual average light extinction. The NC-II data to be used in this step is provided by EPA in the “NaturalConditionsII_Format2_v2.xls” spreadsheet. This data provides just a single annual average natural conditions value per site and species. In reality, each species has its own seasonal curve, and the resulting daily deciview (dv) values are skewed, not normally distributed throughout the year. States should have the flexibility to develop seasonal variations to the natural condition values if the NC-II estimates provided are not representative of conditions at a specific Class I area. In addition, the example calculation for Mesa Verde, shown in Step E of the guidance document (Table 5.7), does not appear to apply the NC-II substitution when the annual average light extinction for Coarse Matter is below the NC-II estimate. The guidance document should be reviewed to ensure that the recommended guidance and the example calculations are the same.

The ambient monitoring data analysis process used by WRAP on behalf of the WESTAR states, for both the first round of Regional Haze SIPs and the progress reports, produced a regionally consistent data set. We again call upon EPA to fund the WRAP to produce these data sets for the next round of SIPs rather than ask states to rely upon EPA and IMPROVE as proposed in the guidance.⁴

Screening of sources, Chapter 6 (Step 2)

EPA has proposed unrealistic and overly conservative screening mechanisms for Long-Term Strategy (LTS) development that capture a large fraction of in-state sources contributing to anthropogenic visibility impairment (EPA recommends 80 percent).⁵ In addition, EPA has recommended a conservative approach to determining if a state’s sources affect visibility at out-of-state monitors and suggests a one percent contribution

³ Section 5.5 Step E: Consider the remaining light extinction from sulfate, nitrate, carbon and dust “anthropogenic.”

⁴ Further, related to ambient data analysis EPA says “The IMPROVE program and the EPA will work together to conduct these analyses and provide datasets to states for their use.” Pp31-32, section 5.5 and “The EPA will work with the IMPROVE program to offer datasets containing the 20 percent most impaired days, selected based on anthropogenic impairment, and the 20 percent clearest days for use by states” (Section 5.13, p 48).

⁵ “The EPA considers 80 percent to be a reasonably large fraction for this purpose in the second planning period. If an approach does not reach this 80 percent inclusion level, the threshold for major stationary sources, minor stationary sources and/or categories of area stationary sources should be reassessed for reasonableness” (p.72)

threshold for out-of-state anthropogenic visibility impairment. This one percent impact threshold is identical to the significance level EPA has used to evaluate interstate impacts on nonattainment and maintenance areas associated with health-based air quality standards. EPA needs to provide a much more detailed and robust demonstration that fully characterizes the modeling tools available to support these thresholds, if they are to be used for the regional haze program. The regional haze rule strives towards unattainable aesthetic goals, rather than the mandatory requirements of meeting a health-based standard.

One of the problems with these approaches is that two large source sectors (mobile and international) that contribute to visibility impairment (and are beyond most state control) are excluded from consideration in the LTS development. This unduly focuses the LTS on in-state stationary and area sources. The guidance recommends that states not consider mobile sources for four factor analysis (or include them in the 80 percent)⁶, but this sector accounts for more than 50 percent of NO_x emissions in the WRAP region. Boundary condition (international) contributions to sulfate extinction at western Class I areas can be large (40 percent or more). We believe it is unjustified to conduct four factor analyses on a large portion of state stationary and area sources without consideration for the significant visibility impairment resulting from mobile and international sources. Asking states to conduct four factor analyses on a large portion of their sources without consideration of the significant visibility impairment resulting from mobile source and boundary conditions inappropriately shifts the burden towards state stationary and area sources, which may cause significantly less visibility impairment.

In the proposed guidance, the one western state that can control mobile source emissions would not be able to consider any of the control programs and reductions that are already part of its LTS in its Regional Haze SIP. This is just one more reason it is not acceptable to screen out the mobile source inventory from the analysis. It is also inappropriate to screen out mobile source impacts when they may be the nearest and predominate anthropogenic contributors of precursor NO_x, PM, and SO_x emissions to Class I areas. The FLMs and the states would not be given any credit for the measures they have introduced or plan to introduce for mobile source reductions within and adjacent to the parks and monuments.

Mobile source emissions include maritime and riverine shipping. States that have taken steps to reduce in-port and near-port emissions will be penalized, in effect, for not being able to count those on-road and off-road control measure at the ports and terminals when they may have a beneficial impact on visibility.

As noted above, boundary condition contributions from international sources (both natural and anthropogenic) to sulfate and nitrate extinction at western Class I areas can be large according to WRAP modeling for the western domain. These ‘boundary conditions’ refer to the modeling boundary exterior to the continental United States and are part of the contributions of ‘uncontrollable’ emissions impacting western Class I areas. They include Canadian and Mexican areas, for which updated inventories are sorely needed, both for changes in anthropogenic and natural emissions, since the turn of the century. Emissions

⁶ Guidance, Section 8.7

from the Pacific and Eastern boundaries of the modeling domain also impact western Class I areas.

Maritime shipping emissions have changed in the past 10 years for many reasons such as California and international fuel requirements, speed limits in sensitive maritime migration and breeding areas, global shipping fluctuations, and the widening of the Panama Canal affecting shipping routes. Other factors, such as energy-related resource development and population growth, also affect national and international movements of goods, whose emissions must be accounted for in the inventories used for modeling of the western region domain.

The guidance minimizes and limits consideration of control costs and downplays consideration of visibility improvements in LTS development. The guidance could result in sources that are captured by screening being required to install controls without demonstrating a commensurate visibility benefit.

The guidance makes a general statement that control costs are reasonable if they are compared “to the costs that other similar sources have had to bear...in other regulatory actions” (Section 8.1.1, page 97). Equating control costs for the Regional Haze Rule, which has aesthetic goals, to those of health-based NAAQS is unjustified. It is an accepted practice in air pollution regulation that air pollution control costs vary from region to region, even within the same state. Some visibility impairment controls might need to be phased in over a longer time frame. This is where long-term strategies can be utilized in place of immediate controls, particularly if immediate controls produce little or no visibility benefit in the current planning period.

EPA suggests there is no ‘safe harbor’⁷ proposed in the guidance, but there should be. How do states know they have done enough to control emissions for a planning period, if being below the URP line is not a ‘safe harbor’? As the guidance is written, compliance costs are the factor with the most weight, but they cannot be the only driver of reasonable progress. An excessive number of sources will be subject to the four factor analysis in each planning period. States must have a clearer sense for when a regional haze SIP will be approvable by EPA than what is provided in the guidance.

In the guidance, EPA assumes a significant regional modeling requirement will be required of states.⁸ We believe that EPA needs to provide financial support to the WRAP for this purpose. The required modeling will include significant emissions inventory data collection, as well as analysis and projection, for all WRAP states. The

⁷ “Under the second alternative approach, states would consider visibility both during the screening step and when considering the four statutory factors” but “it is not appropriate to reject a control measure...on the basis of the associated visibility benefits being imperceptible to the human eye.” (p. 15) “States are not required to set RPGs that meet or exceed the URP, nor does meeting or exceeding the URP create a safe harbor that exempts states from the requirements of the Regional Haze Rule.” (p. 18)

⁸ “This section assumes that a state will use an air quality model to develop estimates of the visibility impacts of individual sources or group of sources.” (Section 6.2, p. 58).

level of detail required for an emissions inventory which will include 80 percent of visibility impairing sources after removing mobile and boundary conditions will also require significant state and local air agency effort that has not been adequately considered in the guidance.

Source and emission control measure characterization, Chapter 7 (Step 3)

Any regulatory program that imposes costly controls to reduce air pollution must produce environmental benefits. The four statutory factors that need to be considered in a regional haze program must also produce demonstrable progress toward the visibility goals. We believe that there must be a direct link between the statutory factors and visibility and the guidance fails to incorporate visibility improvements into the ‘four factor’ analysis in a reasonable manner⁹.

Decisions on the content of the LTS, Chapter 8 (Step 4)

WESTAR believes the development of a LTS goes hand-in-hand with the selection of a Reasonable Progress Goal (RPG). A state needs to know what control measures are available before a reasonable goal can be set, but it must also recognize the incremental nature of the regional haze rule and use the URP line for its Class I areas as a guide in setting a goal.

We recommend the second alternative screening approach in which visibility is considered along with the ‘four factors’ to evaluate sources for potential control. We do not support the notion that control strategy decisions can be divorced from visibility impacts from specific sources. It is one thing to seek emission reductions in a NAAQS nonattainment area of somewhat limited geographic extent. It is another matter to make visibility protection control decisions for sources that may be hundreds of miles away from Class I areas.

Regional scale modeling of the LTS to set the RPGs for 2028, Chapter 9 (Step 5)

An evaluation of each state’s LTS emissions reductions estimates will need to be done for all Class I areas in the west together in a series of modeling runs using a regional photochemical model due to the regional nature of haze, and to be in compliance with existing EPA guidance. We note that updated EPA modeling guidance has not yet been provided that will describe technical requirements to project future visibility with the revised progress tracking metric as the guidance document specifies. This will have to be based on multiple regional modeling runs, with those results needed to complete the LTS and RPG process steps for each state. We also note on page 173 in the draft guidance that EPA in a footnote states: *We expect that regional planning organizations will have*

⁹ “Given the statutory purpose of the visibility program, we believe that allowing states to consider visibility impacts when determining the scope of the reasonable progress analysis is a reasonable interpretation of the statute.” (p.13).

*modeling information that identifies sources affecting visibility in individual class (sic) I areas.*¹⁰

This modeling will need to be based on western states' careful evaluation of both future projections of anthropogenic emissions sources within the states and the international and natural sources' contributions to the proposed Most Impaired Days metric. Resources for the multiple regional LTS modeling runs will be needed from EPA as the guidance only specifies how a state is to proceed to evaluate and consider reductions in anthropogenic sources within the state and does not identify how future interstate, international, prescribed fire and natural sources' contributions are to be quantitatively assessed.

The back trajectory and Q/d methods in the guidance are purely for screening purposes for four factor analysis and will not produce interstate, international, and multiple source contributions for SIP purposes, as a series of regional modeling runs will. Iterative regional modeling to assess LTSs for each state will be required to produce consistent SIPs for the 118 Class I areas in the west. Examining planning inputs for anthropogenic and natural emissions in the 2028 milestone year is a state responsibility that requires a robust regional modeling effort, but EPA provides no resources.

Finally, regional modeling with source apportionment and/or sensitivity studies for the LTS analyses can be efficiently repeated as necessary to help identify when further reasonable controls will not change visibility for the 2028 RPG at each Class I area, simultaneously.

Progress, Degradation and Glidepath Checks, Chapter 10 (Step 6)

The proposed rule revisions and guidance (using the most anthropogenically impaired deciview days metric) may help some states demonstrate progress toward the visibility goals of the Clean Air Act. Natural conditions are not constant. Considering that the glide path will always have imprecise start and endpoints, calculating the URP becomes an expensive, resource-intensive mathematical exercise for many western states, which have to complete analyses for anywhere from one to 29 Class I areas within their own boundaries, in addition to those of their immediate and farther downwind neighbors. To demonstrate progress, western states may need additional weight-of-evidence parameters¹¹ available to track progress toward visibility goals.

Western states are very limited in the number and types of remaining sources to control. Most of the large sources in the west have been suitably controlled through BART. Any new sources must meet RACT, BACT, MACT, or PSD requirements. It will be a struggle to impose further controls on very small sources if there is no way to

¹⁰ from: https://www.epa.gov/sites/production/files/2016-07/documents/draft_regional_haze_guidance_july_2016.pdf

¹¹ These might include tracking improvements in annual visual range, the middle quintile average of annual monitored days, or the number of days per year at or below the deciview value of the Baseline Period's 'Best Days'.

link them to visibility impairment or to visibility improvements. The glide path may not be the best reference to use to benchmark progress.

Whether the RPGs are above or below the glide path, the proposed guidance, in essence, requires states to make a demonstration that more cannot be accomplished during the respective planning period, irrespective of the visibility benefits. There is, in effect, no 'safe harbor' even for states for which 2028 visibility projections are below the deciview glide path. For western states, the real issue is being able to justify controls, if visibility improvements cannot be demonstrated. Equally difficult is showing humanly perceptible visibility improvement, when some of the URPs could be less than half a deciview per year, or in the range of one deciview per planning period.

For these reasons, there needs to be additional 'weight of evidence' means for demonstrating suitable progress. Many western Class I areas already have exceptional visual range of over 100 miles, except on days with natural episodic events. This contrasts with all non-WESTAR states whose current average visual range is between 36 and 86 miles.

WESTAR states need to be included in further discussions with the IMPROVE Committee, the FLMs, and the EPA regarding ways to demonstrate visibility improvements.