

GUIDANCE TOPICS

Topic III: The URP and RPG Framework

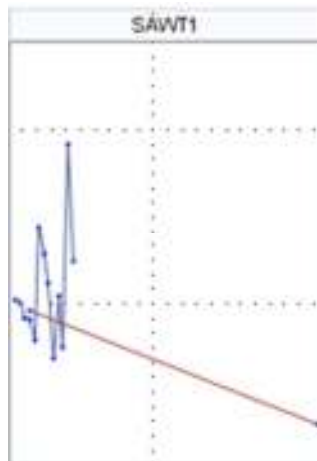
Relevant Background

The current RHR requires states to determine 2000-2004 baseline manmade visibility impairment conditions for the 20% best and 20% worst days, and to determine natural visibility conditions for the same two sets of days.

States project their visibility conditions for the end of the planning period for the 20% best and 20% worst days using a photochemical air quality modeling system to project the net effect of their long term strategy of emission controls. The projected values are referred to as reasonable progress goals (RPGs).

The RPGs are used in later progress reports as points of comparison to most recent visibility conditions. Progress reports are required to include a state determination of whether the SIP is adequate to ensure that the progress goals will be achieved by the end of the planning period.

The existing URP and RPG framework for setting RPGs and tracking progress towards those goals is susceptible, at some Class I areas, to substantial year-to-year variability due to natural events with significant visibility impacts, such as large wildfires and dust storms. This is illustrated for one Class I area in the following figure of annual deciview values for the 20% worst days. This variability is dampened but not always removed by the use of a 5-year moving average.



In addition, because the analytical procedure for setting RPGs does not distinguish between domestic and international anthropogenic emissions, the current RPG framework can mask progress that a state air agency may be making.

Virtually all stakeholders were concerned and recommended that the EPA provide rule changes or guidance for visibility progress metrics that focuses on reducing controllable emissions. In response to this feedback, we intend to issue guidance that focuses visibility progress metrics on reducing U.S. anthropogenic emissions.

Issues

A. How should the progress tracking metric be redefined to focus on progress in controlling anthropogenic emissions?

Questions

1. Is it appropriate to remove (or possibly adjust) days that are dominated by natural events from the 20% worst set of days, for event types whose impact varies a lot from year to year, as a way of making more evident any progress that has been and will be achieved by control of anthropogenic sources? Are such event types limited to wildfires and dust storms, or are other event types of concern?
2. After internal discussion and close reading of the RHR as a whole, including definitions, the EPA workgroup currently believes that removing (or possibly adjusting) days that are dominated by natural events is consistent with the existing Regional Haze Rule (RHR).

Here are relevant definitions from the RHR:

Visibility impairment means any humanly perceptible change in visibility (light extinction, visual range, contrast, coloration) from that which would have existed under natural conditions.

Most impaired days means the average visibility impairment (measured in deciviews) for the twenty percent of monitored days in a calendar year with the highest amount of visibility impairment.

Do you agree that we can reinterpret the RHR, or do you believe the RHR would need to be amended to allow this? If you agree that the RHR allows this, should the rule nevertheless be amended for absolute clarity on this issue?

3. Which are the most important of the following factors that EPA and others could consider when developing a method for removing (or possibly adjusting) days with poor visibility due to natural causes?
 - Good science.
 - Consistency.
 - Should there be one common method across Class I areas and states, possibly with area-specific details? Or, should the state with the Class I area have discretion to pick a reasonable method?
 - Is commonality more important among the western states because they have closely spaced Class I areas and many fires, compared to the east?
 - If one common method is established, how can it be executed on a routine, transparent basis? Can and should it become part of the routine data processing by the IMPROVE program under NPS administration?
 - Resource burden (data, labor, and calendar time).
 - Because every Class I area will be tracked, every IMPROVE site-day will need to be assessed, over the next several decades. This is different than for exceptional events for purposes of the NAAQS.
 - Objectivity. How important is it that the assessment of an IMPROVE site-day be objective once the method and criteria have been established, versus it involving an element of judgment such as in a weight-of-evidence approach?

4. Should the approach aim (i) to remove the influence only of natural events that are highly irregular in their impacts in different years (which may be sufficient to eliminate highly irregular trend lines), and then (ii) rank the days to identify the 20% with the highest light extinction (even though these generally would not be the 20% most impaired by manmade causes, strictly speaking)?
 - If this is the preferred approach, then identifying site-days with visibility impairment from highly irregular natural events might rely on a threshold for determining that a site-day has been sufficiently affected by such natural sources to merit special treatment. How should a threshold(s) be picked?
 - In this approach, once a site-day has been identified as having been dominated by an irregularly occurring event such as a fire or dust storm, should that day be removed completely, or should the monitoring data for that day be adjusted by replacing some PM component concentrations with default values? Removing days has the potential of changing the apparent transport linkage between manmade sources and Class I areas.
 - How should the default values be picked? Is the IMPROVE protocol for data substitution when valid filter data is not obtained appropriate?
 - If a day is removed, should the next-ranked day be brought into the 20% most impaired group?
5. Or, should the approach aim (i) to determine natural and manmade contributions to light extinction for every day, (ii) rank the days to identify the 20% with the highest manmade impairment, and (iii) define the tracking metric as only manmade impairment?
 - This approach directly addresses the CAA goal of reducing manmade visibility impairment.
 - If this is the preferred approach, a method would be needed to allocate and adjust PM components between natural and manmade sources. See item 6.b below.
6. Given the goal of focusing the framework on control of manmade emissions, the factors for consideration listed in Question 3, and the two possible approaches for removing or adjusting IMPROVE data, what would be the most appropriate analytical method, under each of the two approaches? Possible analytical methods that have been discussed within EPA and the FLM agencies include the following:
 - a. Using fixed thresholds applied to IMPROVE data to identify site-days as having been dominated by fires and possibly also dust storms, which are the most obvious irregularly occurring natural sources, and substituting some other values for these PM components using defined formulas.
 - b. Using trajectories and emissions inventories to allocate monitored PM species concentrations among natural sources (including fires) and manmade sources.¹
 - c. Regional scale air quality modeling with source apportionment based on emission inventories including fires.
7. Is it possible and appropriate to distinguish between wild fires and wildland prescribed fires when removing (or adjusting) days from the 20% worst set? Is it a significant

¹ Some meeting attendees may already be familiar with exploratory work of this nature by Scott Copeland.

problem if we cannot recommend or require a practical method for making this distinction, or is it a *de minimis* departure from the ideal?

8. Adequate exploration of specific alternative approaches along the above lines will take time beyond this meeting. How can EPA best obtain outside input as we dive deeper into the details?
9. Is there a useful role for pollutant-specific glide paths as a supplement to the glide path analysis required by the RHR, either as interpreted in the first planning period or reinterpreted as described in these questions?

B. Can and should the visibility impacts of non-U.S. anthropogenic emissions be distinguished in or excluded from the progress tracking approach?

Stakeholders have also expressed concern that monitored *most recent period* visibility impairment can include the effects of non-U.S. emissions which no state can influence, yet the 2064 *natural conditions* end point does not include such impacts, at least in principle.

Questions

1. If EPA were to propose to change the RHR in this area so that impacts of non-U.S. anthropogenic emissions were consistently included or excluded from elements on the URP and RPG framework, which is not currently certain, how could these impacts be estimated, on a consistent basis?
 - o If these impacts were allowed to be added to the 2064 end point of the URP line, how could global scale modeling be used to estimate the impacts of non-U.S. anthropogenic emissions?
2. Assuming that without a rule change the impact of anthropogenic sources outside the U.S. cannot be added to the 2064 end point of the URP line, how else can guidance help air agencies, and the public who comment on draft SIPs and on progress reports, focus on progress being made in the control of anthropogenic sources within the U.S?
 - o For example, would it be helpful if EPA recommended that SIPs and progress reports include a second, informational-only URP diagram that is based on the 2064 end point including impacts from non-U.S. anthropogenic sources?

C. How can we maintain consistency between a revised progress tracking metric, natural conditions, and 2000-2004 baseline visibility conditions?

Modifying the way that baseline visibility on the 20% most impaired days is determined, by removing (or adjusting) some of the days that have the worst 20% overall visibility, would raise the issue of consistency between the resulting metric tracked for progress reports, the 2000-2004 baseline visibility conditions, and natural conditions.

Questions

1. How can baseline conditions (the 2000-2004 starting point for the URP line), projected 2028 air quality conditions, and natural conditions (the 2064 end point of the URP line) be re-determined for each Class I area on a basis that is consistent with the redefined progress tracking metric?

- For example, consistency between the 2028 projection (the RPG) and the metric that is tracked on a rolling 5-year average basis might be improved by similarly removing from the modeling base year, for example 2014, any days that were similarly affected by natural events, before calculating and apply relative response factors.
 - Assuming that the approach in Question 4 above (removal/adjustment only of days affected by very irregular natural events) is followed, consistency might also mean that estimates of natural conditions should be revised to represent natural conditions except for the influence of such irregular natural events, i.e., natural conditions in the absence of such irregular natural sources would need to be estimated. This would require a reconsideration of the 20% worst natural visibility conditions that were used in the first planning period because at least in concept these values were meant to reflect contributions from all natural sources including irregular extreme events.
 - Assuming that the approach in Question 5 above (allocation of all light extinction between manmade and natural sources on all days and tracking only manmade impairment) is followed, then in concept the 2064 end point of the URP line should be zero.
2. What other consistency issues need to be addressed, and how?
 3. More generally, should the values used for natural conditions in the SIPs for the first planning period (those recommended by the “Natural Conditions II” workgroup) be reconsidered? How should this be approached?

D. How should the Long Term Strategy be translated into Reasonable Progress Goals for 2028 (and later milestones)?

This is the topic of the EPA guidance document “Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5} and Regional Haze,” a draft revision of which is currently available for comment, dated December 2014. This draft revision contains only minor changes to the regional haze sections, but further changes will be made to maintain alignment between this guidance document and any new EPA guidance on the RPG framework. EPA expects that the basic concept will be maintained that the 2028 RPG should be set by projecting the air quality outcome that will be produced by the measures in the long term strategy.

Questions

1. How can the value of the 2028 RPG be kept consistent with the progress tracking metric, the 2000-2004 baseline conditions, and the 2064 end point of the URP line?
2. What other issues, for example the issue of the base year for modeling, should EPA address more specifically or differently than in the December 2014 draft guidance?

Topic IV: Reasonable Progress and Long Term Strategy (Four Factors)

Relevant Background

For the next (and subsequent) regional haze planning periods, RH SIPs will focus on achieving additional emission reductions needed to make reasonable progress towards the goal of preventing and remedying impairment in visibility at Class I areas due to manmade air pollution. The Clean Air Act and the RHR require that four factors must be considered in determining whether the long term strategy in the SIP provides for reasonable progress towards this goal:

- The costs of compliance.
- The time necessary for compliance.
- The energy and non-air quality environmental impacts of compliance.
- The remaining useful life of any potentially affected sources.

The URP and RPG framework play a role in the assessment of whether a SIP provides for reasonable progress. Under the current RHR, the URP line (or “glidepath”) is an analytical framework. Adopting a 20% worst days RPG for a Class I area (corresponding to the long term strategy) that is on the URP line does not *per se* mean that a SIP provides for reasonable progress at that Class I area. An RPG that is above the URP line does not *per se* mean that a SIP does not provide reasonable progress. The RHR provides that if the RPG for the worst 20% of days that corresponds to the long term strategy is above the URP line, the state must demonstrate, based on the four factors, that the rate of progress that would be necessary for the implementation plan to attain natural conditions by 2064 is not reasonable; and that the progress goal adopted by the State is reasonable. The State must also provide to the public for review as part of its implementation plan an assessment of the number of years it would take to attain natural conditions if visibility improvement continues at the rate of progress selected by the State as reasonable.

The RHR says that the RPG for 20% best days, i.e., the projected visibility conditions at the end of the planning period resulting from the long term strategy, may not be higher than in the baseline period.

The RHR does not explicitly require a state to consider visibility impacts of individual sources when selecting additional controls for inclusion in its long term strategy. EPA has stated that states may consider such impacts, and EPA has done so in developing FIPs.

All stakeholders expressed concern with the existing EPA guidance for setting RPGs, and recommended that EPA more clearly articulate expectations for how to consider the reasonable progress four factors and visibility benefits and how to conduct a demonstration showing that these factors were taken into consideration in establishing RPGs.

EPA has received mixed input on the topic of the role of visibility impacts in developing the long term strategy. Some stakeholders recommended that visibility be made an explicit “fifth” factor. Some stakeholders were concerned that a possible outcome of having visibility impacts be considered a fifth factor could be that few additional controls would be incorporated into the long term strategy even though many additional control options with some visibility benefits may be available, because each in isolation would have only a small effect compared to the visibility threshold values that were typically used for BART purposes in the first planning period.

Issues

A. How should cross-state impacts be determined and judged to be significant?

These determinations are important because they affect state-to-state consultation requirements and the analysis of what additional emission controls are needed to make reasonable progress for each Class I area. In the first planning period, states used a variety of methods to make these determinations, some based on explicit modeling and some not.

Questions

1. Were any of the methods used in previous SIPs particularly strong or weak in terms of technical validity?
2. How resource intensive were these methods? Will resources be available to use these methods again?
3. Should EPA provide additional guidance on ways in which this can be done? What should it say about the analysis method? About the threshold for a contribution to create a linkage?
4. Should EPA approve a new SIP submission for this element if it simply carries over the attribution findings of the previously approved SIP regarding which Class I areas are affected, without new analysis? Should this only be possible if certain conditions are met? For example, if the state's emissions have not increased, should EPA approve the SIP if it relied on the same analysis conducted for the first planning period?
5. Should these linkages be based on most recent conditions, or on projections of state-to-state impacts in 2028 (or a convenient projection year near 2028) assuming "on the books" controls?

B. What should be the linkage between the URP and the determination of whether the long term strategy provides reasonable progress?

Questions

1. How should EPA guidance address situations where a long term strategy and corresponding RPG for the 20% worst days indicate that a state is on or below the URP line? For example, should such situations constitute reasonable progress, without further source-specific four factor analysis?
2. Should EPA guidance encourage states to adopt long term strategies and RPGs for the 20% best days that provide for definite improvement on those days? How much improvement?

C. How can the task of four-factor analysis of sources best be kept within reasonable resource limits?

Questions

1. For example, would a low-resource tiering (or screening) procedure and criteria be useful, with different recommendations for further analysis for sources in different tiers? What procedure and criteria are appropriate?
 - For example, is there a value of Q/d that would be appropriately recommended for this purpose?
 - Is there an alternative screening method to Q/d?

- If the screening step uses emissions, should it be based on most recent emissions or emissions projected to 2028?
 - Can one of the four factors be used on an individual basis to screen out a source, or to prevent it from being screened out?
 - Can visibility impacts be used to screen out a source, or to prevent it from being screened out?
2. Should the FLMs be able to identify to a state, at some defined early point in the SIP development timeline, a particular source that may not be screened out of a robust four factor analysis?

D. How should four-factor analyses be performed?

Questions

In General

1. What aspects of the BART guidelines (for each factor) are applicable to and appropriate for reasonable progress analyses?
2. Should EPA recommend a presumption that certain controls are needed for reasonable progress, for any particular source or types of source?

Cost of Compliance

3. During the development of the first planning period SIPs, the RH program was criticized for requiring some sections of the Control Cost Manual to be used, even when they contained outdated information. Should EPA plan to again recommend adherence to the OAQPS Control Cost Manual generally, or recommend adherence to only specific sections of the Cost Manual in order to limit room for misunderstanding? Should some of Cost Manual principles be recommended, but not via reference to the Cost Manual itself?
 - For BART-eligible sources, the appropriate approach to consideration of existing controls, especially if installed recently, has been a source of controversy in the first planning period. Opinions have differed on whether and when controls that have been recently installed should be used as the baseline for calculating costs and visibility benefits of potential additional controls, versus the earlier condition of the source. This issue is related to considering “average costs” versus “marginal costs” of controls that have not yet been installed.
 - What are your views on this issue in the context of reasonable progress analysis?
 - What additional or revised guidance on these topics do you recommend EPA adopt for the second planning period?
4. Should state and EPA decisions to require or not require specific additional controls in the first planning period, that had particular costs associated with them, be used to establish cost benchmarks to guide to decisions on what controls are needed for reasonable progress in the next planning period? How?

Time Necessary for Compliance

5. Except for BART, neither the CAA nor the existing RHR set specific deadlines for when sources must comply with any new requirements in a state’s next Regional Haze SIP, so states have discretion in establishing reasonable compliance deadlines for measures in

their SIPs. What recommendations should EPA give in new guidance on selecting a compliance deadline, once it has been determined that additional control of a specific source is needed for reasonable progress? What are the advantages and disadvantages of recommending the BART compliance deadline approach, which is as expeditiously as practicable but not more than 5 years after EPA approval of the SIP? Should EPA's guidance include recommended compliance deadlines for particular controls?

Energy and Non-Air quality Environmental Impacts of Compliance

6. Should EPA recommend any particular approach to how these impacts should be taken into consideration? In particular, should there be any change from the BART Guidelines approach on this topic?

Remaining Useful Life

7. The BART Guidelines require that only enforceable source closures can be considered in determining the remaining useful life of a source, for example for purposes of calculating annualized costs. Should new EPA guidance recommend the same approach be applied for reasonable progress purposes, or should reliance on non-enforceable industry plans and forecasts be endorsed?

E. How should visibility impacts be estimated, and how should they affect the determination of what additional controls are necessary for reasonable progress?

Questions

1. How should visibility impacts be considered in assessing whether a source should be controlled under reasonable progress?
2. The BART Guidelines required that visibility impacts for BART-eligible sources be determined relative to natural conditions, not current conditions. This aspect of the Guidelines has been upheld by federal courts of appeals. Should natural conditions also be used for reasonable progress analysis?
3. What specific visibility metrics should EPA encourage states to consider in the next planning period?
4. Can a threshold or bright line for visibility impact for a source be recommended for use in some way, when analytical methods for determining visibility impact may vary?
5. How should the cumulative visibility impact of many small sources on many Class I areas be taken into account in deciding what is necessary for reasonable progress at all areas?
6. In the first planning period, EPA did not require but did allow states to consider cost/deciview metrics. Should EPA encourage the use of a cost/deciview metric, to inform air agency decision makers and public comment on draft SIPs for the second planning period?

F. What should EPA guidance say about smaller point sources, area sources, and mobile sources?

Question

1. Are there source categories that are of high interest to air agencies or stakeholders, for which EPA guidance might help facilitate dialog and reasoned decision making? What could EPA usefully say about these categories?