

Appendix C: Regional technical and planning analyses in support of the timely and complete submittals regional haze implementation plans due in July 2018.

Introduction

The Regional Haze rule requires states to implementation plans in July 2018 to improve visibility in Class I areas for the planning period from 2018 to 2028. This appendix provides additional background on regional haze planning and technical needs, as well as a proposed budget for the activities identified in the body of the plan.

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Executive summary of WESTAR plan

WESTAR developed the “WESTAR Regional Haze 2018 SIP Update Plan” to describe how the western states will collectively meet the regional planning requirements for the 2018 Regional Haze SIPs. The plan identifies the work that needs to be done and associated policy considerations, but leaves determining how the work will be accomplished to this WRAP Integrated Work Plan. The WESTAR plan relies heavily on technical support from the WRAP for completing regional analysis.

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The Regional Haze Rule requires IMPROVE monitoring data analysis to determine recent visibility trends and compare to baseline visibility conditions. Regional modeling and analysis will identify current emission conditions and the visibility effects of those, as well as estimate future scenarios and the effectiveness of potential additional controls. This analysis will also be used as states set their regional progress goals for the next progress period. The 2011 National Emissions Inventory (NEI) will provide the basis for the emissions that are used in the regional modeling. Additional inventory efforts will be conducted as the states identify sectors that need refinement to better reflect actual conditions in the west. Emissions will be projected to both 2018 and 2028 (or thereabouts). The plan also recognizes that Alaska and Hawaii are outside of the regional modeling domain and may require analysis assistance for their SIPs.

The WESTAR plan includes a description of the “5 Core Issues” and notes that their potential resolution will affect the type and direction of analysis needed. Most critically, the states need direction on conducting “four factor analysis,” are looking for ways to focus the analysis and control efforts on emission reductions that will have an effect on visibility, and need to integrate potential controls with future NAAQS requirements. For example, it may be most efficient and cost effective to select a future model year different than 2028 to accommodate both regional haze and a future ozone standard.

Because of limited funding directly available for regional haze work, the work products for this effort will need to leverage other projects to the maximum extent possible.

Technical Work

The technical regional work to support regional haze SIP submittals can be efficiently and effectively completed within the WRAP organizational structure using existing regional technical tools and capabilities, allowing assessment of sources common to all states and air regulatory agencies as well as to explore the impacts and management of sub-regional groupings of all kinds of sources.

Regional modeling

The 2011 background and base case simulations will be evaluated using comparisons to ambient data to assess how well the model simulates 2011 visibility conditions and to assess if the model background haze levels seem plausible. This will also provide an estimate of the maximum amount of visibility improvement possible through US emissions controls. Comparisons of CAMx and CMAQ will provide an estimate of the uncertainty in the models and will also be useful for quality assurance of the models. Based on the evaluation, it is likely that one model will be selected for future year simulations. Additional sensitivity testing will be completed as needed.

In addition, zero-out model runs may be completed to screen sectors or source types for their impacts on visibility and identify the ones for four-factor analysis. The states recognize that removing reactive species from the model may produce results that are less representative of actual conditions because of the effects on the chemistry. Nonetheless, there are still some scenarios where zero out modeling may provide insight into the contributions of some sectors or source types. For example, removing emissions from sources to be considered for “four factor” analysis may provide an indication of the level of reduction that could be expected if these sources received further control. Performing this type of analysis before conducting detailed four-factor analysis could provide insight into the visibility improvements potentially provided by controlling these sources. Likewise, a model run without US anthropogenic sources could help determine the extent to which the worst days are driven by fire.

The 2018 simulation will be used to estimate progress during the first planning period and to determine baseline conditions for the beginning of the second planning period. A 2018 source apportionment simulation is optional but would be useful if resources are available.

The 2028 simulation will be used to estimate progress from on-the-books control measures that will be implemented before 2028. The source apportionment results will be useful to identify additional sources for control. The 2028 baseline will also be used as a baseline to evaluate benefits of additional control measures.

Although modeling will be conducted by WRAP contractors, the states will coordinate closely with the contractors to prepare and provide emissions data.

Three-State Study

The 3-state study currently underway provides a foundation for developing the regional emission inventories and modeling platform for regional haze analysis. In order to be used for regional haze, the platform will need to be expanded to include detailed emissions information for all the western states. The modeling platform for the 3-state study is being developed with on a 12 km grid. This level is an improvement over the previous regional modeling for regional haze and will provide conservative estimates of visibility in the areas modeled. **[When, how, by whom will the data domain be expanded]**

Additional considerations for RH

In addition to the rules that are currently “on the books,” there are several major rules that will be implemented between now and the end of the next planning period, including new ozone and PM_{2.5} standards, as well as the 111(d) requirements for power plants. Likely, emission reductions

made to meet any one of these regulations will provide a benefit towards meeting all the rules and regional haze progress goals.

Integrating Planning Requirements and Increased Leveraging

As mentioned above, in addition to regional haze planning requirements, the states are also working to meet requirements for other pollutants. In particular, the 2012 annual PM_{2.5} NAAQS will require states to submit transport SIPs. In addition, EPA will be revising the ozone NAAQS and many western states expect to have large nonattainment areas for this pollutant. Finally, to address climate change, EPA is preparing a rule for existing power plants under section 111(d). All of these requirements have the potential to affect the same sources and controls established for one pollutant will likely provide reductions for other pollutants. With different timelines for each pollutant, multiple rounds evaluation and control strategy development will take place. To the extent possible, the more states can meet requirements for multiple pollutants with single control programs and analyses, the more efficient the process will be, in terms of both time and funding, for the states, the affected sources, as well as EPA.

As the states become aware of what is needed for new requirements, they will need to evaluate the work underway to identify ways to leverage the work. Some examples include:

- Any WRAP PM_{2.5} modeling effort for regional haze that incorporates emissions tagging for source apportionment should consider adding a product similar to the interactive Excel spreadsheet for the PM_{2.5} annual standard produced for the WestJumpAQMS project.
- Careful evaluation of future year selection. If possible, a year should be selected that can meet multiple requirement.
- Consider running PM_{2.5} source apportionment at a higher resolution than 36 km for the western U.S.
- Consider products that could be leveraged for exceptional events analysis such as fire emissions tagging and western receptor analysis, as well as stratospheric ozone.
- For ozone, additional source apportionment will be needed that is not needed for regional haze, but there may be an opportunity for adding analysis to existing modeling runs. ~~Is this correct?~~

Technical Support System

The Technical Support System (TSS) provides data and analysis for all the IMPROVE monitoring sites in across the U.S. and emissions and modeling results for the WESTAR/WRAP region. It is important for the states to have access to the data and analysis for all the Class I areas they affect, including those located in other states. By providing this analysis on a regional level, all states have access to the same information. In addition, having the information in one place reduces the need for redundant work and additional coordination.

The WRAP will maintain and update the technical capabilities for regional haze related to visualization, tracking, and analysis of data and analytical results through the TSS to continue to provide this resource for all western states.

Deliverables and Timeline

The following products are needed for the states to complete their 2018 SIPs; their due dates according to the WESTAR Plan are indicated. A detailed timeline is shown in the chart below.

- Regional modeling
 - 2011 Baseline (9/2016)
 - Emissions inventory
 - Model evaluation and sensitivity
 - Source apportionment
 - 2018 Modeling (12/2016)
 - Emissions inventory – including “on the books controls”
 - 2028 Modeling (12/2016)
 - Emissions inventory – including “on the books controls”
 - Model results with potential controls
- Four-factor analysis (12/2016)
- IMPROVE monitoring data analysis – available to states through TSS

~~Coordination with EPA~~

~~What are EPA’s priorities and expectations for the 2018 SIPs?
What will EPA provide to assist states and regions with 2018 SIPs?~~

~~Misc notes to be worked in or deleted~~

~~Information out of EPA tends to be one single answer, and come in fits and starts. How can WRAP provide intermediate info?~~

~~What did BART accomplish?
What if we focus just on emissions?~~

~~The kinds of sources and geographic regions to be studied and assessed for controls or improved management include:~~

- ~~• Non-BART point and stationary area sources~~
- ~~• §309 SO2 Annex Backstop Cap and Trade Program sources~~
- ~~• Concentrated geographic groups of sources proximate to Class I areas~~
- ~~• Oil and Gas production and distribution~~
- ~~• Dust emissions~~
- ~~• Fire emissions~~
- ~~• Secondary aerosol precursor emissions such as ammonia and volatile organic compounds~~
- ~~• Sources outside the WRAP region, international transport, and/or beyond the states’ control~~

~~Offer ideas about how states would evaluate what the 2018 results mean—how to interpret results, from a planner perspective.~~

References

WESTAR 2018 Regional Haze SIP Plan

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USDA Forest Service Recommendations to EPA
DOI Recommendations to EPA
MANE-VUE Recommendations to EPA
WESTAR Recommendations to EPA

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Budget

<u>Project</u>	<u>Funding Year</u>							
	<u>2014</u>		<u>2015</u>		<u>2016</u>		<u>2017</u>	
	<u>Contract \$</u>	<u>Staff (% FTE)</u>	<u>Contract \$</u>	<u>Staff (% FTE)</u>	<u>Contract \$</u>	<u>Staff (% FTE)</u>	<u>Contract \$</u>	<u>Staff (% FTE)</u>
<u>Update & Maintain TSS</u>								
<u>Wildfire Methodology</u>								
<u>Area Sources Methodology</u>								
<u>4-Factor Methodology</u>								
<u>4-Factor Analysis</u>								
<u>AK and HI Support</u>								
<u>Regional Progress Summary Report</u>								
<u>2011 Baseline Modeling (incl. model evaluation)</u>								
<u>2018 Inventory & Modeling</u>								
<u>2028 Inventory & Modeling</u>								

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