Implementing the Clean Air Act’s Regional Haze Program to Improve Visibility in the United States

This issue of EM addresses the regional haze program of the U.S. Clean Air Act (CAA) through the perspectives of key federal, state, and multi-jurisdictional stakeholders involved in implementing the program—the U.S. Environmental Protection Agency (EPA), the Association of Air Pollution Control Agencies (AAPCA), the Southeastern States Air Resource Managers (SESARM), and the Western States Air Resource Council (WESTAR)/Western Regional Air Partnership (WRAP)—supplemented by the views of non-governmental organizations WEST Associates and Trinity Consultants.
Background on Visibility Protection in the United States

The statutory basis for the visibility protection and regional haze program in the United States is established in Section 169A of the CAA, which includes a goal to prevent future and remedy existing impairment of visibility from manmade air pollution in 156 Class I national parks and wilderness areas.

Regional haze is visibility impairment caused by a variety of sources of air pollutants over a region-wide basis. Natural and anthropogenic emissions scatter/absorb light resulting in haze and can travel long distances, influencing areas far away. The major pollutants impairing visibility are elemental and organic carbon, oxides of sulfur and nitrogen, and dust (crustal materials). Owing to varying levels of anthropogenic and natural emissions, both domestic and international, and differing climate conditions, visibility varies from region to region. Generally, visibility is better in the Western United States than in the East, due to fewer anthropogenic emissions and lower humidity.

In January 2017, EPA updated its regional haze regulation to further spell out specific requirements for states as they prepare and submit the second and later rounds of regional haze SIPs. The 2017 rule was supported by mid-2016 draft EPA guidance, which was replaced with final guidance in August 2019. EPA is expected to propose changes to the 2017 rule by early 2020. To assist states in their planning, EPA also has developed technical guidance in December 2018; implementation guidance in August 2019; and will release new technical modeling results in early Fall 2019.

Most notable is EPA’s August 2019 guidance, which came too late for the authors to address in this issue of EM. The August guidance assists states as they develop revised SIPs and replaces the agency’s June 2016 draft guidance. It recognizes state discretion and potential flexibilities in developing regional haze SIPs, addressing key requirements and options for states, including selecting sources to analyze for potential control measures; how states analyze control cost, remaining useful life, and other considerations for individual sources; how to consider visibility benefits associated with control options; and how states might address previous controls installed to comply with other regulations.

Stakeholder Perspectives

The articles that follow address the regional haze program through the perspectives of key stakeholders.

EPA is responsible for implementing the CAA regional haze program in cooperation with state and tribal co-regulators. EPA prepares regulations, guidance, and tools, while also reviewing state plans for adequacy. In the article by Gantt and Timin, EPA addresses its 2017 rule changes for how states prepare plans to make reasonable progress, its December 2018 technical guidance, and updated modeling results to be made available in early Fall 2019 that project 2028 visibility conditions in Class I areas, as well as contribution information for international anthropogenic sources and prescribed fire, which may be useful for state planning.
AAPCA represents more than 50 state and local air agencies, including environmental agencies in 22 states. In the article by Sloan, Spencer, and Vehr, AAPCA discusses state planning challenges and how EPA can best help the states as co-regulators. AAPCA also presents information on trends of improved visibility from EPA and AAPCA reports.

SESARM is a group of state, local, and tribal agencies from 10 Southeast states, which have come together in a regional planning organization called VISTAS (Visibility Improvement—State and Tribal Associations of the Southeast). The article by Hornback, Boylan, and Strait discusses visibility improvement efforts and progress in the Southeast United States from 2000 to 2019. The article notes that preliminary modeling indicates visibility improvements at most Class I areas in the VISTAS region are well ahead of schedule compared to 2028 targets. Progress to date has been largely driven by an 89% decrease in sulfur dioxide emissions in the VISTAS states. VISTAS is preparing technical analyses to support states preparing their SIPs.

WESTAR is a multi-jurisdictional organization of 15 western states. The Western Regional Air Partnership (WRAP) is a virtual organization within WESTAR that brings together the state, local, and tribal air agencies within the WESTAR region and federal land manager partners. EPA participates in WRAP workgroups and committees. WESTAR/WRAP support states and tribes in their regional haze planning efforts. Over 75% of the nation’s Class I areas are located in these 15 states. As noted in the article by Uhl and Moore, significant reductions in electric power-generated sulfur dioxide and nitrogen oxides emissions are expected in the West during the second implementation period ending in 2028. In addition, WESTAR/WRAP have developed emissions inventories for other source categories, including oil and gas production and transmission, as the agencies prepare analyses supporting state SIP development.

WEST Associates is a coalition of 11 cooperative, public and investor-owned electric utilities from the western United States. The article by Plantico addresses the western state utility operating environment, reductions in emissions and changes in how electricity is generated, and the significant number of coal-based power plants that have or soon will be retiring. Wildfires and international emissions transport are significant contributors to haze and are important to consider in state planning.

Trinity Consultants is an environment, health, and safety (EH&S) consulting firm with offices across North America, and in the United Kingdom, Asia, and Australia. Trinity assists organizations with EH&S regulatory issues, such as permitting and compliance management. The article by Otto and Jewell discusses the key differences between the first and second implementation periods for the regional haze program, particularly how the 2017 regional haze rule changes the approach for dealing with anthropogenic versus natural versus international emissions.

Some Final Thoughts
Substantial progress has been made across the United States in reducing regional haze, but Congress has established a high bar where anthropogenic impacts are eliminated over time. EPA regulations, guidance, and tools are crucial to states as they formulate and implement plans to continue that progress. Regional planning organizations such as SESARM and WESTAR/WRAP are producing analyses to support development of state plans to be submitted by July 2021. States will continue to deliver emissions reductions and improved visibility toward the 2064 goal of eliminating domestic, anthropogenic regional haze.

In Next Month’s Issue…
Citizen Science in Environmental Applications
The November 2019 issue will feature articles on how citizen scientists contribute to environmental studies. Citizen scientists have been contributing to environmental studies that look at measuring the air quality in their neighborhood using low-cost sensors, collecting information on water reservoirs, observing land-cover characteristics, and so on, as part of scientific studies.