



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

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COMMISSIONER

MEMORANDUM

TO: Board of Environmental Protection
FROM: Jeffrey S. Crawford, Bureau of Air Quality
DATE: August 5, 2010
RE: State Implementation Plan (SIP) Submittals- State Implementation Plan for Regional Haze (Post to Public Comment)

Statutory and Regulatory Reference:

A. Statutory authority.

38 MRSA Section 585-A provides that the Board of Environmental Protection "may establish and amend regulations to implement ambient air quality standards and emission standards. These regulations shall be designed to achieve and maintain ambient air quality standards and emission standards within any region and prevent air pollution."

Section 107(a) of the 1990 Clean Air Act Amendments (CAA) provides that "Each State shall have the primary responsibility for assuring air quality within the entire geographic area comprising such State by submitting an implementation plan for such State which will specify the manner in which national ambient primary and secondary ambient air quality standards will be achieved and maintained within each air quality control region in such State."

Section 110 of the CAA provides that each state shall, after reasonable notice and public hearing, adopt and submit a plan which provides for the implementation, maintenance and enforcement of national ambient air quality standards. This plan, known as a State Implementation Plan (SIP) consists of the regulations and planning documents a state has developed to meet these air quality standards. As the rulemaking body of the Department of Environmental Protection, the Board may hold public hearings, and has traditionally been responsible for approving non-regulatory SIP submittals.

B. Specific legal mandates requiring adoption.

Section 169A of the CAA establishes the federal program for visibility protection at Class I areas.

40 CFR Part 51, subpart P establishes the federal regional haze requirements. The primary purposes of this rule are “(1) to require states to develop programs to assure reasonable progress toward meeting the national goal of preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from man-made air pollution, and (2) to establish necessary additional procedures for new source permit applicants, States, and Federal Land Managers to use in conducting the visibility impact analysis required for new sources under §51.166. This subpart sets forth requirements addressing visibility impairment in its two principal forms: “reasonably attributable” impairment (i.e., impairment attributable to a single source or small group of sources) and regional haze (i.e. widespread haze from a multitude of sources which impairs visibility in multiple directions over a large area).”

Location/Applicability:

The proposed SIP amendment will apply statewide.

Description:

In 1977, Congress added the goal of restoring pristine visibility conditions in national parks and wilderness areas to the federal Clean Air Act (CAA). Section 169 of the CAA calls for the prevention of any future, and the remedying of “any” existing, man-made visibility impairment in so-called “Class I” areas.¹ These are ambitious targets given that air pollution now reduces average visual range in the eastern United States to just 15 to 30 miles, about one-third the visual range typical of natural conditions.

Despite these goals, only modest steps were taken over the ensuing two decades to remedy visibility impairment at Class I areas around the country. Control measures undertaken to improve visibility were largely confined to addressing plume blight from specific pollution sources near Class I areas; they did little to address the pervasive, regional nature of haze throughout the eastern U.S. However, emissions reductions were realized through the implementation of other sections of the CAA, most notably the adoption, in 1990, of a national acid rain program aimed at substantially reducing sulfur dioxide emissions, a key contributor to visibility impairment in the East.

On July 1, 1999, the U.S. Environmental Protection Agency (EPA) issued a new set of regulations aimed at achieving national visibility goals by 2064. Commonly known as the

¹ There are 156 Class I areas across the country, including many well-known national parks and wilderness areas, such as the Grand Canyon National Park. The State of Maine contains, or shares, three Class I areas: 1) Acadia National Park; 2) Moosehorn National Wildlife Refuge Wilderness Area; and 3) Roosevelt Campobello International Park.

“Regional Haze Rule”, these regulations attempt, for the first time, to address the combined visibility effects of numerous pollution sources over a wide geographic region. Significantly, all states – even those without Class I areas – are now required to participate in haze reduction efforts.

In an effort to foster cooperation in the development and implementation of regional haze programs, the Regional Haze Rule and the CAA require consultation between the states, tribes and Federal Land Managers (FLMs) responsible for managing Class I areas. Since regional haze often results from pollution emitted across broad regions, this multi-state approach to air quality planning also aids in developing the most cost-effective controls for regional haze. Maine is a member of the Mid-Atlantic Northeast Visibility Union (MANE-VU), which was established to facilitate regional haze planning in the region extending from the District of Columbia through Maine.

As noted above, research has shown that sulfur emissions, which react in the atmosphere to form sulfates, are the predominant cause of visibility impairment in the Northeast and Mid-Atlantic states. In fact, sulfate alone accounts for one-half to two-thirds of total fine particle mass on the 20 percent haziest days at Class I sites in Maine and throughout the MANE-VU region. These small particles cause poor visibility by scattering and absorbing light, thereby reducing the amount of visual information about distant objects that reaches an observer. Because of the dominant role played by sulfates, our regional haze planning efforts, including control strategies, are focused on reducing sulfur emissions, primarily in the form of sulfur dioxide (SO₂).

The Regional Haze Rule requires each state to submit a State Implementation Plan (SIP) demonstrating that “reasonable progress” is being made toward the 2064 goal of natural visibility. Given the long-term nature of the regional haze planning effort, the first SIP addresses the ten-year period from 2008 to 2018. Class I states such as Maine must demonstrate that their regional haze plans will make reasonable progress towards meeting the 2064 goal. The Regional Haze SIP is also required to include calculations of baseline and natural visibility conditions, as well as monitoring strategies for tracking reasonable progress. Finally, the SIP must include a determination of Best Available Retrofit Technology (BART) for sources of a certain size or emissions profile that began operating between 1962 and 1977. In the future, Maine must submit revisions evaluating progress towards meeting the reasonable progress goals every 5 years, and must also update the long-term strategy in 2018 as well as every 10 years thereafter.

Federal, regional and state emission control programs that are already adopted and scheduled to be implemented in the coming years (such as the Federal Clean Air Interstate Rule directed at electric generating units) will provide significant SO₂ emission reductions, and improvements in visibility at Class I sites in Maine and throughout the eastern United States. While these measures provide substantial reductions in visibility impairing pollutants, the CAA requires states to consider additional control measures during the establishment of reasonable progress goals, and assess the following four factors during their analysis: 1) costs of compliance, 2) time necessary for compliance, 3) energy and non-air quality environmental impacts of compliance, and 4) remaining useful life of any existing source subject to such requirements. Maine, along with the other MANE-VU members, utilized the four CAA statutory factors and worked through an exhaustive list of more than 900 potential control strategies to assess their potential for reducing regional haze.

The Department and other MANE-VU members have identified additional measures that we believe are reasonable for adoption and implementation both within and outside the MANE-VU region for meeting our reasonable progress goals. These measures include: 1) Best Available Retrofit Technology (BART) sulfate reductions from specific sources as defined in the CAA; 2) a low-sulfur oil strategy for all sectors (commercial, industrial and residential)²; and 3) a strategy that targets a 90% sulfate reduction from each of the key electric generating unit (EGU) stacks impacting any MANE-VU Class I area (comprising a total of 167 stacks throughout the eastern United States), or a reduction equivalent to that amount in each state.

The Department's proposed Regional Haze SIP demonstrates that each of the Class I areas in Maine will meet the 2018 "reasonable progress" requirements. The analysis also demonstrates that the required visibility improvements at Acadia National Park, Moosehorn Wilderness Area, and Roosevelt Campobello International Park are best accomplished through a plan relying on existing programs and new regional strategies for providing additional emission reductions that will reduce SO₂ emissions in the coming years.

Environmental Issues:

Fine particles are the major cause of reduced visibility at Class I areas. These same particles have also been linked to serious health problems and environmental damage. Exposure to fine particles in the air has been linked to increased respiratory illness, decreased lung function, and premature death. In addition, fine particles such as sulfates and nitrates contribute to acid rain formation which makes lakes, rivers and stream unsuitable for many fish, and damages buildings, structures and coated (painted) surfaces.

In addition to improving visibility at Maine's Class I areas and reducing acid deposition, controlling emissions of SO₂ and other haze pollutants will provide significant public health benefits to the people of Maine. The Northeast States for Coordinated Air Use Management (NESCAUM) estimated that just one strategy alone, the use of low-sulfur distillate and residual fuel oils, would provide in \$149,718,300 health benefits (i.e., the value of avoided morbidity and mortality) for 2018.³ These annual health benefits would continue to accrue each year thereafter.⁴

² Maine has already adopted a low sulfur fuel strategy. The 124th Second Regular Session of the Maine Legislature (2010) adopted LD 1662, "An Act to Improve Maine's Air Quality and Reduce Regional Haze at Acadia National Park and Other Federally Designated Class I Areas," which implements the MANE-VU low sulfur fuel strategy in Maine. This legislation establishes a statewide sulfur limit for distillate fuels of 50 ppm in 2016, and 15 ppm in 2018. For residual (#6) fuel oil, the statewide sulfur limit will be reduced to 0.5% in 2018.

³ Source: NESCAUM, 2008, *Public Health Benefits of Reducing Ground-Level Ozone and Fine Particle Matter in the Northeast U.S.*, <http://www.nescaum.org/topics/regional-haze/regional-haze-documents>

⁴ Regionally, the low-sulfur fuel oil strategy would provide \$3.8 billion in health benefits.

Departmental Recommendation:

The Department recommends that the Board post the Regional Haze State Implementation Plan to a 30-day public comment period with the opportunity to request a public hearing.

Estimated Time of Presentation:

1 hour.