6560-50-P

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 52
[EPA-R01-OAR-2012-0025; A-1-FRL-9676-5]

Approval and Promulgation of Air Quality Implementation Plans; Massachusetts; Regional Haze

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: EPA is proposing approval of a revision to the Massachusetts State Implementation Plan (SIP) that addresses regional haze for the first planning period from 2008 through 2018. It was submitted by the Massachusetts Department of Environmental Protection (MassDEP) on December 30, 2011. EPA is also proposing to approve, through parallel processing, a supplemental Regional Haze submittal, Proposed Revisions to Massachusetts Regional Haze State Implementation Plan (SIP), which was proposed by the MassDEP for public comment on February 17, 2012. These submittals address the requirements of the Clean Air Act (CAA) and EPA's rules that require States to prevent any future, and remedy any existing, manmade impairment of visibility in mandatory Class I areas (also referred to as the "regional haze program"). States are required to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas.

DATES: Written comments must be received on or before **[Insert date 30 days after publication in the Federal Register]**.

ADDRESSES: Submit your comments, identified by Docket ID Number EPA-R01-OAR-2012-0025 by one of the following methods:

1. www.regulations.gov : Follow the on-line instructions for submitting comments.
2. E-mail: arnold.anne@epa.gov
3. Fax: (617) 918-0047.
4. Mail: "Docket Identification Number EPA-R01-OAR-2012-0025 Anne Arnold, U.S. Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square - Suite 100, (Mail code OEP05-2), Boston, MA 02109 - 3912.
5. Hand Delivery or Courier. Deliver your comments to: Anne Arnold, Manager, Air Quality Planning Unit, U.S. Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square - Suite 100, (mail code OEP05-2), Boston, MA 02109 - 3912. Such deliveries are only accepted during the Regional Office's normal hours of operation. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30, excluding legal holidays.

Instructions: Direct your comments to Docket ID No. EPA-R01-OAR-2012-0025. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit through www.regulations.gov, or e-mail, information that you consider to be CBI or otherwise protected. The www.regulations.gov website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If

you send an e-mail comment directly to EPA without going through www.regulations.gov your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the electronic docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, i.e., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in www.regulations.gov or in hard copy at Office of Ecosystem Protection, U.S. Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square - Suite 100, Boston, MA. EPA requests that if at all possible, you contact the contact listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30, excluding legal holidays.

In addition, copies of the State submittal are also available for public inspection during normal business hours, by appointment at the Division of Air Quality Control, Department of Environmental Protection, One Winter Street, 8th Floor, Boston, MA 02108.

FOR FURTHER INFORMATION CONTACT: Anne McWilliams, Air Quality Unit, U.S. Environmental Protection Agency, EPA New England Regional Office, 5 Post Office Square – Suite 100, (Mail Code OEP05-02), Boston, MA 02109-3912, telephone number (617)918-1697, fax number (617)918-0697, e-mail mcwilliams.anne@epa.gov

SUPPLEMENTARY INFORMATION:

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Throughout this document, wherever "we," "us," or "our" is used, we mean the EPA.

I. What is the Background for EPA's Proposed Action?

A. The Regional Haze Problem

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles and their precursors (e.g., sulfur dioxide, nitrogen oxides, and in some cases, ammonia and volatile organic compounds). Fine particle precursors react in the atmosphere to form fine particulate matter ($PM_{2.5}$) (e.g., sulfates, nitrates, organic carbon, elemental carbon, and soil dust), which also impair visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. $PM_{2.5}$ can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition.

Data from the existing visibility monitoring network, the "Interagency Monitoring of Protected Visual Environments" (IMPROVE) monitoring network, show that visibility impairment caused by air pollution occurs virtually all the time at most national park and wilderness areas. The

average visual range in many Class I areas (i.e., national parks and memorial parks, wilderness areas, and international parks meeting certain size criteria) in the Western United States is 100-150 kilometers, or about one-half to two-thirds of the visual range that would exist without manmade air pollution. In most of the eastern Class I areas of the United States, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under estimated natural conditions. See 64 FR 35715 (July 1, 1999).

B. Background Information

In section 169A(a)(1) of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section of the CAA establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas[1] which impairment results from manmade air pollution." On December 2, 1980, EPA promulgated regulations to address visibility impairment in Class I areas that is "reasonably attributable" to a single source or small group of sources, i.e., "reasonably attributable visibility impairment" (RAVI). See 45 FR 80084 (Dec. 2, 1980). These regulations represented the first phase in addressing visibility impairment. EPA deferred action on regional haze that emanates from a variety of sources until monitoring, modeling and scientific knowledge about the relationships between pollutants and visibility

[1] Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977 (42 U.S.C. 7472(a)). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value (44 FR 69122, November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions (42 U.S.C. 7472(a)). Although States and Tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to ''mandatory Class I Federal areas." Each mandatory Class I Federal area is the responsibility of a ''Federal Land Manager'' (FLM). (42 U.S.C. 7602(i)). When we use the term "Class I area" in this action, we mean a "mandatory Class I Federal area."

impairment were improved.

Congress added section 169B to the CAA in 1990 to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999 (64 FR 35714), the Regional Haze Rule. The Regional Haze Rule revised the existing visibility regulations to integrate into the regulation provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in EPA's visibility protection regulations at 40 CFR 51.300-309. Some of the main elements of the regional haze requirements are summarized in Section II. The requirement to submit a regional haze SIP applies to all 50 States, the District of Columbia and the Virgin Islands. In 40 CFR 51.308(b), States are required to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007. On January 15, 2009, EPA found that 37 States, the District of Columbia and the U.S. Virgin Islands failed to submit this required implementation plan. See 74 FR 2392 (Jan. 15, 2009). In particular, EPA found that Massachusetts failed to submit a plan that met the requirements of 40 CFR 51.308. See 74 FR 2393. On December 30, 2011, the Division of Air Quality Control of the MassDEP submitted revisions to the Massachusetts SIP to address regional haze as required by 40 CFR 51.308. In addition, on May 2, 2012, MassDEP requested parallel processing of its February 17, 2012 Proposed Revision to Massachusetts Regional Haze SIP. EPA has reviewed Massachusetts' submittals and is proposing to find that they are consistent with the requirements of 40 CFR 51.308 as outlined in Section II.

C. Roles of Agencies in Addressing Regional Haze

Successful implementation of the regional haze program will require long-term regional coordination among States, tribal governments and various federal agencies. As noted above, pollution affecting the air quality in Class I areas can be transported over long distances, even hundreds of kilometers. Therefore, to effectively address the problem of visibility impairment in Class I areas, States need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction on the air quality in another.

Because the pollutants that lead to regional haze can originate from sources located across broad geographic areas, EPA has encouraged the States and Tribes across the United States to address visibility impairment from a regional perspective. Five regional planning organizations (RPOs) were developed to address regional haze and related issues. The RPOs first evaluated technical information to better understand how their States and Tribes impact Class I areas across the country, and then pursued the development of regional strategies to reduce emissions of $PM_{2.5}$ and other pollutants leading to regional haze.

The Mid-Atlantic/Northeast Visibility Union (MANE-VU) RPO is a collaborative effort of State governments, tribal governments, and various federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility and other air quality issues in the Northeastern United States. Member State and Tribal governments include: Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Penobscot Indian Nation, Rhode Island, and Vermont.

D. The Relationship of the Clean Air Interstate Rule and the Cross-State Air Pollution Rule to Regional Haze Requirements

The Clean Air Interstate Rule (CAIR) required some states to reduce emissions of SO_2 and NOx that contribute to violations of the 1997 National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ and ozone. See 70 FR 25162 (May 12, 2005). CAIR established emissions budgets for SO_2 and NOx. On October 13, 2006, EPA's "Regional Haze Regulations; Revisions to Provisions Governing Alternative to Source-Specific Best Available Retrofit Technology (BART) Determinations; Final Rule" (hereinafter known as the "Alternative to BART Rule") was published in the Federal Register. See 71 FR 60612. This rule establishes that states participating in the CAIR program need not require BART for SO_2 and NOx at BART-eligible electric generating units (EGUs). Many States relied on CAIR as an Alternative to BART for SO_2 and NOx for their subject EGUs.

CAIR was later found to be inconsistent with the requirements of the CAA and the rule was remanded to EPA. See North Carolina v. EPA, 550 F.3d 1176 (D.C. Cir. 2008). The court left CAIR in place until replaced by EPA with a rule consistent with its opinion. See North Carolina v. EPA, 550 F.3d 1176, 1178(D.C. Cir. 2008).

EPA promulgated the Cross-State Air Pollution Rule (CSAPR), to replace CAIR in 2011 (76 FR 48208, August 8, 2011). Massachusetts was subject to ozone season NOx controls under the CAIR program. In its January 11, 2011, proposed Regional Haze SIP, MassDEP proposed to rely on emission reductions included in EPA's proposed Transport Rule as an Alternative to

BART. However, Massachusetts is not subject to any of the requirements of CSAPR and therefore cannot rely on CASPR as an Alternative to BART.

On December 30, 2011, the D.C. Circuit Court issued an order addressing the status of CSAPR and CAIR in response to motions filed by numerous parties seeking a stay of CSAPR pending judicial review. In that order, the D.C. Circuit stayed CSAPR pending the court's resolutions of the petitions for review of that rule in *EME Homer Generation, L.P. v. EPA* (No. 11-1302 and consolidated cases). The court also indicated that EPA is expected to continue to administer CAIR in the interim until the court rules on the petitions for review of CSAPR.

On February 17, 2012, MassDEP proposed an amended Alternative to BART. This strategy is discussed in further detail in Section III.B. MassDEP has also requested parallel processing of sections 8.10, 8.11, and 10.5, its revised BART and Long Term Strategy Chapters. Under this procedure, EPA prepared this action before the State's final adoption of this revision. Massachusetts has indicated that they plan to have a final adopted submittal by July 2012, prior to our final action on its Regional Haze SIP. After Massachusetts submits its final adopted revision, EPA will review the submittal to determine whether it differs from the proposed revision. If the final revision does differ from the proposed revision, EPA will determine whether these differences are significant. Based on EPA's determination regarding the significance of any changes in the final revision, EPA would then decide whether it is appropriate to prepare a final rule and describe the changes in the final rulemaking action, re-propose action based on the Massachusetts' final adopted revision, or take such other action as may be appropriate.

II. What Are the Requirements for Regional Haze SIPs?

A. The CAA and the Regional Haze Rule (RHR)

Regional haze SIPs must assure reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas. Section 169A of the CAA and EPA's implementing regulations require States to establish long-term strategies for making reasonable progress toward meeting this goal. Implementation plans must also give specific attention to certain stationary sources that were in existence on August 7, 1977, but were not in operation before August 7, 1962, and require these sources, where appropriate, to install Best Available Retrofit Technology (BART) controls for the purpose of eliminating or reducing visibility impairment. The specific regional haze SIP requirements are discussed in further detail below.

B. Determination of Baseline, Natural, and Current Visibility Conditions

The RHR establishes the deciview (dv) as the principal metric for measuring visibility. This visibility metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility is determined by measuring the visual range (or deciview), which is the greatest distance, in kilometers or miles, at which a dark object can be viewed against the sky. The deciview is a useful measure for tracking progress in improving visibility, because each deciview change is an equal incremental change in visibility perceived by the human eye. Most people can detect a change in visibility at one deciview.[2]

The deciview is used in expressing Reasonable Progress Goals (RPGs) (which are interim visibility goals towards meeting the national visibility goal), defining baseline, current, and

[2] The preamble to the RHR provides additional details about the deciview. See 64 FR 35714, 35725 (July 1, 1999).

natural conditions, and tracking changes in visibility. The regional haze SIPs must contain measures that ensure "reasonable progress" toward the national goal of preventing and remedying visibility impairment in Class I areas caused by manmade air pollution by reducing anthropogenic emissions that cause regional haze. The national goal is a return to natural conditions, i.e., manmade sources of air pollution would no longer impair visibility in Class I areas.

To track changes in visibility over time at each of the 156 Class I areas covered by the visibility program and as part of the process for determining reasonable progress, States must calculate the degree of existing visibility impairment at each Class I area within the State at the time of each regional haze SIP submittal and periodically review progress every five years midway through each 10-year planning period. To do this, the RHR requires States to determine the degree of impairment (in deciviews) for the average of the 20 percent least impaired ("best") and 20 percent most impaired ("worst") visibility days over a specified time period at each of their Class I areas. In addition, States must also develop an estimate of natural visibility conditions for the purposes of comparing progress toward the national goal. Natural visibility is determined by estimating the natural concentrations of pollutants that cause visibility impairment and then calculating total light extinction based on those estimates. EPA has provided guidance to States regarding how to calculate baseline, natural and current visibility conditions in documents entitled, *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule*, September 2003, (EPA-454/B-03-005) available at www.epa.gov/ttncaaa1/t1/memoranda/rh_envcurhr_gd.pdf (hereinafter referred to as "EPA's 2003 Natural Visibility Guidance"), and *Guidance for Tracking Progress Under the Regional*

Haze Rule, September 2003 (EPA-454/B-03-004), available at www.epa.gov/ttncaaa1/t1/memoranda/rh_tpurhr_gd.pdf (hereinafter referred to as "EPA's 2003 Tracking Progress Guidance").

For the first regional haze SIPs that were due by December 17, 2007, "baseline visibility conditions" were the starting points for assessing "current" visibility impairment. Baseline visibility conditions represent the degree of impairment for the 20 percent least impaired days and 20 percent most impaired days at the time the regional haze program was established. Using monitoring data from 2000 through 2004, States are required to calculate the average degree of visibility impairment for each Class I area within the State, based on the average of annual values over the five year period. The comparison of initial baseline visibility conditions to natural visibility conditions indicates the amount of improvement necessary to attain natural visibility, while the future comparison of baseline conditions to the then current conditions will indicate the amount of progress made. In general, the 2000-2004 baseline period is considered the time from which improvement in visibility is measured.

C. Determination of Reasonable Progress Goals (RPGs)

The vehicle for ensuring continuing progress towards achieving the natural visibility goal is the submission of a series of regional haze SIPs from the States that establish RPGs for Class I areas for each (approximately) 10-year planning period. The RHR does not mandate specific milestones or rates of progress, but instead calls for States to establish goals that provide for "reasonable progress" toward achieving natural (i.e., "background") visibility conditions for their Class I areas. In setting RPGs, States must provide for an improvement in visibility for the most

impaired days over the (approximately) 10-year period of the SIP, and ensure no degradation in visibility for the least impaired days over the same period.

States have significant discretion in establishing RPGs, but are required to consider the following factors established in the CAA and in EPA's RHR: (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources. States must demonstrate in their SIPs how these factors are considered when selecting the RPGs for the best and worst days for each applicable Class I area. See 40 CFR 51.308(d)(1)(i)(A). States have considerable flexibility in how they take these factors into consideration, as noted in EPA's July 1, 2007 memorandum from William L. Wehrum, Acting Administrator for Air and Radiation, to EPA Regional Administrators, EPA Regions 1-10, entitled *Guidance for Setting Reasonable Progress Goals under the Regional Haze Program* (p. 4-2, 5-1)(EPA's Reasonable Progress Guidance). In setting the RPGs, States must also consider the rate of progress needed to reach natural visibility conditions by 2064 (referred to as the "uniform rate of progress" or the "glide path") and the emission reduction measures needed to achieve that rate of progress over the 10-year period of the SIP. The year 2064 represents a rate of progress which States are to use for analytical comparison to the amount of progress they expect to achieve. In setting RPGs, each State with one or more Class I areas ("Class I State") must also consult with potentially "contributing States," i.e., other nearby States with emission sources that may be contributing to visibility impairment at the Class I State's areas. See 40 CFR 51.308(d)(1)(iv).

D. Best Available Retrofit Technology (BART)

Section 169A of the CAA directs States to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, the CAA requires States to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the natural visibility goal, including a requirement that certain categories of existing stationary sources built between 1962 and 1977 procure, install, and operate the "Best Available Retrofit Technology" as determined by the State. CAA § 169A(b)(2), 42 U.S.C. § 7491(b)(2).[3] States are directed to conduct BART determinations for such sources that may be anticipated to cause or contribute to any visibility impairment in a Class I area. Rather than requiring source-specific BART controls, States also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.

On July 6, 2005, EPA published the *Guidelines for BART Determinations Under the Regional Haze Rule* at Appendix Y to 40 CFR part 51 (hereinafter referred to as the "BART Guidelines") to assist States in determining which of their sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. In making a BART applicability determination for a fossil fuel-fired electric generating plant with a total generating capacity in excess of 750 megawatts (MW), a State must use the approach set forth in the BART Guidelines. A State is encouraged, but not required, to follow the BART Guidelines in making BART determinations for other types of sources.

States must address all visibility impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are sulfur dioxide

[3] The set of "major stationary sources" potentially subject to BART are listed in CAA section 169A(g)(7).

(SO_2), nitrogen oxides (NO_x), and particulate matter (PM). EPA has stated that States should use their best judgment in determining whether volatile organic compounds (VOCs), or ammonia (NH_3) and ammonia compounds impair visibility in Class I areas.

The RPOs provided air quality modeling to the States to help them in determining whether potential BART sources can be reasonably expected to cause or contribute to visibility impairment in a Class I area. Under the BART Guidelines, States may select an exemption threshold value for their BART modeling, below which a BART eligible source would not be expected to cause or contribute to visibility impairment in any Class I area. The State must document this exemption threshold value in the SIP and must state the basis for its selection of that value. Any source with emissions that model above the threshold value would be subject to a BART determination review. The BART Guidelines acknowledge varying circumstances affecting different Class I areas. States should consider the number of emission sources affecting the Class I areas at issue and the magnitude of the individual sources' impacts. Any exemption threshold set by the State should not be higher than 0.5 deciviews. See 70 FR 39161 (July 6, 2005).

In their SIPs, States must identify potential BART sources, described as "BART-eligible sources" in the RHR, and document their BART control determination analyses. The term "BART-eligible source" used in the BART Guidelines means the collection of individual emission units at a facility that together comprises the BART-eligible source. See 70 FR 39161 (July 6, 2005). In making BART determinations, section 169A(g)(2) of the CAA requires that States consider the following factors: (1) the costs of compliance; (2) the energy and non-air

quality environmental impacts of compliance; (3) any existing pollution control technology in use at the source; (4) the remaining useful life of the source; and (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. States are free to determine the weight and significance to be assigned to each factor. See 70 FR 39170 (July 6, 2005).

A regional haze SIP must include source-specific BART emission limits and compliance schedules for each source subject to BART. Once a State has made its BART determination, the BART controls must be installed and in operation as expeditiously as practicable, but no later than five years after the date of EPA approval of the regional haze SIP, as required by CAA (section 169(g)(4)) and the RHR (40 CFR 51.308(e)(1)(iv)). In addition to what is required by the RHR, general SIP requirements mandate that the SIP must also include all regulatory requirements related to monitoring, recordkeeping, and reporting for the BART controls on the source. States have the flexibility to choose the type of control measures they will use to meet the requirements of BART.

States may also provide an Alternative to BART demonstration. On October, 13, 2006, EPA finalized "Regional Haze Regulations; Revisions to Provisions Governing Alternative to Source-Specific Best Available Retrofit Technology (BART) Determinations" (71 FR 60612), an alternative emissions program that gives flexibility for states or tribal governments in ways to apply BART. The BART requirements would be satisfied if the alternative program meets or exceeds the visibility benefits resulting from BART. This approach has been approved by the

D.C. Circuit. *See Center for Energy & Economic Development v. EPA*, 398 F.3d 653 (D.C. Cir. 2005); *Utility Air Regulatory Group v. EPA*, 471 F.3d 1333 (D.C. Cir. 2006).

E. Long-Term Strategy (LTS)

In 40 CFR 51.308(d)(3) of the RHR, States are required to include a LTS in their SIPs. The LTS is the compilation of all control measures a State will use to meet any applicable RPGs. The LTS must include "enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals" for all Class I areas within, or affected by emissions from, the State. See 40 CFR 51.308(d)(3).

When a State's emissions are reasonably anticipated to cause or contribute to visibility impairment in a Class I area located in another State, the RHR requires the impacted State to coordinate with the contributing States in order to develop coordinated emissions management strategies. See 40 CFR 51.308(d)(3)(i). In such cases, the contributing State must demonstrate that it has included in its SIP all measures necessary to obtain its share of the emission reductions needed to meet the RPGs for the Class I area. The RPOs have provided forums for significant interstate consultation, but additional consultations between States may be required to sufficiently address interstate visibility issues. This is especially true where two States belong to different RPOs.

States should consider all types of anthropogenic sources of visibility impairment in developing their LTS, including stationary, minor, mobile, and area sources. At a minimum, States must describe how each of the seven factors listed below is taken into account in

developing their LTS: (1) emission reductions due to ongoing air pollution control programs, including measures to address RAVI; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the RPG; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes; (6) enforceability of emissions limitations and control measures; (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS. See 40 CFR 51.308(d)(3)(v).

F. Coordinating Regional Haze and Reasonably Attributable Visibility Impairment (RAVI) LTS

As part of the RHR, EPA revised 40 CFR 51.306(c) regarding the LTS for RAVI to require that the RAVI plan must provide for a periodic review and SIP revision not less frequently than every three years until the date of submission of the State's first plan addressing regional haze visibility impairment, which was due December 17, 2007, in accordance with 40 CFR 51.308(b) and (c). On or before this date, the State must revise its plan to provide for review and revision of a coordinated LTS for addressing reasonably attributable and regional haze visibility impairment, and the State must submit the first such coordinated LTS with its first regional haze SIP. Future coordinated LTS's, and periodic progress reports evaluating progress towards RPGs, must be submitted consistent with the schedule for SIP submission and periodic progress reports set forth in 40 CFR 51.308(f) and 51.308(g), respectively. The periodic reviews of a State's LTS must report on both regional haze and RAVI impairment and must be submitted to EPA as a SIP revision.

G. Monitoring Strategy and Other Implementation Plan Requirements

In 40 CFR 51.308(d)(4), the RHR requires a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the State. The strategy must be coordinated with the monitoring strategy required in 40 CFR 51.305 for RAVI. Compliance with this requirement may be met through participation in the Interagency Monitoring of Protected Visual Environments (IMPROVE) network. The monitoring strategy is due with the first regional haze SIP, and it must be reviewed every five years. The monitoring strategy must also provide for additional monitoring sites if the IMPROVE network is not sufficient to determine whether RPGs will be met.

The SIP must also provide for the following:

- Procedures for using monitoring data and other information in a State with mandatory Class I areas to determine the contribution of emissions from within the State to regional haze visibility impairment at Class I areas both within and outside the State;
- Procedures for using monitoring data and other information in a State with no mandatory Class I areas to determine the contribution of emissions from within the State to regional haze visibility impairment at Class I areas in other States;
- Reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the State, and where possible, in electronic format;
- Developing a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. The inventory must include emissions for a baseline year, emissions for the most recent

year for which data are available, and estimates of future projected emissions. A State must also make a commitment to update the inventory periodically; and

- Other elements, including reporting, recordkeeping, and other measures necessary to assess and report on visibility.

Pursuant to 40 CFR 51.308(f) of the RHR, state control strategies must cover an initial implementation period extending to the year 2018, with a comprehensive reassessment and revision of those strategies, as appropriate, every 10 years thereafter. Periodic SIP revisions must meet the core requirements of 40 CFR 51.308(d) with the exception of BART. The BART provisions of 40 CFR 51.308(e), as noted above, apply only to the first implementation period. Periodic SIP revisions will assure that the statutory requirement of reasonable progress will continue to be met.

H. Consultation with States and Federal Land Managers (FLMs)

The RHR requires that States consult with FLMs before adopting and submitting their SIPs. See 40 CFR 51.308(i). States must provide FLMs an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on the SIP. This consultation must include the opportunity for the FLMs to discuss their assessment of impairment of visibility in any Class I area and to offer recommendations on the development of the RPGs and on the development and implementation of strategies to address visibility impairment. Further, a State must include in its SIP a description of how it addressed any comments provided by the FLMs. Finally, a SIP must provide procedures for continuing consultation between the State and FLMs regarding the State's

visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas.

III. What is EPA's Analysis of Massachusetts' Regional Haze SIP Submittal?

On December 30, 2011, the Division of Air Quality Control of the MassDEP submitted revisions to the Massachusetts SIP to address regional haze as required by 40 CFR 51.308. In addition, on May 2, 2012, MassDEP requested parallel processing of its February 17, 2012 Proposed Revision to Massachusetts Regional Haze SIP. EPA has reviewed Massachusetts' submittals and is proposing to find that they are consistent with the requirements of 40 CFR 51.308 as outlined in Section II. A detailed analysis follows.

Massachusetts is responsible for developing a regional haze SIP which addresses Massachusetts' impact on any nearby Class I areas. As Massachusetts has no Class I areas within its borders, Massachusetts is not required to address the following Regional Haze SIP elements: a) calculation of baseline and natural visibility conditions; b) establishment of reasonable progress goals; c) monitoring requirements; and d) RAVI requirements.

A. Massachusetts' Impact on MANE-VU Class I Areas

Massachusetts is a member of the MANE-VU RPO. The MANE-VU RPO contains seven Class I areas in four States: Moosehorn Wilderness Area, Acadia National Park, and Roosevelt/Campobello International Park in Maine; Presidential Range/Dry River Wilderness

Area and Great Gulf Wilderness Area in New Hampshire; Brigantine Wilderness Area in New Jersey; and Lye Brook Wilderness Area in Vermont.

Through source apportionment modeling, MANE-VU assisted States in determining their contribution to the visibility impairment of each Class I area in the MANE-VU region. Massachusetts and the other MANE-VU States adopted a weight-of-evidence approach which relied on several independent methods for assessing the contribution of different sources and geographic source regions to regional haze in the northeastern and mid-Atlantic portions of the United States. Details about each technique can be found in the Northeast States for Coordinated Air Use Management (NESCAUM) document *Contributions to Regional Haze in the Northeast and Mid-Atlantic United States*, August 2006 (hereinafter referred to as the "Contribution Report").[4]

The MANE-VU Class I States determined that any State contributing at least 2.0% of the total sulfate (the main contributor to visibility impairment in the Northeast, see Section III.C.3) observed on the 20 percent worst visibility days in 2002 was a contributor to visibility impairment at the Class I areas. Massachusetts emissions were found to contribute to the total annual average sulfate at the nearby Class I areas: Acadia National Park, Maine (10.11% of total sulfate); Moosehorn Wilderness Area, Maine and Roosevelt Campobello International Park (6.78% of total sulfate); Great Gulf Wilderness Area and Presidential Range Dry River, New Hampshire (3.11% of total sulfate); Lye Brook Wilderness Area (2.45% of total sulfate); and

[4] The August 2006 NESCAUM document *Contributions to Regional Haze in the Northeast and Mid-Atlantic United States* has been provided as part of the docket to this proposed rulemaking.

Brigantine Wilderness Area, New Jersey (2.73% of total sulfate). The impact of sulfate on visibility is discussed in greater detail below.

EPA is proposing to find that Massachusetts has adequately demonstrated that emissions from sources within the State cause or contribute to visibility impairment in nearby Class I Areas.

B. Best Available Retrofit Technology (BART)

According to 51.308(e), "The State must submit an implementation plan containing emission limitations representing BART and schedules for compliance with BART for each BART-eligible source that may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I Federal area, unless the State demonstrates that an emissions trading program or other alternative will achieve greater reasonable progress toward natural visibility conditions." On October 13, 2006, EPA's "Regional Haze Regulations; Revisions to Provisions Governing Alternative to Source-Specific Best Available Retrofit Technology (BART) Determinations; Final Rule" (hereinafter known as the "Alternative to BART Rule") was published in the Federal Register. See 71 FR 60612. Massachusetts chose to demonstrate that programs already developed by the State provide greater progress in visibility improvement than source-by-source BART determinations. A demonstration that the alternative program will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the state must be based on the following:

(1) A list of all BART-eligible sources within the State.

(2) A list of all BART-eligible sources and all BART source categories covered by the alternative program.

(3) Determination of the BART benchmark. If the alternative program has been designed to meet a requirement other than BART, as in the case of Massachusetts, the State may determine the best system of continuous emission control technology and associated emission reductions for similar types of sources within a source category based on both source specific and category-wide information, as appropriate.

(4) An analysis of the projected emission reductions achieved through the alternative program.

(5) A determination based on a clear weight of evidence that the alternative program achieves greater reasonable progress than would be achieved through the installation and operation of BART at the covered sources.

As allowed by the Regional Haze Rule, Massachusetts opted to pursue source by source BART determinations for select sources and demonstrate an Alternative to BART for other sources.

1. Identification of All BART Eligible Sources

Determining BART-eligible sources is the first step in the BART process. BART-eligible sources in Massachusetts were identified in accordance with the methodology in Appendix Y of the Regional Haze Rule, Guidelines for BART Determinations Under the Regional Haze Rule, Part II, How to Identify BART-Eligible Sources. See 70 FR 39158. This guidance consists of the following criteria:

- the unit falls into one of the listed source categories;
- the unit was constructed or reconstructed between 1962 and 1977; and
- the unit has the potential to emit over 250 tons per year of sulfur dioxide, nitrogen oxides, particulate matter, volatile organic compounds, or ammonia.

The BART Guidelines require States to address SO_2, NO_x, and particulate matter. States are allowed to use their best judgment in deciding whether VOC or ammonia emissions from a source are likely to have an impact on visibility in the area. The State of Massachusetts addressed SO_2, NO_x, and used particulate matter less than 10 microns in diameter (PM_{10}) as an indicator for particulate matter to identify BART eligible units, as the BART Guidelines require.

The identification of BART sources in Massachusetts was undertaken as part of a multi-State analysis conducted by the NESCAUM. NESCAUM worked with MassDEP licensing engineers to review all sources and determine their BART eligibility. MassDEP identified twenty-nine sources as BART-eligible. The Massachusetts BART eligible sources are listed in Table 1. Three of the sources are petroleum storage facilities (Exxon Mobile- Everett, Global Petroleum – Revere, and Gulf Oil – Chelsea) with VOC emissions.

Consistent with the BART Guidelines, the State of Massachusetts did not evaluate emissions of VOCs in BART determinations due to the lack of impact on visibility in the area due to anthropogenic sources. The majority of VOC emissions in Massachusetts are biogenic in nature. Therefore, the ability to further reduce total ambient VOC concentrations at Class I areas is limited. Point, area, and mobile sources of VOCs in Massachusetts are already comprehensively controlled as part of an ozone attainment and maintenance strategy.

Nor did Massachusetts evaluate ammonia. The overall ammonia inventory is very uncertain, but the amount of anthropogenic emissions at sources that were BART-eligible is relatively

small, and no additional sources were identified that had greater than 250 tons per year ammonia and required a BART analysis.

Table 1: BART Eligible Sources in Massachusetts

Source, Unit and Location	Fuel	BART Source Category	2002 Emissions (ton/yr)	Highest 2002 Visibility Impact (dv)[5]
Boston Generating – New Boston Unit 1	Distillate Oil	18.6 MW EGU	SO_2: 1 NOx: 170	0.04
Boston Generating – Mystic Unit 7*	Residual Oil	574 MW EGU	SO_2: 3,727 NOx: 805	1.02
Braintree Electric Unit 3	Distillate Oil Natural Gas	76 MW EGU	SO_2: 6 NOx: 97	0.03
Dominion – Brayton Point Unit 1*	Coal	243 MW EGU	SO_2: 9,254 NOx: 2,513	3.82
Dominion – Brayton Point Unit 2*	Coal	240 MW EGU	SO_2: 8,853 NOx: 2,270	3.67
Dominion – Brayton Point Unit 3*	Coal	612 MW EGU	SO_2: 19,450 NOx: 7,335	7.25
Dominion – Brayton Point Unit 4*	Residual Oil Natural Gas	435 MW EGU	SO_2: 2,037 NOx: 552	0.73
Dominion – Salem Harbor Unit 4*	Residual Oil	433 MW EGU	SO_2: 2,886 NOx: 787	0.98
Harvard University – Blackstone Unit 11	Residual Oil Natural Gas	83 MW EGU	SO_2: 63 NOx: 41	0.06
Harvard University – Blackstone Unit 12	Residual Oil Natural Gas	83 MW EGU	SO_2: 74 NOx: 46	0.06
Mirant – Canal Station Unit 1	Residual Oil	560 MW EGU	SO_2: 13,066 NOx: 3,339	4.43
Mirant – Canal Station Unit 2	Residual Oil	560 MW EGU	SO_2: 8,948 NOx: 2,260	3.26
Mirant Kendall LLC Unit 1	Residual Oil Natural Gas	80 MW EGU	SO_2: 18 NOx: 172	0.06
Mirant Kendall LLC Unit 2	Residual Oil Natural Gas	80 MW EGU	SO_2: 36 NOx: 96	0.04
Taunton Municipal Light Plant (TMLP) – Cleary Flood Unit 8	Residual Oil	28 MW EGU	SO_2: 37 NOx: 15	0.01
Taunton Municipal Light Plant (TMLP) – Cleary Flood Unit 9	Residual Oil	90 MW EGU	SO_2: 55 NOx: 163	0.07

[5] Visibility Impact is measured in units of deciviews (dv). A deciview measures the incremental visibility change discernable by the human eye. The modeling to determine the visibility impact is discussed below.

Source, Unit and Location	Fuel	BART Source Category	2002 Emissions (ton/yr)	Highest 2002 Visibility Impact (dv)[5]
Eastman Gelatin Units 1, 2, 3, and 4	Residual Oil Natural Gas	ICI Boilers	SO_2: 5.2 NOx: 51	0.03
General Electric Aircraft – Lynn Unit 3	Natural Gas Residual Oil	ICI Boilers	SO_2: 425 NOx: 213	0.24
Solutia	Natural Gas Residual Oil Coal	ICI Boiler	NOx: 16	0.003
Trigen – Kneeland St. Unit 3	Residual Oil Distillate Oil	ICI Boiler	SO_2: 85 NOx: 396	0.15
Wheelabrator Saugus Units 1	Mixed Waste	Municipal Incinerator	SO_2: 42 NOx: 357	0.25
Wheelabrator Saugus Unit 2	Mixed Waste	Municipal Incinerator	SO_2: 42 NOx: 364	0.25
Exxon Mobil – Everett All Processing Units	--	Petroleum Storage	N/A	--
Global Petroleum – Revere All Processing Units	--	Petroleum Storage	N/A	--
Gulf Oil – Chelsea All Processing Units	--	Petroleum Storage	N/A	--

*Located at a facility greater than 750 MW

2. Cap-Outs

BART applies to sources with the potential to emit 250 tons or more per year of any visibility impairing pollutant. (70 FR 39160). BART-eligible sources that adopt a federally enforceable permit limit to permanently limit emissions of visibility impairing pollutants to less than 250 tons per year (tpy) may thereby "cap-out" of BART. See 70 FR 39112. One Massachusetts source capped out of BART by taking such limits, General Electric-Lynn Unit 3. Actual emissions of visibility impairing pollutants from General Electric-Lynn Unit 3 are less than the 250 tons per year threshold. Pursuant to the request of the source, MassDEP has established a federally enforceable permit condition that limits the potential to emit (PTE) NOx and SO_2 emissions from

Unit 3 to less than 250 tons per year. This permit has been submitted as part of the Massachusetts SIP submittal (Appendix BB). The existing PM_{10} potential to emit is already below the 250 tpy threshold. As a result, Massachusetts concluded that this source is not BART eligible. If in the future, this source requests an increase in its PTE above the 250 tons per year threshold for a visibility impairing pollutant, it shall be subject to BART.

3. Identification of Sources Subject to BART

Massachusetts, working with MANE-VU, found that almost every MANE-VU state with BART-eligible sources contributes to visibility impairment at one or more Class I areas to a significant degree (See the MANE-VU Contribution Report). As a result, Massachusetts found that all BART eligible sources within Massachusetts are subject to BART.

According to Section III of the Guidelines, once the state has compiled its list of BART-eligible sources, it needs to determine whether to make BART determinations for all of the sources or to consider exempting some of them from BART because they may not reasonably be anticipated to cause or contribute to any visibility impairment in a Class I area.

Based on the collective importance of BART sources, Massachusetts decided that no exemptions would be given for sources.[6]

[6] Massachusetts' decision that all BART eligible sources are subject to BART should not be misconstrued to mean that all BART-eligible sources must install controls. For sources subject to a source-specific BART determination, Massachusetts' approach simply requires the consideration of each of the five statutory factors before determining whether or not controls are warranted. For sources that were not subject to source-specific BART determinations, Massachusetts' alternative to BART requires greater overall reductions than would have been achieved by application of source-specific BART, but may not require all sources to install additional controls.

4. Modeling to Demonstrate Source Visibility Impact

MANE-VU conducted modeling analyses of BART-eligible sources using the EPA approved air quality model, California Pollution Model (CALPUFF), in order to provide a regionally-consistent foundation for assessing the degree of visibility improvement which could result from the installation of BART controls.[7] While this modeling analysis differed slightly from the guidance, it was intended to provide a first-order estimate of the maximum visibility benefit that could be achieved by eliminating all emissions from a BART source, and provides a useful metric for determining which sources are unlikely to warrant additional controls to satisfy BART.

The MANE-VU modeling effort analyzed 136 BART-eligible sources in the MANE-VU region using the CALPUFF modeling platform and two meteorological data sets: 1) a wind field based on National Weather Service (NWS) observations; and 2) a wind field based on the Pennsylvania State University/National Center for Atmospheric Research Mesoscale Meteorological Model (MM5) version 3.6. Modeling results from both the NWS and MM5 platforms include each BART eligible unit's maximum 24-hr, 8th highest 24-hr, and annual average impact at the Class I area.[8] These visibility impacts were modeled relative to the 20 percent best, 20 percent worst, and average annual natural background conditions. In accordance with EPA guidance, which allows the use of either estimates of the 20 percent best or the annual average of natural background visibility conditions as the basis for calculating the deciview difference that individual sources would contribute for BART modeling purposes, MANE-VU

[7] The MANE-VU modeling protocol can be found in the NESCAUM "BART Resource Guide," dated August 23, 2006, (www.nescaum.org/documents/bart-resource-guide/bart-resource-guide-08-23-06-final.pdf/)
[8]The NWS and MM5 platform modeling results can be found in Appendices R-1 and R-2 of the SIP submittal.

opted to utilize the more conservative best conditions estimates approach because it is more protective of visibility.

The 2002 baseline modeling provides an estimate of the maximum improvement in visibility at Class I Areas in the region that could result from the installation of BART controls (the maximum improvement is equivalent to a "zero-out" of emissions). In virtually all cases, the installation of BART controls would result in less visibility improvement than what is represented by a source's 2002 impact, but this approach does provide a consistent means of identifying those sources with the greatest contribution to visibility impairment.

In addition to modeling the maximum potential improvement from BART, MANE-VU also determined that 98 percent of the cumulative visibility impact from all MANE-VU BART eligible sources corresponds to a maximum 24-hr impact of 0.22 dv from the NWS-driven data and 0.29 dv from the MM5 data. As a result, MANE-VU concluded that, on the average, a range of 0.2 to 0.3 dv would represent a significant impact at MANE-VU Class I areas, and sources having less than 0.1 dv impact are unlikely to warrant additional controls under BART.[9]

For Massachusetts, sources with visibility impact of 0.1 dv or less are: Braintree Electric Unit 3; Harvard University – Blackstone Units 11 and 12; Mirant- Kendall Units 1 and 2; New Boston

[9] As an additional demonstration that sources whose impacts were below the 0.1 dv level were too small to warrant BART controls, the entire MANE-VU population of these units was modeled together to examine their cumulative impacts at each Class I area. The results of this modeling demonstrated that the maximum 24-hour impact at any Class I area of all modeled sources with individual impacts below 0.1 dv was only a 0.35 dv change relative to the estimated best days natural conditions at Acadia National Park. This value is well below the 0.5 dv impact used by most RPOs and States for determining whether a BART-eligible source contributes to visibility impairment.

Unit 1; Eastman Gelatin Units 1, 2, 3, and 4; Solutia; and Trigen – Kneeland Unit 3.[10] Massachusetts determined that the cost of installing additional controls on these de minimis units was not cost effective given the minimal expected visibility impact. Massachusetts therefore determined that current controls represent BART for these units.

5. Source Specific BART Determination

The Regional Haze Rule allows Massachusetts to either make individual BART determinations or to implement an alternative that will achieve greater reasonable progress toward natural visibility conditions. Massachusetts developed an individual BART determination for Wheelabrator – Saugus Units 1 and 2.

a. Background

Wheelabrator-Saugus is a municipal waste combustor which contains two mass burn incinerators with water wall boilers, each rated at 325 MMBtu/hr heat input. Both incinerator units are BART-eligible, with reported combined 2002 emissions of 84 tons of SO_2 and 721 tons of NOx.

b. NOx BART Review

Wheelabrator has NOx control for both units that includes low-NOx burners and Selective Non-Catalytic Reduction (SNCR). The current NOx emission limit is 205 ppm (by volume at 7 percent oxygen dry basis, 24-hour arithmetic average). MassDEP believes that the low-NOx

[10] Trigen – Kneeland has been added to this list, despite its modeled impact of 0.146 dv (0.127 dv from NO_3) using the MM5 modeling platform, due to two significant errors in the 2002 input data used by MANE-VU to screen facilities for their impact on visibility. First, Units 1- 4 were included in the modeling when only Unit 3 is BART-eligible. Second, the 2002 modeled NOx emissions from Unit 3 were 396 tons, rather than the actual 96 tons of NOx emissions. Massachusetts believes that the modeling using the corrected 2002 NOx emissions from Trigen-Kneeland would indicate a total visibility impact of < 0.1 dv, therefore a source with a de minimis impact on visibility.

burners and SNCR are the most stringent control available for municipal waste combustors. At MassDEP's request, the facility performed furnace gas temperature profiling and conductd SNCR optimization testing to determine the capability to further reduce NOx emission while minimizing ammonia slip. The optimization test results indicated that a reduced NOx emission target of 185 ppm (dry, 7% O_2) could be achieved with the existing SNCR system. Therefore Massachusetts determined that the NOx emission rate of 185 ppm (30-day average) for each of Wheelabrator's units represents BART.

c. SO_2 BART Review

Wheelabrator's existing control technology for SO_2 emissions includes a spray dry absorber (SDA) with lime slurry injection. Wheelabrator's permitted SO_2 emission limit is 29 ppm (by volume at 7 percent oxygen dry basis, 24-hour geometric mean). CALPUFF modeling suggests that visibility impacts from 2002 SO_2 emissions from Wheelabrator – Saugus are below 0.1 dv on the worst day at any Class I area. Massachusetts determined that further controls for SO_2 are not warranted given the minimal potential visibility improvement and that current controls are equivalent to federal Maximum Achievable Control Technology (MACT) standards (40 CFR Part 60 Subpart Cb).

d. PM BART Review

Each of Wheelabrator's units is equipped with 10-module fabric filters (baghouses) and is subject to a PM emission limit 27 mg/dscm or less at 7 percent oxygen (dry basis). On March 14, 2012, MassDEP issued an ECP Modified Final Approval for Wheelabrator that reduced its PM emission limit to 25 mg/dscm or less at 7 percent oxygen (dry basis). Massachusetts determined

that additional PM controls were not warranted given the additional cost of installation and the already strict controls in place at Wheelabrator.

e. EPA Assessment

EPA has reviewed the Massachusetts analysis and concluded it was conducted in a manner consistent with EPA's BART Guidelines. The proposed NOx, PM, and SO_2 limits meet the current federal Maximum Achievable Control Technology (MACT) limits. See 40 CFR Part 60 Subpart Cb (71 FR 27324, May 10, 2006). The BART Rule states, "Unless there are new technologies subsequent to the MACT standards which would lead to cost-effective increases in the level of control, you may rely on the MACT standards for purposes of BART." (50 FR 39164, (July 6, 2005)). The MACT standard for Large Municipal Waste Combustors was modified in 2006, with the standards taking effect in 2009. We are currently unaware of any new technology available that would require reevaluation of the cost-effectiveness of additional controls. EPA is proposing to find that the Massachusetts analysis and conclusions for the BART emission units located at Wheelabrator – Saugus are reasonable.

6. Identification of all BART Source Categories Covered by the Alternative Program

To address the BART requirement for the remaining sources subject to BART, Massachusetts opted to implement an "Alternative to BART" measure.

In crafting Massachusetts' Alternative to BART demonstration, the State relied on: SO_2 and NOx emission reductions required by 310 CMR 7.29, "Emissions Standards for Power Plants;" the retirement of Somerset Power; permit restrictions for Brayton Point, Salem Harbor, and

Mount Tom Station that limits SO_2 and/or NOx emissions; 310 CMR 7.19, "Reasonably Available Control Technology for sources of Oxides of Nitrogen NOx;" and MassDEP's proposed amendments to its low sulfur fuel oil regulation, which requires EGU's that burn residual oil to limit the sulfur content of 0.5% by weight beginning July 1, 2014.

The Massachusetts Alternative to BART includes emission reductions from all of the remaining BART-eligible EGUs, as well as, select EGUs determined to be too old to meet the definition of BART-eligible.

7. Determination of the BART Benchmark

In developing the BART benchmark,[11] with one exception, States must follow the approach for making source-specific BART determinations under section 51.308(e)(1). The one exception to this general approach is where the alternative program has been designed to meet requirements other than BART, such as being part of the State's long term strategy to meet reasonable progress goals. In this case, States are not required to conduct a full BART analysis under 51.308(e)(1) for each source and may instead use simplifying assumptions in establishing a BART benchmark based on an analysis of what BART is likely to be for similar types of sources within a source category using category-wide or source-specific information as appropriate. Under either approach to establishing a BART benchmark, we believe that the presumptions for EGUs in the BART Guidelines should be used for comparison to a trading or other alternative program, unless the State determines that such presumptions are not appropriate for a particular EGU. See 71 FR 60619. Massachusetts' program is part of the State's long term strategy and

[11] The BART benchmark is intended to provide a target emission reduction—what would the expected reductions in emissions have been if the State had chosen to apply source-specific BART to all of its BART sources—for comparison to the Alternative to BART.

even though Massachusetts had the option of using the less stringent EPA presumptive limits, the State opted to use the MANE-VU recommended BART emission limits for non-CAIR EGUs in setting the BART benchmark. These limits are listed in Table 2.

Table 2: MANE-VU Recommended BART Limits

Category	SO_2 Limits	NOx Limits
Non-CAIR EGUs	Coal- 95% control or 0.15 lb/MMBtu Oil – 95% control or 0.33 lb/MMBtu (0.3% fuel sulfur limit)	In NOx SIP call area, extend use of controls to year round 0.1 – 0.25 lb/MMBtu depending on coal and boiler type

8. Massachusetts' SO_2 Alternative BART Program

The Massachusetts Alternative to BART is comprised of:

- 310 CMR 7.29, "Emission Standards for Power Plants," which establishes SO_2 emission standards for certain EGUs.
- Permit restrictions for Mount Tom Station, Brayton Point Station, and Salem Harbor that disallow the use of 310 CMR 7.29 SO_2 Early Reduction Credits and federal Acid Rain Allowances for compliance with 310 CMR 7.29.
- An annual cap of 300 tons of SO_2 for Salem Harbor Unit 2, and a shutdown of Units 3 and 4 beginning June 1, 2014.
- The retirement of Somerset Power in 2010.
- MassDEP's proposed low sulfur fuel oil regulation, which would require EGUs that burn residual oil to limit the sulfur content to 0.5% by weight beginning July 1, 2014.

Massachusetts included previously adopted 310 CMR 7.29, "Emission Standards for Power Plants," as part of its February 17, 2012 proposed Regional Haze SIP supplement. 310 CMR 7.29 was adopted in 2001 as a means to reduce NOx, SO_2, mercury (Hg), and carbon dioxide (CO_2) emissions from the State's largest fossil fueled EGUs. The rule established a two-phased schedule. The second phase became effective October 1, 2006. The Massachusetts Emission Standards for power plants establishes a facility-wide rolling 12-month SO_2 emission rate of 3.0 pounds per megawatt-hour and a monthly average emission rate of 6.0 pounds per megawatt-hour. This regulation allows the use of SO_2 Early Reduction Credits (on a 1 ton credit to 1 ton excess emission basis) and the use of federal Acid Rain SO_2 Allowances (on a 3 ton allowance to 1 ton excess emission basis) for compliance with the 3.0 pound per mega-watt hour emission rate. 310 CMR 7.29 applies to Brayton Point (Units 1, 2, 3, 4), Canal Station (Units 1 and 2), Mount Tom Station (Unit 1), Mystic Station (Units 4, 5, 6, 7, 81, 82, 93, and 94), Salem Harbor Station (Units 1, 2, 3, and 4), and NRG Somerset (Unit 8).

On May 15, 2009, MassDEP issued an amended Emission Control Plan Final Approval[12] for Mount Tom that prohibits the use of Early Reduction Credits (ERCs) and federal Acid Rain Allowances for compliance with 310 CMR 7.29 after June 1, 2014. In a similar fashion, on February 16, 2012, at Brayton Point's request, MassDEP issued an Amended Emission Control Plan Draft Approval[13] which prohibits the use of ERCs and federal Acid Rain Allowances for compliance with 310 CMR 7.29 after June 1, 2014.

[12] The Mount Tom amended Emission Control Plan can be found in Appendix EE of the February 17, 2012 Proposed Revision to Massachusetts Regional Haze State Implementation Plan.
[13] The Brayton Point amended Emission Control Plan can be found in Appendix GG of the February 17, 2012 Proposed Revision to Massachusetts Regional Haze State Implementation Plan.

On February 17, 2012, at Salem Harbor's request, MassDEP proposed an Amended Emission Control Plan[14] that prohibits the use of ERCs and federal Acid Rain Allowances for compliance with 310 CMR 7.29, after June 1, 2014. The emission control plan also establishes an annual cap of 300 tons of SO_2 for Salem Harbor 2 and the shutdown of Units 3 and 4 effective June 1, 2014. Per a consent decree,[15] Salem Harbor Units 1 and 2 were removed from service as of December 31, 2011, which means that these units can no longer generate electricity for the power grid. However, under the consent decree these units were not restricted from operating for other purposes. The consent decree therefore does not act as a federally enforceable limit on emissions from these units. MassDEP's proposed permit restrictions will make the emission reductions from Salem Harbor federally enforceable. As such these reductions are not required under the consent decree and are included in Massachusetts' Alternative to BART.

Instead of complying with 310 CMR 7.29, Somerset Power ceased operating in 2010, and on June 22, 2011, at Somerset Power's request, MassDEP issued a letter that revoked all air approvals and permits for the facility and deemed all pending permit applications withdrawn.[16]

The final component of the Massachusetts Alternative to BART is the MassDEP proposed amendment to 310 CMR 7.05, "Fuels All Districts," to lower the allowable sulfur content of distillate oil and residual oil combusted by stationary sources. For residual oil, 310 CMR 7.05 currently includes a range of sulfate content limits, from 0.5% to 2.2%, depending on the area of

[14] The Salem Harbor amended Emission Control Plan can be found in Appendix FF of the February 17, 2012 Proposed Revision to Massachusetts Regional Haze State Implementation Plan.
[15] Conservation Law Foundation v. Dominion Energy New England, Inc., Case No. 1:10-cv-11069 (D. Mass. 2012), http://www.clf.org/wp-content/uploads/2012/02/Signed-Consent-Decree-12_11.pdf.
[16] Appendix HH of the Massachusetts February 17, 2012 SIP submittal.

the state. The proposed amendment would establish a 0.5% sulfur content limit for power plants as of July 1, 2014.

Analysis of Alternative to BART for SO_2

Table 3 shows the BART benchmark projected SO_2 emissions for the BART-eligible units included in the alternative program. The emissions were calculated by multiplying the MANE-VU BART workgroup recommended BART SO_2 emission rate in lb/MMBtu (see Table 2 above) by each unit's 2002 baseline heat input in MMBtu. Massachusetts determined that the BART benchmark emission reduction is 50,752 tons of SO_2 (68,328 tons minus 17,576 tons).

Table 3: BART Benchmark for SO_2

BART Eligible Facility	Unit	2002 SO_2 Emissions (Tons)	2002 Heat Input (MMBtu)	MANE-VU Recommended SO_2 BART Emission Rate (lbs/MMBtu)	Estimated SO_2 Emissions (Tons)
Brayton Point	1	9,254	17,000,579	0.15	1,275
Brayton Point	2	8,853	15,896,795	0.15	1,192
Brayton Point	3	19,450	36,339,809	0.15	2,725
Brayton Point	4	2,037	4,787,978	0.33	790
Canal Station	1	13,066	27,295,648	0.33	4,504
Canal Station	2	8,948	19,440,919	0.33	3,208
Cleary Flood	8	39	92,567	0.33	15
Cleary Flood	9	68	2,123,819	0.33	350
Mystic	7	3,727	15,172,657	0.33	2,503
Salem Harbor	4	2,886	6,137,412	0.33	1,013
Total		**68,328**			**17,576**

Table 4 shows the Alternative to BART estimated SO_2 emissions, which MassDEP calculated by multiplying the proposed low-sulfur fuel oil regulation SO_2 emission rates in lbs/MMBtu by the 2002 heat input in MMBtu, or by multiplying the 310 CMR 7.29 SO_2 rolling 12-month emission rate in lbs/MWh by the 2002 megawatt-hours electrical generation, and accounting for

permit restrictions in effect at Mount Tom Station and proposed for Brayton Point and Salem Harbor, as well as the retirement of Somerset Power. MassDEP calculated that the Alternative to BART results in an estimated emission reduction of 54,986 tons from 2002 emissions (89,254 tons minus 34,268). This reduction is 4,234 tons (54,986 tons minus 50,752 tons) more than the calculated emission reduction from the BART benchmark. Massachusetts determined that its proposed Alternative to BART for SO_2 would therefore result in more emissions reductions than would have been achieved through the application of source-specific BART.

Table 4: Alternative to BART for SO_2

Facility	Unit	2002 SO_2 Emissions (Tons)	2002 Heat Input (MMBtu) or Generation (MWh)	Alternative BART Emission Rate (lbs/MMBtu or lbs/MWh)	Estimated SO_2 Emissions (Tons)
Brayton Point	1	9,254	1,951,839 MWh	3.0 lbs/MWh	2,928
Brayton Point	2	8,853	1,855,515 MWh	3.0 lbs/MWh	2,783
Brayton Point	3	19,450	4,294,957 MWh	3.0 lbs/MWh	6,442
Brayton Point	4	2,037	4,787,978 MMBtu	0.56 lbs/MMBtu	1,341
Canal Station	1	13,066	27,295,648 MMBtu	0.56 lbs/MMBtu	7,643
Canal Station	2	8,948	19,440,919 MMBtu	0.56 lbs/MMBtu	5,443
Cleary Flood	8	39	92,567 MMBtu	0.56 lbs/MMBtu	25
Cleary Flood	9	68	2,123,819 MMBtu	0.56 lbs/MMBtu	595
Mount Tom	1	5,282	1,047,524 MWh	3.0 lbs/MWh	1,571
Mystic	7	3,727	15,172,657 MMBtu	0.56 lbs/MMBtu	4,248
Salem Harbor	1	3,425	631,606 MWh	3.0 lbs/MWh	947
Salem Harbor	2	2,821	527,939 MWh	Cap	300
Salem Harbor	3	4,999	974,990 MWh	Retired	0
Salem Harbor	4	2,886	6,137,412 MMBtu	Retired	0
Somerset	8	4,399	8,910,087 MMBtu	Retired	0
Total		**89,254**			**34,268**

Section 40 CFR 51.308(e)(3) provides a process for determining whether an alternative measure makes greater reasonable progress than would be achieved through the installation and operation of BART. If the geographic distribution of emission reductions is similar between an

alternative measure and BART, the comparison of the two measures may be made on the basis of emissions alone. The alternative measure may be deemed to make greater progress than BART if it results in greater emission reductions than requiring sources subject to BART to install, operate, and maintain BART. In this case, the Alternative to BART achieves greater emission reductions than BART. Aside from Mount Tom, all of the Alternative to BART sources are coastally located EGUs in Eastern Massachusetts – two of which, Brayton Point and Somerset, are located in the same municipality. Massachusetts concluded that the geographic distribution of emission reductions is not significantly different than the application of source specific BART. Therefore, Massachusetts determined that its Alternative to BART for SO_2 would result in greater reasonable progress than application of source-specific BART.

9. Massachusetts' NOx Alternative BART Program

The Massachusetts Alternative to BART for NOx relies on:

- 310 CMR 7.29, "Emissions Standards for Power Plants," which establishes NOx emissions limits for certain EGUs.
- An annual cap of 276 tons of NOx for Salem Harbor Unit 1 and an annual cap of 50 tons of NOx for Unit 2, and a shutdown of Units 3 and 4 beginning June 1, 2014.
- The retirement of Somerset Power in 2010.
- 310 CMR 7.19, "Reasonably Available Control Technology (RACT) for Sources of Oxides of Nitrogen NOx," which establishes NOx emission standards for various sources, including EGUs.

MassDEP's existing regulation 310 CMR 7.29, "Emission Standards for Power Plants" establishes a rolling 12-month average NOx emission rate of 1.5 lbs/MWh and a monthly average emission rate of 3 lbs/MWh. 310 CMR 7.29 applies to Brayton Point (Units 1, 2, 3, 4), Canal Station (Units 1 and 2), Mount Tom Station (Unit 1), Mystic Station (Units 4, 5, 6, 7, 81, 82, 93, and 94), Salem Harbor Station (Units 1, 2, 3, and 4), and NRG Somerset (Unit 8).

On February 17, 2012, at Salem Harbor's request, MassDEP proposed an Amended ECP Approval[17] that requires an annual cap of 276 tons of NOx for Salem Harbor Unit 1 and an annual cap of 50 tons of NOx for Unit 2, and a shutdown of Units 3 and 4 beginning June 1, 2014. While these units are subject to a consent decree that requires them to be removed from electric generation service, the consent decree does not prevent these units from operation other than electric generation service. Therefore, Massachusetts' proposed Amended ECP Approval will result in an enforceable limitation on emissions from Salem Harbor in excess of currently required reductions.

Somerset Power ceased operating in 2010, and on June 22, 2011, at Somerset's Power's request, MassDEP issued a letter[18] that revoked all air approvals and permits for the facility and deemed all pending permit applications withdrawn.

MassDEP's existing regulation 310 CMR 7.19 establishes NOx emission rates for various stationary sources, including EGUs. Under 310 CMR 7.19, Cleary Flood Units 8 and 9 are subject to a NOx emission rate of 0.28 lbs/MMBtu. Mystic Unit 7 is subject to a NOx emission

[17] The Salem Harbor amended Emission Control Plan can be found in Appendix FF of the February 17, 2012 Proposed Revision to Massachusetts Regional Haze State Implementation Plan.
[18] Appendix HH of the Massachusetts February 17, 2012 SIP submittal.

rate of 0.25 lb/MMBtu. Mystic is also subject to 310 CMR 7.29 on a facility–wide basis. However, Mystic Unit 7 could exceed the 310 CMR 7.29 NOx rate of 1.5 lbs/MWh while the facility as a whole complies with the rate because the other units at Mystic are natural gas-fired with low NOx emissions, and therefore the 310 CMR 7.19 unit-specific NOx rate of 0.25 lbs/MMBtu is the controlling factor for Unit 7.

Analysis of the Alternative BART Program for NOx

Table 5 shows the BART benchmark NOx emissions for the BART-eligible units, which were calculated by multiplying the lowest, more stringent MANE-VU BART workgroup recommended emission rate of 0.1 lb/MMBtu by the 2002 heat input in MMBtu. The BART benchmark results in a calculated emission reduction of 12,820 tons of NOx (20,034 tons minus 7,214 tons) from 2002 emissions.

Table 5: BART Benchmark for NOx

BART-Eligible Facility	Unit	2002 NO_x Emissions (Tons)	2002 Heat Input (MMBtu)	MANE-VU Recommended BART NO_x Emission Rate (lbs/MMBtu)	Estimated NO_x Emissions (Tons)
Brayton Point	1	2,513	17,000,579	0.10	850
Brayton Point	2	2,270	15,896,795	0.10	795
Brayton Point	3	7,335	36,339,809	0.10	1,817
Brayton Point	4	552	4,787,978	0.10	239
Canal Station	1	3,339	27,295,648	0.10	1,365
Canal Station	2	2,260	19,440,919	0.10	972
Cleary Flood	8	12	92,567	0.10	5
Cleary Flood	9	161	2,123,819	0.10	106
Mystic	7	805	15,172,657	0.10	759
Salem Harbor	4	787	6,137,412	0.10	307
Total		**20,034**			**7,214**

Table 6 shows the Alternattive to BART NOx emissions, which were calculated by multiplying MassDEP's 310 CMR 7.29 NOx emission rate in lb/MWh and 310 CMR 7.19 NOx emission rate in lb/MMBtu by the 2002 electricity generation in MWh and 2002 heat input in MMBtu respectively, and accounting for permit restrictions proposed for Salem Harbor and the retirement of Somerset Power. The Alternative to BART results in an emission reduction of 13,116 tons (26,455 tons minus 13,339 tons) from 2002 emissions. The estimated NOx reductions from the Alternative to BART are 296 tons (13,116 tons minus 12,820 tons) more than estimated reductions from BART alone. Massachusetts determined that its proposed Alternative to BART for NOx would therefore result in more emissions reductions than would have been achieved through the application of source-specific BART.

Table 6: Alternative to BART for NOx

Facility	Unit	2002 NO_x Emission (Tons)	2002 Heat Input (MMBtu) or Generation (MWh)	Alternative BART Emission Rate (lbs/MMBtu or lbs/MWh)	Estimated NO_x Emissions (Tons)
Brayton Point	1	2,513	1,951,839 MWh	1.5 lbs/MWh	1,464
Brayton Point	2	2,270	1,855,515 MWh	1.5 lbs/MWh	1,392
Brayton Point	3	7,335	4,294,957 MWh	1.5 lbs/MWh	3,221
Brayton Point	4	552	401,305 MWh	1.5 lbs/MWh	301
Canal Station	1	3,339	2,945,578 MWh	1.5 lbs/MWh	2,209
Canal Station	2	2,260	1,910,079 MWh	1.5 lbs/MWh	1,433
Cleary Flood	8	12	92,567 MMBtu	0.28 lbs/MMBtu	13
Cleary Flood	9	161	2,123,819 MMBtu	0.28 lbs/MMBtu	297
Mount Tom	1	1,969	1,047,524 MWh	1.5 lbs/MWh	786
Mystic	7	805	15,172,657 MMBtu	0.25 lbs/MMBtu	1,897
Salem Harbor	1	920	631,606 MWh	Cap	276
Salem Harbor	2	755	527,939 MWh	Cap	50
Salem Harbor	3	1,331	974,990 MWh	Retired	0
Salem Harbor	4	787	508,342 MWh	Retired	0
Somerset	8	1,445	8,910,087 MMBtu	Retired	0
		26,455			**13,339**

As with SO_2, the Alternative to BART achieves greater NOx emission reductions than source by source BART. Massachusetts determined that the geographic distribution of the emission reductions is not significantly different than the application of source specific BART. Therefore, Massachusetts determined that its Alternative to BART would result in greater reasonable progress than application of source-specific BART.

10. EPA's Assessment of Massachusetts' Alternative to BART Demonstration

EPA is proposing to find that Massachusetts has demonstrated that the Alternative to BART achieves greater SO_2 and NOx emission reductions than expected from source by source BART. EPA is also proposing to find that the geographic distribution of the emission reductions from the Alternative to BART is not significantly different to the geographic distribution expected from source by source BART emission reductions, therefore visibility modeling is not required, as noted in the Alternative to BART Rule. See 71 FR 60612.[19] Thus, EPA is proposing to find that the SO_2 and NOx Alternative to BART measures meet the requirements of the Alternative to BART Rule.

11. Massachusetts' PM BART Determinations

Massachusetts' proposed Alternative to BART does not cover PM_{10} emissions. An overview of 2002 and 2009 PM_{10} emissions and PM controls at the EGU BART sources is contained in Table 7. Collectively, these facilities emitted 1,531 tons of PM_{10} in 2002 that diminished visibility in the New England Class I areas by 0.032 – 0.037 deciviews. Through installation of controls for other purposes, these facilities have significantly reduced PM emissions, so that in

[19] In addition, because the SO_2 and NOx Alternatives to BART do not involve emissions trading between sources, review under EPA's Guidance on Economic Incentive Programs (EIPs) is not required. IMPROVING AIR QUALITY WITH ECONOMIC INCENTIVE PROGRAMS (2001), http://www.epa.gov/ttncaaa1/t1/memoranda/eipfin.pdf.

2009 these facilities emitted a total of 109 tons of PM_{10}.

Table 7: Massachusetts PM_{10} BART Sources, Emissions, and Controls

Source	Unit	PM_{10} dv	2002 PM_{10} Emissions (tpy)	2009 PM_{10} Emissions (tpy)	PM Controls	PM Emission Limits lbs/MMBtu as of 2009
Brayton Point	1	0.031, 0.026	386	39	Fabric Filter Baghouse	0.08
Brayton Point	2				Fabric Filter Baghouse	0.08
Brayton Point	3				Fabric Filter Baghouse (Planned)	0.08
Brayton Point	4	0.000, 0.000	6	0	ESP	0.03
Canal Station	1	0.000, 0.000	672	60	ESP	0.02
Canal Station	2				ESP	0.02
Mystic Station	7	0.002, 0.003	131	4	ESP	0.05
Salem Harbor	4	0.001, 0.001	316	0	ESP	0.04
Cleary Flood	8	0.003, 0.002	20	6	None	0.12
Cleary Flood	9				None	0.12

CALPUFF modeling of the 2002 PM emissions at these facilities shows an impact that was well below the 0.1 dv on the worst day at affected Class I areas, for each unit and cumulatively, which is the level MANE-VU has identified that the degree of visibility improvement is so small (<0.1 dv) that no reasonable weighting of factors could justify additional controls under BART. The visibility would be even lower today based on the emission reductions achieved since 2002. Massachusetts therefore determined that no additional controls are warranted for primary PM_{10}.

EPA's Assessment

EPA is proposing to approve Massachusetts' determination that further primary PM control

beyond the controls already implemented by Massachusetts' BART-eligible units is not warranted at this time as such measures are not cost-effective and the visibility contribution from Massachusetts' BART-eligible units with respect to PM is insignificant.

12. BART Enforceability

The BART emission limits referenced above are enforceable through a variety of mechanisms. Specifically, MassDEP's 310 CMR 7.19, "Reasonably Available Control Technology (RACT) of Sources of Oxides of Nitrogen (NOx)," which establishes NOx emission rates for various stationary sources, including EGUs, was previously approved into the Massachusetts SIP on December 27, 2000. See 65 FR 81743. The PM limits for Brayton Point (Units 1, 2 3, and 4), Canal Station (Units 1 and 2), Mystic Station (Unit 7), and Salem Harbor (Unit 4) are enforceable by permit conditions issued under Massachusetts' federally approved permit process. In addition, the PM limits for Cleary Flood (Units 8 and 9) are enforceable via 310 CMR 7.02, "Plans and Approvals and Emission Limitations," which was previously approved into the Massachusetts SIP on October 28, 1972. See 37 FR 23085. Finally, a number of requirements were included in the MassDEP February 17, 2012 proposal.

Pursuant to MassDEP's request for parallel processing of the proposed SIP revision, EPA is proposing approval of Massachusetts' Final ECP Approval – Wheelabrator Saugus, Amended ECP for Brayton Point, Amended ECP for Salem Harbor Station, Amended ECP for Mount Tom Station, Amended ECP for Somerset Station, and previously adopted 310 CMR 7.29, "Emission Standards for Power Plants," and proposed Amendments to 310 CMR 7.05, "Fuels all Districts" and 310 CMR 7.00, "Definitions." After the State submits the final version of the February 17,

2012 proposed SIP revision (including a response to all public comments raised during the State's public participation process), EPA will prepare a final rulemaking notice. If the State's formal SIP submittal contains changes which occur after EPA's notice of proposed rulemaking, such changes must be described in EPA's final rulemaking action. If the State's changes are significant, then EPA must decide whether to finalize approval with a description of the changes, re-propose our action with regard to the State's SIP submittal, or take other action as may be appropriate.

C. Long-Term Strategy

As described in Section II.E of this action, the LTS is a compilation of State-specific control measures relied on by the State to obtain its share of emission reductions to support the RPGs established by Maine, New Hampshire, Vermont, and New Jersey, the nearby Class I area States. Massachusetts' LTS for the first implementation period addresses the emissions reductions from federal, State, and local controls that take effect in the State from the baseline period starting in 2002 until 2018. Massachusetts participated in the MANE-VU regional strategy development process and supported a regional approach towards deciding which control measures to pursue for regional haze, which was based on technical analyses documented in the following reports: a) the Contribution Report; b) *Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas* (available at www.marama.org/visibility/RPG/FinalReport/RPGFinalReport_070907.pdf); c) *Five-Factor Analysis of BART-Eligible Sources: Survey of Options for Conducting BART Determinations* (available at www.nescaum.org/documents/bart-final-memo-06-28-07.pdf); and d) *Assessment of Control Technology Options for BART-Eligible Sources: Steam Electric Boilers, Industrial*

Boilers, Cement Plants and Paper, and Pulp Facilities (available at www.nescaum.org/documents/bart-control-assessment.pdf).

1. Emissions Inventory for 2018 with Federal and State Control Requirements

The State-wide emissions inventories used by MANE-VU in its regional haze technical analyses were developed by MARAMA for MANE-VU with assistance from Massachusetts. The 2018 emissions inventory was developed by projecting 2002 emissions forward based on assumptions regarding emissions growth due to projected increases in economic activity and emissions reductions expected from federal and State regulations. MANE-VU's emissions inventories included estimates of NOx, PM_{10}, $PM_{2.5}$, SO_2, VOC, and NH_3. The BART guidelines direct States to exercise judgment in deciding whether VOC and NH_3 impair visibility in their Class I area(s). As discussed further in Section III.C.3 below, MANE-VU demonstrated that anthropogenic emissions of sulfates are the major contributor to $PM_{2.5}$ mass and visibility impairment at Class I areas in the Northeast and Mid-Atlantic region. It was also determined that the total ammonia emissions in the MANE-VU region are extremely small.

MANE-VU developed emissions inventories for four inventory source classifications: 1) stationary point sources, 2) stationary area sources, 3) non-road mobile sources, and 4) on-road mobile sources. The New York Department of Environmental Conservation also developed an inventory of biogenic emissions for the entire MANE-VU region. Stationary point sources are those sources that emit greater than a specified tonnage per year, depending on the pollutant, with data provided at the facility level. Stationary area sources are those sources whose individual emissions are relatively small, but due to the large number of these sources, the

collective emissions from the source category could be significant. Non-road mobile sources are equipment that can move but do not use the roadways. On-road mobile source emissions are automobiles, trucks, and motorcycles that use the roadway system. The emissions from these sources are estimated by vehicle type and road type. Biogenic sources are natural sources like trees, crops, grasses, and natural decay of plants. Stationary point sources emission data is tracked at the facility level. For all other source types, emissions are summed on the county level.

There are many federal and State control programs being implemented that MANE-VU and Massachusetts anticipate will reduce emissions between the baseline period and 2018. Emission reductions from these control programs in the MANE-VU region were projected to achieve substantial visibility improvement by 2018 at all of the MANE-VU Class I areas. To assess emissions reductions from ongoing air pollution control programs, BART, and reasonable progress goals, MANE-VU developed 2018 emissions projections called "Best and Final." The emissions inventory provided by the Commonwealth of Massachusetts for the Best and Final 2018 projections is based on expected control requirements.

Massachusetts relied on emission reductions from the following ongoing and expected air pollution control programs as part of the State's long term strategy. For electrical generating units (EGUs), Massachusetts relied on 310 CMR 7.29, "Emissions Standards for Power Plants" which limits SO_2 and NOx emissions from the six largest fossil fuel-fired power plants in Massachusetts. Massachusetts also relied on the following controls on non-EGU point sources in estimating 2018 emissions inventories: NOx SIP Call Phases I and II; NOx Reasonably

Available Control Technology (RACT) in 1-hour Ozone SIP; VOC 2-year, 4-year, 7-year and 10-year Maximum Achievable Control Technology (MACT) Standards; Combustion Turbine and Reciprocating Internal Combustion Engine (RICE) MACT; and Industrial Boiler/Process Heater MACT (also known as the Industrial Boiler MACT).

On July 30, 2007, the U.S. Court of Appeals for the District of Columbia vacated and remanded the Industrial Boiler MACT Rule. *NRDC v. EPA,* 489F.3d 1250 (D.C. Cir. 2007). This MACT was vacated since it was directly affected by the vacatur and remand of the Commercial and Industrial Solid Waste Incinerator (CISWI) definition rule. EPA proposed a new Industrial Boiler MACT rule to address the vacatur on June 4, 2010 (75 FR 32006) and issued a final rule on March 21, 2011 (76 FR 15608). On May 18, 2011, EPA stayed the effective date of the Industrial Boiler MACT pending review by the D.C. Circuit or the completion of EPA's reconsideration of the rule. See 76 FR 28662.

On December 2, 2011, EPA issued a proposed reconsideration of the MACT standards for existing and new boilers at major (76 FR 80598) and area (76 FR 80532) source facilities, and for Commercial and Industrial Solid Waste Incinerators (76 FR 80452). On January 9, 2012, the U.S. District Court for the District of Columbia vacated EPA's stay of the effectiveness date of the Industrial Boiler MACT, reinstating the original effective date and therefore requiring compliance with the current rule in 2014. *Sierra Club v. Jackson*, Civ. No. 11-1278, slip op. (D.D.C. Jan. 9, 2012).

Even though Massachusetts' modeling is based on the old Industrial Boiler MACT limits, Massachusetts' modeling conclusions are unlikely to be affected because the expected reductions in SO_2 and PM resulting from the vacated MACT rule are a relatively small component of the Massachusetts inventory and the expected emission reductions from the final MACT rule are comparable to those modeled. In addition, the new MACT rule requires compliance by 2014 and therefore the expected emission reductions will be achieved prior to the end of the first implementation period in 2018. Thus, EPA does not expect that differences between the old and revised Industrial Boiler MACT emission limits would affect the adequacy of the existing Massachusetts regional haze SIP. If there is a need to address discrepancies between projected emissions reductions from the old Industrial Boiler MACT and the Industrial Boiler MACT finalized in March 2011, we expect Massachusetts to do so in its 5-year progress report.

Controls on area sources expected by 2018 include: VOC rules for consumer products (310 CMR 7.25(12)); VOC control measures for architectural and industrial maintenance coatings (310 CMR 7.25(11)) and solvent cleaning (310 CMR 7.18(8)); VOC control measures for cutback asphalt paving (310 CMR 7.18(9)); and VOC control measures for portable fuel containers (contained in EPA's Mobile Source Air Toxics rule).

Controls on mobile sources expected by 2018 include: enhanced inspection and maintenance (I/M) inspection for 1984 and new vehicles (310 CMR 60.02); Federal On-Board Refueling Vapor Recovery (ORVR) Rule; Federal Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Requirements; Federal Heavy-Duty Diesel Engine Emission Standards for Trucks and

Buses; and Federal Emission Standards for Large Industrial Spark-Ignition Engines and Recreation Vehicles.

Controls on non-road sources expected by 2018 include the following federal regulations: Control of Air Pollution: Determination of Significance for Nonroad Sources and Emission Standards for New Nonroad Compression Ignition Engines at or above 37 kilowatts (59 FR 31306, June 17, 1994); Control of Emissions of Air Pollution from Nonroad Diesel Engines (63 FR 56967, Oct. 23, 1998); Control of Emissions from Nonroad Large Spark-Ignition Engines and Recreational Engines (67 FR 68241, Nov. 8, 2002); and Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuels (69 FR 38958, June 29, 2004).

Tables 8 and 9 are summaries of the 2002 baseline and 2018 estimated emissions inventories for Massachusetts. The 2018 estimated emissions include emissions growth as well as emission reductions due to ongoing emission control strategies and reasonable progress goals.

Table 8: 2002 Emission Inventory Summary for Massachusetts (tons per year)

Category	VOC	NO_x	$PM_{2.5}$	PM_{10}	NH_3	SO_2
Point	5,647	45,590	4,161	5,852	1,526	101,049
Area	159,753	34,371	43,203	191,369	16,786	25,585
On-Road Mobile	57,186	143,368	2,410	3,408	5,499	4,399
Non-Road Mobile	56,749	42,769	3,226	3,531	28	3,791
Biogenics	113,957	1,257	--	--	--	--
Total	393,292	267,355	53,000	204,160	23,839	134,824

Table 9: 2018 Emission Inventory Summary for Massachusetts (tons per year)

Category	VOC	NO_x	$PM_{2.5}$	PM_{10}	NH_3	SO_2
Point	10,902	40,458	6,827	9,137	1,622	55,878
Area	134,963	36,199	31,237	82,027	19,552	1,804
On-Road Mobile	17,056	22,813	840	893	5,817	1,937
Non-Road Mobile	36,306	27,040	2,052	2,246	36	442

Biogenics	113,958	1,257	--	--	--	--
Total	313,185	127,767	40,956	94,303	27,027	60,061

2. Modeling to Support the LTS

MANE-VU performed modeling for the regional haze LTS for the 11 Mid-Atlantic and Northeast States and the District of Columbia. The modeling analysis is a complex technical evaluation that began with selection of the modeling system. MANE-VU used the following modeling system:

- Meteorological Model: The Fifth-Generation Pennsylvania State University/National Center for Atmospheric Research (NCAR) Mesoscale Meteorological Model (MM5) version 3.6 is a nonhydrostatic, prognostic meteorological model routinely used for urban- and regional-scale photochemical, $PM_{2.5}$, and regional haze regulatory modeling studies.
- Emissions Model: The Sparse Matrix Operator Kernel Emissions (SMOKE) version 2.1 modeling system is an emissions modeling system that generates hourly gridded speciated emission inputs of mobile, non-road mobile, area, point, fire, and biogenic emission sources for photochemical grid models.
- Air Quality Model: The EPA's Models-3/Community Multiscale Air Quality (CMAQ) version 4.5.1 is a photochemical grid model capable of addressing ozone, PM, visibility and acid deposition at a regional scale.
- Air Quality Model: The Regional Model for Aerosols and Deposition (REMSAD), is a Eulerian grid model that was primarily used to determine the attribution of sulfate species in the Eastern US via the species-tagging scheme.

- Air Quality Model: The California Puff Model (CALPUFF), version 5 is a non-steady-state Lagrangian puff model used to access the contribution of individual States' emissions to sulfate levels at selected Class I receptor sites.

CMAQ modeling of regional haze in the MANE-VU region for 2002 and 2018 was carried out on a grid of 12x12 kilometer (km) cells that covers the 11 MANE-VU States (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont) and the District of Columbia and States adjacent to them. This grid is nested within a larger national CMAQ modeling grid of 36x36 km grid cells that covers the continental United States, portions of Canada and Mexico, and portions of the Atlantic and Pacific Oceans along the east and west coasts. Selection of a representative period of meteorology is crucial for evaluating baseline air quality conditions and projecting future changes in air quality due to changes in emissions of visibility-impairing pollutants. MANE-VU conducted an in-depth analysis which resulted in the selection of the entire year of 2002 (January 1-December 31) as the best period of meteorology available for conducting the CMAQ modeling. The MANE-VU States' modeling was developed consistent with EPA's *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze,* April 2007 (EPA-454/B-07-002, available at www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf), and EPA document, *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations*, August 2005 and updated November 2005 (EPA-454/R-05-001, available at

www.epa.gov/ttnchie1/eidocs/eiguid/index.html) (hereinafter referred to as "EPA's Modeling Guidance").

MANE-VU examined the model performance of the regional modeling for the areas of interest before determining whether the CMAQ model results were suitable for use in the regional haze assessment of the LTS and for use in the modeling assessment. The modeling assessment predicts future levels of emissions and visibility impairment used to support the LTS and to compare predicted, modeled visibility levels with those on the uniform rate of progress. In keeping with the objective of the CMAQ modeling platform, the air quality model performance was evaluated using graphical and statistical assessments based on measured ozone, fine particles, and acid deposition from various monitoring networks and databases for the 2002 base year. MANE-VU used a diverse set of statistical parameters from the EPA's Modeling Guidance to stress and examine the model and modeling inputs. Once MANE-VU determined the model performance to be acceptable, MANE-VU used the model to assess the 2018 RPGs using the current and future year air quality modeling predictions, and compared the RPGs to the uniform rate of progress.

In accordance with 40 CFR 51.308(d)(3), the Commonwealth of Massachusetts provided the appropriate supporting documentation for all required analyses used to determine the State's LTS. The technical analyses and modeling used to support the LTS are consistent with EPA's RHR, and interim and final EPA Modeling Guidance. EPA is proposing to find the MANE-VU technical modeling to support the LTS is acceptable because the modeling system was chosen and used according to EPA Modeling Guidance. EPA agrees with the MANE-VU model

performance procedures and results, and that CMAQ, REMSAD, and CALPUFF are appropriate tools for the regional haze assessments for the Massachusetts LTS and regional haze SIP.

3. Relative Contributions of Pollutants to Visibility Impairment

An important step toward identifying reasonable progress measures is to identify the key pollutants contributing to visibility impairment at each Class I area. To understand the relative benefit of further reducing emissions from different pollutants, MANE-VU developed emission sensitivity model runs using CMAQ to evaluate visibility and air quality impacts from various groups of emissions and pollutant scenarios in the Class I areas on the 20 percent worst visibility days.

Regarding which pollutants are most significantly impacting visibility in the MANE-VU region, MANE-VU's contribution assessment demonstrated that sulfate is the major contributor to $PM_{2.5}$ mass and visibility impairment at Class I areas in the Northeast and Mid-Atlantic Region. Sulfate particles commonly account for more than 50 percent of particle-related light extinction at northeastern Class I areas on the clearest days and for as much as, or more than, 80 percent on the haziest days. For example, at the Brigantine National Wildlife Refuge Class I area (the MANE-VU Class I area with the greatest visibility impairment), on the 20 percent worst visibility days in 2000 – 2004, sulfate accounted for 66 percent of the particle extinction. After sulfate, organic carbon (OC) consistently accounts for the next largest fraction of light extinction. Organic carbon accounted for 13 percent of light extinction on the 20 percent worst visibility days for Brigantine, followed by nitrate that accounts for 9 percent of light extinction. On the best visibility days, sulfate accounts for 50 percent of the particle related visibility

extinction. Organic carbon accounts for the next largest contribution of 40 percent of the visibility impairment on the clearest days. Nitrate, elemental carbon, and fine soil typically contribute less than 10 percent of the visibility impairment mass on the clearest days.

The emissions sensitivity analyses conducted by MANE-VU predict that reductions in SO_2 emissions from EGU and non-EGU industrial point sources will result in the greatest improvements in visibility in the Class I areas in the MANE-VU region, more than any other visibility-impairing pollutant. As a result of the dominant role of sulfate in the formation of regional haze in the Northeast and Mid-Atlantic Region, MANE-VU concluded that an effective emissions management approach would rely heavily on broad-based regional SO_2 control efforts in the eastern United States.

4. Meeting the MANE-VU "Ask"

Since the Commonwealth of Massachusetts does not have a Class I area, it is not required to establish RPGs. However, as a MANE-VU member State, Massachusetts adopted the "Statement of MANE-VU Concerning a Request for a Course of Action by States Within MANE-VU Toward Assuring Reasonable Progress" on June 7, 2007. This document included four emission management strategies that will provide for reasonable progress towards achieving natural visibility at the MANE-VU Class I areas. These emission management strategies are collectively known as the MANE-VU "Ask," and include: (a) timely implementation of BART requirements; (b) a 90 percent reduction in SO_2 emissions from each of the EGU stacks identified by MANE-VU comprising a total of 167 stacks[20]; (c) adoption of a low sulfur fuel oil

[20] See Appendix E – "Top Electrical Generating Unit List" of the Massachusetts SIP submittal for a complete listing of the 167 stacks.

strategy; and (d) continued evaluation of other control measures to reduce SO_2 and NO_x emissions.

a. Timely Implementation of BART

Massachusetts will be controlling its BART sources through the application of source-specific BART or its Alternative to BART. The source-specific BART determinations and the Alternative to BART are discussed in detail in Section III.B. Massachusetts has requested parallel processing of its February 17, 2012 proposal to make several of the emission reductions expected from the Alternative to BART federally enforceable.

b. Ninety Percent Reduction in SO_2 emissions from each of the EGU stacks identified by MANE-VU comprising a total of 167 stacks

Massachusetts is home to five sources with a total of 10 of the 167 EGU stacks which have been identified by MANE-VU as top contributors to visibility impairment in any of the MANE-VU Class I areas. These sources are Brayton Point (Units 1-3), Canal Station (Units 1-2), Mount Tom Station (Unit 1), Salem Harbor (Units 1, 3, and 4), and Somerset Power (Unit 8). Each of these facilities is subject to MassDEP's 310 CMR 7.29, which limits SO_2 emissions facility-wide.

Several of the Massachusetts EGUs already have installed SO_2 controls or are planning additional SO_2 controls to help them meet 310 CMR 7.29 limits. Brayton Point has installed spray dryer absorbers on Units 1 and 2 and plans to operate a dry scrubber on Unit 3 starting in 2012. Mount Tom Station has installed a dry scrubber. Salem Harbor plans to shut down all

units by 2014. Somerset Power shut down in 2010. Canal Station is using lower sulfur oil to comply with 310 CMR 7.29, and will be subject to MassDEP's proposed low sulfur oil regulation.

Table 10 shows that SO_2 emissions were reduced by 72% from 2002 to 2011 at the targeted units. Additional reductions will occur in the 2012-2014 timeframe as the Salem Harbor units retire and the Brayton Unit 3 scrubber becomes operational.

Table 10: Massachusetts Targeted EGUs

Facility	Unit	2002 SO_2 Emissions	2011 SO_2 Emissions	2018 Projected SO_2 Emissions (Conservative)	2018 Projected SO_2 Emissions (Likely)	*2018 Projected SO_2 Emissions (90% Target)*
Brayton Point	1	9,254	4,298	2,928	1,700	*925*
Brayton Point	2	8,853	3,535	2,783	1,590	*885*
Brayton Point	3	19,450	10,769	6,442	3,634	*1,945*
Canal Station	1	13,066	99	7,643	1,069	*1,307*
Canal Station	2	8,948	29	5,443	1,479	*895*
Mt Tom	1	5,282	129	1,571	1,033	*528*
Salem Harbor	1	3,425	893	0	0	*343*
Salem Harbor	3	4,999	2,344	0	0	*500*
Salem Harbor	4	2,886	69	0	0	*289*
Somerset	8	4,399	0	0	0	*440*
Total		**80,562**	**22,165**	**26,811**	**10,505**	***8,057***
Reduction			**59,396**	**53,751**	**70,057**	***72,505***
Percent Reduction			**72%**	**67%**	**87%**	***90%***

MassDEP believes that there will be further emissions reductions at the targeted units as a result of EPA's recently issued Mercury and Air Toxics Standards (MATS) rule.[21] MATS gives coal units with scrubbers a compliance option to meet an SO_2 emissions rate of 0.2 lbs/MMBtu as an alternative to a hydrogen chloride emissions rate, which is more stringent than MassDEP's 310 CMR 7.29 annual SO_2 emissions rate (3.0 lbs/MWh, which is roughly equivalent to 0.3 lbs/MMBtu). Brayton Point and Mt. Tom Station may choose this option for their coal units, thereby further reducing their permitted SO_2 emissions.

To be subject to MATS in a given year, an EGU must fire coal or oil for more than 10 percent of the average annual heat input during the 3 previous consecutive calendar years, or for more than 15 percent of the annual heat input during any one of the 3 previous calendar years. This provision provides an incentive to Canal Unit 2, which can burn oil or natural gas, to limit the amount of oil it burns so that it is not subject to MATS, which would result in future SO_2 emissions continuing to be lower than permitted emissions. MATS also establishes work practices (versus emissions rates) for oil-fired units with an annual capacity factor of less than 8% of its maximum heat input. Canal Station Unit 1's utilization was 1% in 2011, and thus has an incentive to remain below 8%, which would result in future SO_2 emissions continuing to be lower than its permitted emissions. Even without MATS, oil-fired combustion at Canal Units 1 and 2 is expected to be low well into the future because of the high cost of oil relative to natural gas. This cost differential is why Canal's utilization currently is very low.

Taking into account 310 CMR 7.29 SO_2 emission rates, permit restrictions and retirements, and MassDEP's proposed low-sulfur oil regulation, MassDEP conservatively projects SO_2 emissions

[21] http://www.epa.gov/mats/pdfs/20111216MATSfinal.pdf

in 2018 would represent at least a 67% reduction in SO_2 emissions compared to 2002 emissions.[22] However, taking into account EPA's MATS, including the SO_2 compliance option and incentives for low utilization of oil-fired units, MassDEP believes there is a likelihood that SO_2 emissions in 2018 will be up to 87% lower than 2002 emissions. Therefore, Massachusetts believes that existing regulatory programs will lead to SO_2 emission reductions that fulfill the MANE-VU Targeted EGU Strategy.

Massachusetts also notes that even the conservative projection of a 67% reduction in SO_2 emissions from the targeted EGUs is more than enough to meet the level of SO_2 emissions projected for Massachusetts EGUs which was used in the MANE-VU 2018 regional modeling, as documented in NESCAUM's 2018 Visibility Projections.[23] Emission results from the 2018 Inter-Regional Planning Organization CAIR Case Integrated Planning Model v.2.1.9 estimated 17,486 tons of SO_2 emissions for Massachusetts.[24] However, MANE-VU planners recognized that CAIR allows for emission trading. MANE-VU decided that projected emissions should be increased to represent the implementation of the strategy for the 167 stacks within the limits of CAIR program, and therefore increased the projected emissions from states subject to CAIR cap and trade. For Massachusetts, this modification resulted in projected SO_2 emission of 45,941 tons SO_2 for Massachusetts. As shown in Table 10, MassDEP's conservative 67% reduction projection for targeted EGU results in 2018 emissions of 26,811 tons SO_2,[25] well below the

[22] The 67% projection is less than the 72% reduction already achieved in 2011 because it assumes the same unit utilization as in the 2002 baseline year, whereas the reduction achieved in 2011 is due in part to low utilization of several units, including Canal Units 1 and 2 and Mt. Tom Station.
[23] Appenidix G on Massachusetts December 30, 2011 SIP submittal.
[24] Appendix W, Table 1 of the Massachusetts December 30, 2011 SIP submittal.
[25] Two additional EGUs beyond the "167 Stack" Targeted EGUs were projected to have 2018 SO_2 emissions totaling 3,588 tons, which would bring the total 2018 emissions to 30,399 tons, which is still well below the 45,941 tons used in the 2018 modeling.

45,941 tons of SO_2 that is needed to meet the modeled 2018 reasonable progress goals for the Class I areas Massachusetts affects.

c. Massachusetts Low Sulfur Fuel Oil Strategy

The MANE-VU low sulfur fuel oil strategy includes: Phase I reduction of distillate oil to 0.05% sulfur by weight (500 parts per million (ppm)) by no later than 2014; Phase II reductions of #4 residual oil to 0.25% sulfur by weight by no later than 2018; #6 residual oil to 0.5% sulfur by weight by no later than 2018; and further reduction of the sulfur content of distillate oil to 15 ppm by 2018.

The expected reduction in SO_2 emissions by 2018 from the MANE-VU "Ask" will yield corresponding reductions in sulfate aerosol, the main culprit in fine-particle pollution and regional haze. For Massachusetts, the MANE-VU analysis demonstrates that the reduction of the sulfur content in fuel oil will lead to an average reduction of 0.15 ug/m^3 in the 24 hour $PM_{2.5}$ concentration within the State, improving health and local visibility. In addition, the use of low sulfur fuels will result in cost savings to owners/operators of residential furnaces and boilers due to reduced maintenance costs and extended life of the units.

Massachusetts has proposed amendments to 310 CMR 7.05, "Fuels All Districts." The proposed amendments limit the Statewide sulfur content of distillate oil to 500 parts per million (ppm) July 1, 2014 through June 30, 2018. Starting July 1, 2018, the sulfur content of distillate is limited to 15 ppm. The sulfur in fuel limit for No. 6 residual oil, starting July 1, 2018 is 0.5% by weight Statewide, except for the Berkshire Air Pollution Control District (APCD). The

Berkshire APCD has a 1974 legislative exemption allowing sources in this district to burn up to 2.2% sulfur residual oil. Therefore, the proposed revisions do not require lower sulfur residual oil in the Berkshire APCD due to the existing law.[26] Legislative action would be needed in order for MassDEP to apply the lower sulfur residual oil limits for this district. Despite this legislative exemption, MassDEP expects that the majority of residual oil burned in the Berkshire APCD will have a reduced sulfur content because the suppliers in Massachusetts, and in the surrounding states, will need to supply lower sulfur residual oil for sale in other APCDs and states.

d. Continued evaluation of other control measures to reduce SO_2 and NOx emissions

While MassDEP continues to evaluate other control measures to reduce SO_2 and NOx emissions, Massachusetts has adopted a program to reduce wood smoke emissions from outdoor hydronic heaters (OHHs, also known as outdoor wood-fired boilers or OWBs). This regulation, 310 CMR 7.26(50)-(54), "Outdoor Hydronic Heaters," was submitted as part of the December 30, 2011 SIP submittal. The regulation is based in part on a NESCAUM model rule developed in January 2007 and has requirements for manufacturers, sellers, and owners of OHHs. Manufacturers must meet performance standards in order to sell OHHs in Massachusetts. The Phase I emission standard is 0.44 lb/MMBtu for units sold after October 1, 2008, and the Phase II emission standard is 0.32 lb/MMBtu for units sold after March 31, 2010. Owners of current and new OHHs are subject to regulations regarding the operation of their OHHs. Massachusetts concludes that adoption of these regulations will reduce future smoke and particulate emissions from OHHs.

[26] Massachusetts Chapter 353 of the Acts of 1974.

Massachusetts did not include emission reductions which result from the promulgation of the outdoor wood boilers rule in the visibility modeling to ensure reasonable progress. However, Massachusetts is including this program in its Regional Haze SIP as a SIP strengthening measure. In today's action, EPA is proposing to approve Massachusetts' 310 CMR 7.26(50)-(54), "Outdoor Hydronic Heaters," and incorporating this regulation into the SIP.

EPA is also proposing to approve Massachusetts' Regional Haze SIP for the first implementation period. This includes proposed approval of Massachusetts' LTS which will allow other States to meet their respective RPGs. Massachusetts' LTS includes its Alternative to BART, expected enforceable SO_2 emission reduction in excess of modeled 2018 SO_2 emission inventories for the 167 stacks and other EGUs, Massachusetts proposed amendments to 310 CMR 7.05, "Sulfur in Fuels" to reduce the sulfur content of distillate and residual oils, and the outdoor wood boiler control regulation, 310 CMR 7.26(50)-(54), "Outdoor Hydronic Heaters." EPA believes that between Massachusetts' Alternative to BART and expected reductions from other programs, Massachusetts will reduce SO_2 emissions from its EGUs identified by MANE-VU as top contributors to visibility impairment below the level that MANE-VU modeled as being necessary for other States to meet their RPGs. In addition, EPA believes that SO_2 reductions from the proposed low sulfur fuel oil strategy will be comparable to modeled reductions despite the exclusion of the Berkshire APCD. Therefore, EPA does not anticipate that Massachusetts' emissions under its LTS will interfere with the ability of other States to meet their respective RPGs.

5. Additional Considerations for the LTS

In 40 CFR 51.308(d)(3)(v), States are required to consider the following factors in developing the long term strategy:

a. Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment;
b. Measures to mitigate the impacts of construction activities;
c. Emission limitations and schedules for compliance to achieve the reasonable progress goal;
d. Source retirement and replacement schedules;
e. Smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes;
f. Enforceability of emissions limitations and control measures; and
g. The anticipated net effect on visibility due to projected changes in point area, and mobile source emissions over the period addressed by the long term strategy.

a. Emission reductions including RAVI

Since Massachusetts does not contain any Class I areas, the State is not required to address RAVI, nor has any Massachusetts source been identified as subject to RAVI. A list of Massachusetts' ongoing air pollution control programs is included in Section III.C.1.

b. Construction activities

The Regional Haze Rule requires Massachusetts to consider measures to mitigate the impacts of construction activities on regional haze. MANE-VU's consideration of control measures for construction activities is documented in *Technical Support Document on Measures to Mitigate*

the Visibility Impacts of Construction Activities in the MANE-VU Region, Draft, October 20, 2006.[27]

The construction industry is already subject to requirements for controlling pollutants that contribute to visibility impairment. For example, federal regulations require the reduction of SO_2 emissions from construction vehicles. At the State level, Massachusetts regulation 310 CMR 7.09 regulates dust from construction and demolition activities. 7.09(3) states, "No person shall cause, suffer, allow, or permit a building, road, driveway, or open area to be constructed, used, repaired, or demolished without applying such reasonable measures as may be necessary to prevent particulate matter from becoming air-borne that may cause or contribute to a condition of air pollution." See 37 FR 23085, (October 28, 1972.)

MANE-VU's Contribution Report found that, from a regional haze perspective, crustal material generally does not play a major role. On the 20 percent best-visibility days during the 2000-2004 baseline period, crustal material accounted for 6 to 11 percent of the particle-related light extinction at the MANE-VU Class I Areas. On the 20 percent worst-visibility days, however, the contribution was reduced to 2 to 3 percent. Furthermore, the crustal fraction is largely made up of pollutants of natural origin (e.g., soil or sea salt) that are not targeted under the Regional Haze Rule. Nevertheless, the crustal fraction at any given location can be heavily influenced by the proximity of construction activities; and construction activities occurring in the immediate vicinity of MANE-VU Class I area could have a noticeable effect on visibility.

[27] This document has been provided as part of the docket to this proposed rulemaking.

For this regional haze SIP, Massachusetts concluded that its current regulations are currently sufficient to mitigate the impacts of construction activities. Any future deliberations on potential control measures for construction activities and the possible implementation will be documented in the first regional haze SIP progress report in 2014. EPA proposes to find that Massachusetts has adequately addressed measures to mitigate the impacts of construction activities.

c. Emission limitations and schedules for compliance to achieve the RPG

In addition to the existing CAA control requirements discussed in section III.C.1, Massachusetts has adopted a low sulfur fuel oil strategy consistent with the MANE-VU "Ask" as discussed in Section III.C.4. EPA proposes to find that Massachusetts has adequately addressed emissions limitations and schedules for compliance.

d. Source retirement and replacement schedule

Pursuant to 40 CFR 51.308(d)(3)(v)(D) of the Regional Haze Rule, Massachusetts is required to consider source retirement and replacement schedules in developing the long term strategy. Source retirement and replacement were considered in developing the 2018 emissions. However, no additional sources beyond those already discussed have been identified by Massachusetts. EPA proposes to find that Massachusetts has adequately addressed source retirement and replacement schedules.

e. Smoke management techniques

The Regional Haze Rule requires States to consider smoke management techniques related to agricultural and forestry management in developing the long-term strategy. MANE-VU's

analysis of smoke management in the context of regional haze is documented in *Technical Support Document on Agricultural and Smoke Management in the MANE-VU Region*, September 1, 2006, (hereinafter referred to as the "Smoke TSD") .[28]

Massachusetts does not have a formal smoke management program (SMP). SMPs are required only when smoke impacts from fires managed for resources benefits contribute significantly to regional haze. The emissions inventory presented in the Smoke TSD indicates that agricultural, managed, prescribed, and open burning emissions are very minor; the inventory estimates that, in Massachusetts, those emissions from those source categories totaled 414.2 tons of PM_{10} and 270.4 tons of $PM_{2.5}$ in 2002, which constitute 0.2% and 0.5% of the total inventory for these pollutants, respectively.

Source apportionment results show that wood smoke is a moderate contributor to visibility impairment at some Class I areas in the MANE-VU region; however, smoke is not a large contributor to haze in MANE-VU Class I areas on either the 20% best or 20% worst visibility days. Moreover, most of wood smoke is attributable to residential wood combustion. Therefore, it is unlikely that fires for agricultural or forestry management cause large impacts on visibility in any of the Class I areas in the MANE-VU region. On rare occasions, smoke from major fires degrades air quality and visibility in the MANE-VU area. However, these fires are generally unwanted wildfires that are not subject to SMPs. EPA proposes to approve Massachusetts' decision that an Agricultural and Forestry Smoke Management Plan to address visibility impairment is not required at this time.

[28] This document has been included as part of the docket to this proposed rulemaking.

f. Enforceability of emission limitations and control measures.

Massachusetts has asked, and we are proposing to process approval of 310 CMR 7.29, 310 CMR 7.05, and 310 CMR 7.26(50) in parallel with the approval of Massachusetts' Regional Haze SIP. Massachusetts indicated that they plan to have the final supplemental SIP revision by July 2012, prior to the finalization of this action. EPA will review the final SIP supplement and determine whether it differs significantly from the February 17, 2012 proposal. At the same time we take final action on Massachusetts' Regional Haze SIP, we will then take final action on 310 CMR 7.29, 310 CMR 7.05, and 310 CMR 7.26(50)- (54) as well as on several ECPs discussed in the BART section. Upon EPA final action, these requirements and associated emission limitations included as part of the Massachusetts Regional Haze SIP, will become federally enforceable. EPA is proposing to find that Massachusetts has adequately addressed the enforceability of emission limitations and control measures.

g. The anticipated net effect on visibility

MANE-VU used the best and final emission inventory to model progress expected toward the goal of natural visibility conditions for the first regional haze planning period. All of the MANE-VU Class I areas are expected to achieve greater progress toward the natural visibility goal than the uniform rate of progress, or the progress expected by extrapolating a trend line from current visibility conditions to natural visibility conditions.[29]

In summary, EPA is proposing to find that Massachusetts has adequately addressed the LTS regional haze requirements.

[29] Projected visibility improvements for each MANE-VU Class I area can be found in the NESCAUM document dated May 13, 2008, "2018 Visibility Projections" (www.nescaum.org/documents/2018-visibility-projections-final-05-13-08.pdf/)

D. Consultation with States and Federal Land Managers

On May 10, 2006, the MANE-VU State Air Directors adopted the Inter-RPO State/Tribal and FLM Consultation Framework that documented the consultation process within the context of regional phase planning, and was intended to create greater certainty and understanding among RPOs. MANE-VU States held ten consultation meetings and/or conference calls from March 1, 2007 through March 21, 2008. In addition to MANE-VU members attending these meetings and conference calls, participants from the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) RPO, Midwest RPO, and the relevant Federal Land Managers were also in attendance. In addition to the conference calls and meeting, the FLMs were given the opportunity to review and comment on each of the technical documents developed by MANE-VU.

On November 21, 2008 and July 31, 2009, Massachusetts submitted a draft Regional Haze SIP to the relevant FLMs for review and comment pursuant to 40 CFR 51.308(i)(2). The FLMs provided comments on the draft Regional Haze SIP in accordance with 40 CFR 51.308(i)(3). The comments received from the FLMs were addressed and incorporated in Massachusetts' SIP revision. Most of the comments were requests for additional detail as to various aspects of the SIP. These comments and Massachusetts' response to comments can be found in the docket for this proposed rulemaking.

On January 11, 2011, Massachusetts proposed its Regional Haze SIP for public hearing. Comments were received from U.S EPA, the National Park Service, the U.S. Department of

Agriculture, Conservation Law Foundation, Wheelabrator, Massachusetts Petroleum Council, and Massachusetts Oil Heat Council.[30] On February 17, 2012, MassDEP proposed revisions to the Massachusetts Regional Haze SIP for public hearing. Comments were received from U.S. EPA, the National Park Service, and the Sierra Club. To address the requirement for continuing consultation procedures with the FLMs under 40 CFR 51.308(i)(4), Massachusetts commits in its SIP to ongoing consultation with the FLMs on emission strategies, major new source permits, assessments or rulemaking concerning sources identified as probable contributors to visibility impairment, any changes to the monitoring strategy, work on the periodic revisions to the SIP, and ongoing communications regarding visibility impairment.

EPA is proposing to find that Massachusetts has addressed the requirements for consultation with the Federal Land Managers.

E. Periodic SIP Revisions and Five-Year Progress Reports

Consistent with the requirements of 40 CFR 51.308(g), Massachusetts has committed to submitting a report on reasonable progress (in the form of a SIP revision) to the EPA every five years following the initial submittal of its regional haze SIP. The reasonable progress report will evaluate the progress made towards the RPGs for the MANE-VU Class I areas, located in Maine, New Hampshire, Vermont, and New Jersey**.**

Pursuant to 40 CFR 51.308(f), Massachusetts is required to submit periodic revisions to its Regional Haze SIP by July 31, 2018, and every ten years thereafter. Massachusetts acknowledges and agrees to comply with this schedule.

[30] The comments and MassDEP's responses have been included in the docket.

Pursuant to 40 CFR 51.308(d)(4)(v), Massachusetts will also make periodic updates to the State's emissions inventory. Massachusetts proposes to complete these updates to coincide with the progress reports. Actual emissions will be compared to projected modeled emissions in the progress reports.

Lastly, pursuant to 40 CFR 51.308(h), Massachusetts will submit a determination of adequacy of its regional haze SIP revision whenever a progress report is submitted. Massachusetts' regional haze SIP states that, depending on the findings of its five-year review, Massachusetts will take one or more of the following actions at that time, whichever actions are appropriate or necessary:

- If Massachusetts determines that the existing State Implementation Plan requires no further substantive revision in order to achieve established goals for visibility improvement and emissions reductions, Massachusetts will provide to the EPA Administrator a negative declaration that further revision of the existing plan is not needed.
- If Massachusetts determines that its implementation plan is or may be inadequate to ensure reasonable progress as a result of emissions from sources in one or more other State(s) which participated in the regional planning process, Massachusetts will provide notification to the EPA Administrator and to those other State(s). Massachusetts will also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address any such deficiencies in Massachusetts' plan.

• If Massachusetts determines that its implementation plan is or may be inadequate to ensure reasonable progress as a result of emissions from sources in another country, Massachusetts will provide notification, along with available information, to the EPA Administrator.

• If Massachusetts determines that the implementation plan is or may be inadequate to ensure reasonable progress as a result of emissions from sources within the State, Massachusetts will revise its implementation plan to address the plan's deficiencies within one year from this determination.

IV. What Action is EPA Proposing to Take?

EPA is proposing approval of Massachusetts' December 30, 2011 SIP revision and February 17, 2012 proposed regional haze SIP revision supplement, as meeting the applicable requirements of the Regional Haze Rule found in 40 CFR 51.308. EPA is proposing to approve 310 CMR 7.29 "Emission Standards for Power Plants," 310 CMR 7.26(50)-(54) "Outdoor Hydronic Heaters," Amended Emission Control Plan for Mt. Tom Station dated May 15, 2009, Facility Shutdown of Somerset Power, LLC dated June 22, 2011, Modified Emission Control Plan for General Electric Aviation – Lynn dated March 24, 2011, and Modified Emission Control Plan for Wheelabrator Saugus, Inc. dated March 14, 2012. Pursuant to MassDEP's May 2, 2012 request for parallel processing, EPA is proposing approval of Massachusetts' proposed 310 CMR 7.00 "Definitions," 310 CMR 7.05 "Fuels All Districts," proposed Amended Emission Control Plan Approval for Salem Harbor Station dated February 17, 2012, and proposed Amended Emission Control Plan Approval for Brayton Point Station dated February 16, 2012. Under this procedure, EPA prepared this action before the State's final adoption of these regulations and ECPs. Massachusetts has already held a public hearing on the proposed

regulations and received public comment. Massachusetts may revise the regulations and ECPs in response to comments. After Massachusetts submits its final adopted supplemental SIP revision, EPA will review this submittal to determine whether it is significantly different from the proposal. EPA will determine whether it is appropriate to approve the final rules and ECPs with a description of any changes since the proposal, re-propose action based on the final adopted regulations, or take other action as appropriate.

V. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve State choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this proposed action merely approves State law as meeting Federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, this proposed action:

- is not a "significant regulatory action" subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq*.);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);

- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and
- does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, this rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), because the SIP is not approved to apply in Indian country located in the State, and EPA notes that it will not impose substantial direct costs on tribal governments or preempt tribal law.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

AUTHORITY: 42 U.S.C. 7401 et seq.

Dated: May 14, 2012

Ira W. Leighton,
Acting Regional Administrator,
EPA Region 1

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