**Installation Prohibitions**

(f) After the effective date of this AD, do not install any HP fuel pump P/N E4A–30–100–000, onto any engine.

(g) After the effective date of this AD, do not install any engine equipped with HP fuel pump P/N E4A–30–100–000, onto any airplane.

**Alternative Methods of Compliance (AMOCs)**

(h) The Manager, Engine Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

**Related Information**

(i) Refer to MCAI European Aviation Safety Agency Airworthiness Directive 2011–0039, dated March 8, 2011, Austro Engine GmbH Work Instruction No. WI–MSB–E4–009, dated October 7, 2010, and Austro Engine GmbH MSB No. MSB–E4–009/2, dated March 4, 2011, for related information. For a copy of this service information, contact Austro Engine GmbH, Rudolf-Diesel-Strasse 11, A–2700 Weiner Neustadt, Austria, phone: +43 2622 23000; fax: +43 2622 23000–2711, or go to: *http://www.austroengine.at.* For information on the availability of this material at the FAA, call 781–238–7125.

(j) For more information about this AD, contact James Lawrence, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: (781) 238–7176; fax: (781) 238–7199; e-mail: *james.lawrence@faa.gov.*

Issued in Burlington, Massachusetts, on June 2, 2011.

**Peter A. White,**

*Acting Manager, Engine & Propeller Directorate, Aircraft Certification Service.*

[FR Doc. 2011–14235 Filed 6–8–11; 8:45 am]

**BILLING CODE 4910–13–P**

## ENVIRONMENTAL PROTECTION AGENCY

## 40 CFR Part 52

**[EPA–R04–OAR–2009–0786–201033; FRL–9317–6]**

## Approval and Promulgation of Air Quality Implementation Plans; State of Tennessee; Regional Haze State Implementation Plan

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** EPA is proposing a limited approval and a limited disapproval of a revision to the Tennessee State Implementation Plan (SIP) submitted by the State of Tennessee through the Tennessee Department of Environment and Conservation (TDEC) on April 4, 2008, that addresses regional haze for the first implementation period. This revision addresses the requirements of the Clean Air Act (CAA) and EPA's rules that require states to prevent any future and remedy any existing anthropogenic impairment of visibility in mandatory Class I areas caused by emissions of air pollutants from numerous sources located over a wide geographic area (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. EPA is proposing a limited approval of this SIP revision to implement the regional haze requirements for Tennessee on the basis that the revision, as a whole, strengthens the Tennessee SIP. Also in this action, EPA is proposing a limited disapproval of this same SIP revision because of the deficiencies in the State's April 2008 regional haze SIP submittal arising from the remand by the U.S. Court of Appeals for the District of Columbia (DC Circuit) to EPA of the Clean Air Interstate Rule (CAIR).

**DATES:** Comments must be received on or before July 11, 2011.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA–R04–OAR–2009–0786, by one of the following methods:

1. *http://www.regulations.gov:* Follow the on-line instructions for submitting comments.

2. *E-mail: spann.jane@epa.gov.*

3. *Fax:* 404–562–9029.

4. *Mail:* EPA–R04–OAR–2009–0786, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW., Atlanta, Georgia 30303–8960.

5. *Hand Delivery or Courier:* Jane Spann, Acting Chief, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW., Atlanta, Georgia 30303–8960. 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 Federal holidays.

*Instructions:* Direct your comments to Docket ID No. "EPA–R04–OAR–2009–0786." EPA's policy is that all comments received will be included in the public docket without change and may be made available online at: *http://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 *http://www.regulations.gov* or e-mail, information that you consider to be CBI or otherwise protected. The *http://www.regulations.gov* Web site 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 *http://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. For additional information about EPA's public docket visit the EPA Docket Center homepage at *http://www.epa.gov/epahome/dockets.htm.*

*Docket:* All documents in the electronic docket are listed in the *http://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 *http://www.regulations.gov* or in hard copy at the Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW., Atlanta, Georgia 30303–8960. EPA requests that if at all possible, you contact the person 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 Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Sara Waterson or Michele Notarianni, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency,

Region 4, 61 Forsyth Street, SW, Atlanta, Georgia 30303–8960. Sara Waterson can be reached at telephone number (404) 562–9061 and by electronic mail at *waterson.sara@epa.gov.* Michele Notarianni can be reached at telephone number (404) 562–9031 and by electronic mail at *notarianni.michele@epa.gov.*

**SUPPLEMENTARY INFORMATION:**

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## I. What action is EPA proposing to take?

EPA is proposing a limited approval of Tennessee's April 4, 2008, SIP revision addressing regional haze under CAA sections 301(a) and 110(k)(3) because the revision as a whole strengthens the Tennessee SIP. However, the Tennessee SIP relies on CAIR, an EPA rule, to satisfy key elements of the regional haze requirements. Due to the remand of CAIR, *see North Carolina* v. *EPA,* 531 F.3d 836 (DC Cir. 2008), the revision does not meet all of the applicable requirements of the CAA and EPA's regulations as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300–308. As a result, EPA is concurrently proposing a limited disapproval of Tennessee's SIP revision. The revision nevertheless represents an improvement over the current SIP, and makes considerable progress in fulfilling the applicable CAA regional haze program requirements. This proposed rulemaking and the accompanying Technical Support Document [1] (TSD) explain the basis for EPA's proposed limited approval and limited disapproval actions.

Under CAA sections 301(a) and 110(k)(6) and EPA's long-standing guidance, a limited approval results in approval of the entire SIP submittal, even of those parts that are deficient and prevent EPA from granting a full approval of the SIP revision. *Processing of State Implementation Plan (SIP) Revisions,* EPA Memorandum from John Calcagni, Director, Air Quality Management Division, OAQPS, to Air Division Directors, EPA Regional Offices I–X, September 7, 1992, (1992 Calcagni Memorandum) located at *http://www.epa.gov/ttn/caaa/t1/memoranda/siproc.pdf.* The deficiencies that EPA has identified as preventing a full approval of this SIP revision relate to the status and impact of CAIR on certain interrelated and required elements of the regional haze program. At the time the Tennessee regional haze SIP was being developed, the State's reliance on CAIR was fully consistent with EPA's regulations, *see* 70 FR 39104, 39142–4143 (July 6, 2005). CAIR, as originally promulgated, requires significant reductions in emissions of sulfur dioxide ($SO_2$) and nitrogen oxides ($NO_X$) to limit the interstate transport of these pollutants, and the reliance on CAIR by affected states as an alternative to requiring BART for electrical generating units (EGUs) had specifically been upheld in *Utility Air Regulatory Group* v. *EPA,* 471 F.3d 1333 (DC Cir. 2006). In 2008, however, the DC Circuit remanded CAIR back to EPA. *See North Carolina* v. *EPA,* 550 F.3d 1176. The Court found CAIR to be inconsistent with the requirements of the CAA, *see North Carolina* v. *EPA,* 531 F.3d 896 (DC Cir. 2008), but ultimately remanded the rule to EPA without vacatur because it found that "allowing CAIR to remain in effect until it is replaced by a rule consistent with [the court's] opinion would at least temporarily preserve the environmental values covered by CAIR." *North Carolina* v. *EPA,* 550 F.3d at 1178. In response to the court's decision, EPA has proposed a new rule to address interstate transport of $NO_X$ and $SO_2$ in the eastern United States. *See* 75 FR 45210 (Aug. 2, 2010) ("the Transport Rule"). EPA explained in that proposal that the Transport Rule, when finalized, will replace CAIR and the CAIR Federal implementation plans (FIPs). In other words, the CAIR and CAIR FIP requirements, which were found to be illegal by the DC Circuit, will not remain in force after the Transport Rule requirements are in place. Given the status of CAIR, EPA is proposing to find that Tennessee may not rely on CAIR in its present form to provide reductions to satisfy the reasonable progress and BART requirements of the regional haze program.

While CAIR will not remain in effect indefinitely, it is currently in force. *See North Carolina* v. *EPA,* 550 F.3d 1176. By granting limited approval of Tennessee's regional haze SIP, EPA will allow the State to rely on the emissions reductions associated with CAIR for so long as CAIR is in place. EPA believes that this course of action is consistent with the court's intention to keep CAIR in place in order to "temporarily preserve the environmental values covered by CAIR." *Id,* at 1178.

## II. 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

[1] EPA's TSD to this action, entitled, "*Technical Support Document for Tennessee Regional Haze Submittal,*" is included in the public docket for this action.

fine particles ($PM_{2.5}$) (*e.g.,* sulfates, nitrates, organic carbon, elemental carbon, and soil dust), and their precursors (*e.g.,* $SO_2$, $NO_X$, and in some cases, ammonia ($NH_3$) and volatile organic compounds (VOC)). Fine particle precursors react in the atmosphere to form fine particulate matter which impairs 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 and eutrophication.

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 [2] 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 anthropogenic 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. Requirements of the CAA and EPA's Regional Haze Rule (RHR)*

In section 169A 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 [3] 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". *See* 45 FR 80084. 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 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 35713), the RHR. The RHR 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 III of this preamble. The requirement to submit a regional haze SIP applies to all 50 states, the District of Columbia and the Virgin Islands.[4] 40 CFR 51.308(b) requires states to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007.

### *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 particulate matter (PM) and other pollutants leading to regional haze.

The Visibility Improvement State and Tribal Association of the Southeast (VISTAS) 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 Southeastern United States. Member state and tribal governments include: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and the Eastern Band of the Cherokee Indians.

## III. What are the requirements for regional haze SIPs?

### *A. The CAA and the 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 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 as the principal metric or unit for expressing visibility. This visibility metric expresses uniform changes in haziness in terms of common

[2] Visual range is the greatest distance, in kilometers or miles, at which a dark object can be viewed against the sky.

[3] Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. *See* 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. *See* 44 FR 69122 (November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions. *See* 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." *See* 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."

[4] Albuquerque/Bernalillo County in New Mexico must also submit a regional haze SIP to completely satisfy the requirements of section 110(a)(2)(D) of the CAA for the entire State of New Mexico under the New Mexico Air Quality Control Act (section 74–2–4).

increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility expressed in deciviews is determined by using air quality measurements to estimate light extinction and then transforming the value of light extinction using a logarithm function. The deciview is a more useful measure for tracking progress in improving visibility than light extinction itself 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.[5]

The deciview is used in expressing RPGs (which are interim visibility goals towards meeting the national visibility goal), defining baseline, current, and 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 anthropogenic air pollution by reducing anthropogenic emissions that cause regional haze. The national goal is a return to natural conditions, *i.e.,* anthropogenic 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 (40 CFR 81.401–437), and as part of the process for determining reasonable progress, states must calculate the degree of existing visibility impairment at each Class I area at the time of each regional haze SIP submittal and periodically review progress every five years midway through each 10-year implementation 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 purpose 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 titled, EPA's *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule,* September 2003, (EPA–454/B–03–005 located at *http://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 located at *http://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 visibility impairment for the 20 percent least impaired days and 20 percent most impaired days for each calendar year from 2000 to 2004. Using monitoring data for 2000 through 2004, states are required to calculate the average degree of visibility impairment for each Class I area, 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 two RPGs (*i.e.,* two distinct goals, one for the "best" and one for the "worst" days) for every Class I area for each (approximately) 10-year implementation 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. 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 section 169A of the CAA and in EPA's RHR at 40 CFR 51.308(d)(1)(i)(A): (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. States have considerable flexibility in how they take these factors into consideration, as noted in EPA's *Guidance for Setting Reasonable Progress Goals under the Regional Haze Program,* ("EPA's Reasonable Progress Guidance"), July 1, 2007, memorandum from William L. Wehrum, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, EPA Regions 1–10 (pp.4–2, 5–1). 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 "glidepath") and the emission reduction measures needed to achieve that rate of progress over the 10-year period of the SIP. Uniform progress towards achievement of natural conditions by 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 affecting 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, section 169A(b)(2)(A) of 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 major stationary sources[6] built between 1962 and 1977 procure, install, and operate the "Best Available Retrofit Technology" as determined by the state. Under the RHR, states are directed to conduct BART determinations for such "BART-eligible" sources that may be anticipated to cause or contribute to any visibility

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

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

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 determination for a fossil fuel-fired electric generating plant with a total generating capacity in excess of 750 megawatts, 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 $SO_2$, $NO_X$, and PM. EPA has stated that states should use their best judgment in determining whether VOC or $NH_3$ compounds impair visibility in Class I areas.

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 deciview.

In their SIPs, states must identify potential BART sources, described as "BART-eligible sources" in the RHR, and document their BART control determination analyses. 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.

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. *See* CAA section 169(g)(4)); *see* 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.

As noted above, the RHR allows states to implement an alternative program in lieu of BART so long as the alternative program can be demonstrated to achieve greater reasonable progress toward the national visibility goal than would BART. Under regulations issued in 2005 revising the regional haze program, EPA made just such a demonstration for CAIR. *See* 70 FR 39104 (July 6, 2005). EPA's regulations provide that states participating in the CAIR cap-and trade program under 40 CFR part 96 pursuant to an EPA-approved CAIR SIP or which remain subject to the CAIR FIP in 40 CFR part 97 need not require affected BART-eligible EGUs to install, operate, and maintain BART for emissions of $SO_2$ and $NO_X$. *See* 40 CFR 51.308(e)(4). Since CAIR is not applicable to emissions of PM, states were still required to conduct a BART analysis for PM emissions from EGUs subject to BART for that pollutant.

### *E. Long-Term Strategy (LTS)*

Consistent with the requirement in section 169A(b) of the CAA that states include in their regional haze SIP a 10 to 15 year strategy for making reasonable progress, section 51.308(d)(3) of the RHR requires that states include a LTS in their regional haze SIPs. The LTS is the compilation of all control measures a state will use during the implementation period of the specific SIP submittal to meet 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 following seven factors listed below are 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; and (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 RAVI and regional haze, 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 review 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*

Section 51.308(d)(4) of the RHR includes the requirement for 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 section 51.305 for RAVI. Compliance with this requirement may be met through "participation" in the IMPROVE network, *i.e.,* review and use of monitoring data from the 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.

The RHR requires control strategies to 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 section 51.308(d) with the exception of BART. The requirement to evaluate sources for BART applies only to the first regional haze SIP. Facilities subject to BART must continue to comply with the BART provisions of section 51.308(e), as noted above. 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.

## IV. What is the relationship of the CAIR to the regional haze requirements?

*A. Overview of EPA's CAIR*

CAIR, as originally promulgated, requires 28 states and the District of Columbia to reduce emissions of $SO_2$ and $NO_X$ that significantly contribute to, or interfere with maintenance of, the national ambient air quality standards (NAAQS) for fine particulates and/or ozone in any downwind state. *See* 70 FR 25162 (May 12, 2005). CAIR establishes emission budgets or caps for $SO_2$ and $NO_X$ for states that contribute significantly to nonattainment in downwind states and requires the significantly contributing states to submit SIP revisions that implement these budgets. States have the flexibility to choose which control measures to adopt to achieve the budgets, including participation in EPA-administered cap-and-trade programs addressing $SO_2$, $NO_X$ -annual, and $NO_X$ -ozone season emissions.

*B. Remand of the CAIR*

On July 11, 2008, the DC Circuit issued its decision to vacate and remand both CAIR and the associated CAIR FIPs in their entirety. *See North Carolina* v. *EPA,* 531 F.3d 836 (DC Cir. 2008). However, in response to EPA's petition for rehearing, the Court issued an order remanding CAIR to EPA without vacating either CAIR or the CAIR FIPs. The Court thereby left the EPA CAIR rule and CAIR SIPs and FIPs in place in order to "temporarily preserve the environmental values covered by CAIR" until EPA replaces it with a rule consistent with the court's opinion. *See North Carolina* v. *EPA,* 550 F.3d at 1178. The Court directed EPA to "remedy CAIR's flaws" consistent with its July 11, 2008, opinion but declined to impose a schedule on EPA for completing that action. Because CAIR accordingly has been remanded to the Agency without vacatur, CAIR and the CAIR FIPs are currently in effect in subject states.

*C. Regional Haze SIP Elements Potentially Affected by the CAIR Remand*

The following is a summary of the elements of the regional haze SIPs that are potentially affected by the remand of CAIR. Many states relied on CAIR as an alternative to BART for $SO_2$ and $NO_X$ for subject EGUs, as allowed under the BART provisions at 40 CFR 51.308(e)(4). Additionally, several states established RPGs that reflect the improvement in visibility expected to result from controls planned for or already installed on sources within the state to meet the CAIR provisions for this implementation period for specified pollutants. Many states relied upon their own CAIR SIPs or the CAIR FIPs for their states to provide the legal requirements which leads to these planned controls, and did not include enforceable measures in the LTS in the regional haze SIP submission to ensure these reductions. States also submitted demonstrations showing that no additional controls on EGUs beyond CAIR would be reasonable for this implementation period. Due to EPA's

need to address the concerns of the Court as outlined in its decision remanding CAIR, EPA believes it would be inappropriate to fully approve states' LTSs that rely upon the emissions reductions predicted to result from CAIR to meet the BART requirement for EGUs or to meet the RPGs in the states' regional haze SIPs. For this reason, EPA cannot fully approve regional haze SIP revisions that rely on CAIR for emission reduction measures. EPA therefore proposes to grant limited approval and limited disapproval of the Tennessee SIP. The next section discusses how the Agency proposes to address these deficiencies.

*D. Rationale and Scope of Proposed Limited Approval*

EPA is intending to propose to issue limited approvals of those regional haze SIP revisions that rely on CAIR to address the impact of emissions from a state's own EGUs. Limited approval results in approval of the entire regional haze submission and all its elements. EPA is taking this approach because an affected state's SIP will be stronger and more protective of the environment with the implementation of those measures by the state and having Federal approval and enforceability than it would without those measures being included in the state's SIP.

EPA also intends to propose to issue limited disapprovals for regional haze SIP revisions that rely on CAIR concurrently with the proposals for limited approval. As explained in the 1992 Calcagni Memorandum, "[t]hrough a limited approval, EPA [will] concurrently, or within a reasonable period of time thereafter, disapprove the rule * * * for not meeting all of the applicable requirements of the Act. * * * [T]he limited disapproval is a rulemaking action, and it is subject to notice and comment." Final limited disapproval of a SIP submittal does not affect the Federal enforceability of the measures in the subject SIP revision nor prevent state implementation of these measures. The legal effects of the final limited disapproval are to provide EPA the authority to issue a FIP at any time, and to obligate the Agency to take such action no more than two years after the effective date of the final limited disapproval action.

## V. What is EPA's analysis of Tennessee's regional haze submittal?

On April 4, 2008, TDEC's Division of Air Pollution Control submitted revisions to the Tennessee SIP to address regional haze in the State's Class I areas as required by EPA's RHR.

*A. Affected Class I Areas*

Tennessee has two Class I areas within its borders: Great Smoky Mountains National Park and Joyce-Kilmer Slickrock Wilderness Area. These Class I areas also fall within the geographic boundaries of North Carolina. Therefore, both Tennessee and North Carolina are responsible for developing their own regional haze SIPs that address these Class I areas. The two states worked together to determine appropriate RPGs, including consulting with other states that impact the two Class I areas, as discussed in V.F.1. In addition, both Tennessee and North Carolina are responsible for describing their own long-term emission strategies, their role in the consultation processes, and how their particular state SIP meets the other requirements in EPA's regional haze regulations.

The Tennessee regional haze SIP establishes RPGs for visibility improvement at each of these Class I areas and a LTS to achieve those RPGs within the first regional haze implementation period ending in 2018. In developing the LTS for each area, Tennessee considered both emission sources inside and outside of Tennessee that may cause or contribute to visibility impairment in Tennessee's Class I areas. The State also identified and considered emission sources within Tennessee that may cause or contribute to visibility impairment in Class I areas in neighboring states as required by 40 CFR 51.308(d)(3). The VISTAS RPO worked with the State in developing the technical analyses used to make these determinations, including state-by-state contributions to visibility impairment in specific Class I areas, which included the two areas in Tennessee and those areas affected by emissions from Tennessee.

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

As required by the RHR and in accordance with EPA's 2003 Natural Visibility Guidance, Tennessee calculated baseline/current and natural visibility conditions for each of its Class I areas, as summarized below (and as further described in sections III.B.1 and III.B.2. of EPA's TSD to this **Federal Register** action).

1. Estimating Natural Visibility Conditions

Natural background visibility, as defined in EPA's 2003 Natural Visibility Guidance, is estimated by calculating the expected light extinction using default estimates of natural concentrations of fine particle components adjusted by site-specific estimates of humidity. This calculation uses the IMPROVE equation, which is a formula for estimating light extinction from the estimated natural concentrations of fine particle components (or from components measured by the IMPROVE monitors). As documented in EPA's 2003 Natural Visibility Guidance, EPA allows states to use "refined" or alternative approaches to 2003 EPA guidance to estimate the values that characterize the natural visibility conditions of the Class I areas. One alternative approach is to develop and justify the use of alternative estimates of natural concentrations of fine particle components. Another alternative is to use the "new IMPROVE equation" that was adopted for use by the IMPROVE Steering Committee in December 2005.[7] The purpose of this refinement to the "old IMPROVE equation" is to provide more accurate estimates of the various factors that affect the calculation of light extinction. Tennessee opted to use the default estimates for the natural concentrations combined with the "new IMPROVE equation," for all of its areas. Using this approach, natural visibility conditions using the new IMPROVE equation were calculated separately for each Class I area by VISTAS.

The new IMPROVE equation takes into account the most recent review of the science[8] and it accounts for the

[7] The IMPROVE program is a cooperative measurement effort governed by a steering committee composed of representatives from Federal agencies (including representatives from EPA and the FLMs) and RPOs. The IMPROVE monitoring program was established in 1985 to aid the creation of Federal and State implementation plans for the protection of visibility in Class I areas. One of the objectives of IMPROVE is to identify chemical species and emission sources responsible for existing anthropogenic visibility impairment. The IMPROVE program has also been a key participant in visibility-related research, including the advancement of monitoring instrumentation, analysis techniques, visibility modeling, policy formulation and source attribution field studies.

[8] The science behind the revised IMPROVE equation is summarized in Appendix B.2 of the Tennessee Regional Haze submittal and in numerous published papers. See for example: Hand, J.L., and Malm, W.C., 2006, *Review of the IMPROVE Equation for Estimating Ambient Light Extinction Coefficients—Final Report.* March 2006. Prepared for Interagency Monitoring of Protected Visual Environments (IMPROVE), Colorado State University, Cooperative Institute for Research in the Atmosphere, Fort Collins, Colorado. *http://vista.cira.colostate.edu/improve/publications/GrayLit/016_IMPROVEeqReview/IMPROVEeqReview.htm;* and Pitchford, Marc., 2006, *Natural Haze Levels II: Application of the New IMPROVE Algorithm to Natural Species Concentrations Estimates.* Final Report of the Natural Haze Levels II Committee to the RPO Monitoring/Data Analysis Workgroup. September 2006 *http://vista.cira.colostate.edu/improve/Publications/GrayLit/029_NaturalCondII/naturalhazelevelsIIreport.ppt.*

effect of particle size distribution on light extinction efficiency of sulfate, nitrate, and organic carbon. It also adjusts the mass multiplier for organic carbon (particulate organic matter) by increasing it from 1.4 to 1.8. New terms are added to the equation to account for light extinction by sea salt and light absorption by gaseous nitrogen dioxide. Site-specific values are used for Rayleigh scattering (scattering of light due to atmospheric gases) to account for the site-specific effects of elevation and temperature. Separate relative humidity enhancement factors are used for small and large size distributions of ammonium sulfate and ammonium nitrate and for sea salt. The terms for the remaining contributors, elemental carbon (light-absorbing carbon), fine soil, and coarse mass terms, do not change between the original and new IMPROVE equations.

2. Estimating Baseline Conditions

The Joyce Kilmer-Slickrock Wilderness Area does not contain an IMPROVE monitor. In cases where onsite monitoring is not available, 40 CFR 51.308(d)(2)(i) requires states to use the most representative monitoring available for the 2000–2004 period to establish baseline visibility conditions, in consultation with EPA. Tennessee used and EPA concurs with the use of 2000–2004 data from the IMPROVE monitor at Great Smoky Mountains National Park for the Joyce Kilmer-Slickrock Wilderness Area. The Great Smoky Mountains National Park is nearest and contiguous to the Joyce Kilmer-Slickrock Wilderness Area, and the areas possess similar characteristics, such as meteorology and topography.

TDEC estimated baseline visibility conditions at both Tennessee Class I areas using available monitoring data from a single IMPROVE monitoring site in the Great Smoky Mountains National Park. As explained in section III.B, for the first regional haze SIP, baseline visibility conditions are the same as current conditions. A five-year average of the 2000 to 2004 monitoring data was calculated for each of the 20 percent worst and 20 percent best visibility days at each Tennessee Class I area. IMPROVE data records for Great Smoky Mountains National Park for the period 2000 to 2004 meet the EPA requirements for data completeness. See page 2–8 of EPA's 2003 Tracking Progress Guidance. Table 3.3–1 from Appendix G of the Tennessee regional haze SIP, also provided in section III.B.3 of EPA's TSD to this action, lists the 20 percent best and worst days for the baseline period of 2000–2004 for Great Smoky Mountains National Park. This data is also provided at the following Web site: *http://www.metro4-sesarm.org/vistas/SesarmBext_20BW.htm.*

3. Summary of Baseline and Natural Conditions

For the Tennessee Class I areas, baseline visibility conditions on the 20 percent worst days are approximately 30 deciviews. Natural visibility in these areas is predicted to be approximately 11 deciviews on the 20 percent worst days. The natural and baseline conditions for Tennessee's Class I areas for both the 20 percent worst and best days are presented in Table 1 below.

TABLE 1—NATURAL BACKGROUND AND BASELINE CONDITIONS FOR THE TENNESSEE CLASS I AREAS

| Class I area | Average for 20 percent worst days (dv[9]) | Average for 20 percent best days (dv) |
|---|---|---|
| Natural Background Conditions: | | |
| Great Smoky Mountains National Park | 11.05 | 4.54 |
| Joyce Kilmer-Slickrock Wilderness Area | 11.05 | 4.54 |
| Baseline Visibility Conditions (2000–2004): | | |
| Great Smoky Mountains National Park | 30.28 | 13.58 |
| Joyce Kilmer-Slickrock Wilderness Area | 30.28 | 13.58 |

4. Uniform Rate of Progress

In setting the RPGs, Tennessee considered the uniform rate of progress needed to reach natural visibility conditions by 2064 ("glidepath") and the emission reduction measures needed to achieve that rate of progress over the period of the SIP to meet the requirements of 40 CFR 51.308(d)(1)(i)(B). As explained in EPA's Reasonable Progress Guidance document, the uniform rate of progress is not a presumptive target, and RPGs may be greater, lesser, or equivalent to the glidepath.

The State's implementation plan presents two sets of graphs, one for the 20 percent best days, and one for the 20 percent worst days, for its two Class I areas. Tennessee constructed the graph for the worst days (*i.e.,* the glidepath) in accordance with EPA's 2003 Tracking Progress Guidance by plotting a straight graphical line from the baseline level of visibility impairment for 2000–2004 to the level of visibility conditions representing no anthropogenic impairment in 2064 for its two areas. For the best days, the graph includes a horizontal, straight line spanning from baseline conditions in 2004 out to 2018 to depict no degradation in visibility over the implementation period of the SIP. Tennessee's SIP shows that the State's RPGs for its areas provide for improvement in visibility for the 20 percent worst days over the period of the implementation plan and ensure no degradation in visibility for the 20 percent best days over the same period, in accordance with 40 CFR 51.308(d)(1).

For the Tennessee Class I areas, the overall visibility improvement necessary to reach natural conditions is the difference between baseline visibility of 30.28 deciviews for the 20 percent worst days and natural conditions of 11.05 deciviews, *i.e.,* 19.23 deciviews. Over the 60-year period from 2004 to 2064, this would require an average improvement of 0.321 deciviews per year to reach natural conditions. Hence, for the 14-year period from 2004 to 2018, in order to achieve visibility improvements at least equivalent to the uniform rate of progress for the 20 percent worst days at Great Smoky Mountain National Park and the Joyce Kilmer-Slickrock Wilderness Area, Tennessee would need to project at least 4.49 deciviews over the first implementation period (*i.e.,* 0.321 deciviews × 14 years = 4.49 deciviews) of visibility improvement from the 30.28 deciviews baseline in 2004, resulting in visibility levels at or below 25.79 deciviews in 2018. As discussed below in section V.C.7,

[9] The term, "dv," is the abbreviation for "deciview."

"Reasonable Progress Goals," Tennessee projects a 6.78 deciview improvement to visibility from the 30.28 deciview baseline to 23.50 deciviews in 2018 for the 20 percent most impaired days, and a 1.47 deciview improvement to 12.11 deciviews from the baseline visibility of 13.58 deciviews for the 20 percent least impaired days.

*C. Long-Term Strategy/Strategies*

As described in section III.E of this action, the LTS is a compilation of state-specific control measures relied on by the state for achieving its RPGs. Tennessee's LTS for the first implementation period addresses the emissions reductions from Federal, state, and local controls that take effect in the State from the end of the baseline period starting in 2004 until 2018. The Tennessee LTS was developed by the State, in coordination with the VISTAS RPO, through an evaluation of the following components: (1) Identification of the emission units within Tennessee and in surrounding states that likely have the largest impacts currently on visibility at the State's two Class I areas; (2) estimation of emissions reductions for 2018 based on all controls required or expected under Federal and state regulations for the 2004–2018 period (including BART); (3) comparison of projected visibility improvement with the uniform rate of progress for the State's Class I areas; and (4) application of the four statutory factors in the reasonable progress analysis for the identified emission units to determine if additional reasonable controls were required.

CAIR is also an element of Tennessee's LTS. CAIR rule revisions were approved into the Tennessee SIP in 2007 and 2009. *See* 72 FR 46388 (Aug. 20, 2007); 74 FR 61535 (Nov. 25, 2009). Tennessee opted to rely on CAIR emission reduction requirements to satisfy the BART requirements for $SO_2$ and $NO_X$ from EGUs. *See* 40 CFR 51.308(e)(4). Therefore, Tennessee only required its BART-eligible EGUs to evaluate PM emissions for determining whether they are subject to BART, and, if applicable, for performing a BART control assessment. See section III.D. of this notice for further details. Additionally, as discussed below in section V.C.5, Tennessee concluded that no additional controls beyond CAIR are reasonable for reasonable progress for its EGUs for this first implementation period. Prior to the remand of CAIR, EPA believed the State's reliance on CAIR for specific BART and reasonable progress provisions affecting its EGUs was adequate, as detailed later in this notice. As explained in section IV. of this notice, the Agency proposes today to issue a limited approval and a proposed limited disapproval of the State's regional haze SIP revision.

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

The emissions inventory used in the regional haze technical analyses was developed by VISTAS with assistance from Tennessee. The 2018 emissions inventory was developed by projecting 2002 emissions and applying reductions expected from Federal and state regulations affecting the emissions of VOC and the visibility-impairing pollutants $NO_X$, PM, and $SO_2$. 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 V.C.3, VISTAS performed modeling sensitivity analyses, which demonstrated that anthropogenic emissions of VOC and $NH_3$ do not significantly impair visibility in the VISTAS region. Thus, while emissions inventories were also developed for $NH_3$ and VOC, and applicable Federal VOC reductions were incorporated into Tennessee's regional haze analyses, Tennessee did not further evaluate $NH_3$ and VOC emissions sources for potential controls under BART or reasonable progress.

VISTAS developed emissions for five inventory source classifications: Stationary point and area sources, off-road and on-road mobile sources, and biogenic sources. 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. VISTAS estimated emissions on a countywide level for the inventory categories of: (a) stationary area sources; (b) off-road (or non-road) mobile sources (*i.e.,* equipment that can move but does not use the roadways); and (c) biogenic sources (which are natural sources of emissions, such as trees). On-road mobile source emissions are estimated by vehicle type and road type, and are summed to the countywide level.

There are many Federal and state control programs being implemented that VISTAS and Tennessee anticipate will reduce emissions between the end of the baseline period and 2018. Emission reductions from these control programs are projected to achieve substantial visibility improvement by 2018 in the Tennessee Class I areas. The control programs relied upon by Tennessee include CAIR; EPA's $NO_X$ SIP Call; North Carolina's Clean Smokestacks Act; Georgia multi-pollutant rule; consent decrees for Tampa Electric, Virginia Electric and Power Company, Gulf Power-Plant Crist, and American Electric Power; $NO_X$ and/or VOC reductions from the control rules in 1-hour ozone SIPs for Atlanta, Birmingham, and Northern Kentucky; North Carolina's $NO_X$ Reasonably Available Control Technology state rule for Philip Morris USA and Norandal USA in the Charlotte/Gastonia/Rock Hill 1997 8-hour ozone nonattainment area; Federal 2007 heavy duty diesel (2007) engine standards for on-road trucks and buses; Federal Tier 2 tailpipe controls for on-road vehicles; Federal large spark ignition and recreational vehicle controls; and EPA's non-road diesel rules. Controls from various Federal Maximum Achievable Control Technology (MACT) rules were also utilized in the development of the 2018 emission inventory projections. These MACT rules include the industrial boiler/process heater MACT (referred to as "Industrial Boiler MACT"), the combustion turbine and reciprocating internal combustion engines MACTs, and the VOC 2-, 4-, 7-, and 10-year MACT standards.

On July 30, 2007, the U.S. District Court of Appeals mandated the vacatur and remand of the Industrial Boiler MACT Rule.[10] 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. Notwithstanding the vacatur of this rule, the VISTAS states, including Tennessee, decided to leave these controls in the modeling for their regional haze SIPs since it is believed that by 2018, EPA will have re-promulgated an industrial boiler MACT rule or the states will have addressed the issue through state-level case-by-case MACT reviews in accordance with section 112(j) of the CAA. EPA finds this approach acceptable for the following reasons. 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), giving Tennessee time to assure the required controls are in place prior to the end of the first implementation period in 2018. In the absence of an established MACT rule for boilers and process heaters, the statutory language in section 112(j) of the CAA specifies a

[10] *See NRDC* v. *EPA,* 489F.3d 1250.

schedule for the incorporation of enforceable MACT-equivalent limits into the title V operating permits of affected sources. Should circumstances warrant the need to implement section 112(j) of the CAA for industrial boilers, EPA would expect, in this case, that compliance with case-by-case MACT limits for industrial boilers would occur no later than January 2015, which is well before the 2018 RPGs for regional haze. In addition, the RHR requires that any resulting differences between emissions projections and actual emissions reductions that may occur will be addressed during the five-year review prior to the next 2018 regional haze SIP. The expected reductions due to the original, vacated Industrial Boiler MACT rule were relatively small compared to the State's total $SO_2$, $PM_{2.5}$, and coarse particulate matter ($PM_{10}$) emissions in 2018 (*i.e.,* 0.5 to 1.5 percent, depending on the pollutant, of the projected 2018 $SO_2$, $PM_{2.5}$, and $PM_{10}$ inventory), and not likely to affect any of Tennessee's modeling conclusions. Thus, if there is a need to address discrepancies such that projected emissions reductions from the vacated Industrial Boiler MACT were greater than actual reductions achieved by the replacement MACT, EPA would not expect that this would affect the adequacy of the existing Tennessee regional haze SIP.

Below in Tables 2 and 3 are summaries of the 2002 baseline and 2018 estimated emission inventories for Tennessee.

TABLE 2—2002 EMISSIONS INVENTORY SUMMARY FOR TENNESSEE

[Tons per year]

| | VOC | $NO_X$ | $PM_{2.5}$ | $PM_{10}$ | $NH_3$ | $SO_2$ |
|---|---|---|---|---|---|---|
| Point | 85,254 | 221,651 | 39,973 | 49,814 | 1,817 | 413,755 |
| Area | 153,509 | 17,936 | 42,925 | 212,972 | 34,412 | 29,942 |
| On-Road Mobile | 179,807 | 238,577 | 3,949 | 5,371 | 6,625 | 9,226 |
| Off-Road Mobile | 66,450 | 96,827 | 6,458 | 6,819 | 43 | 10,441 |
| Total | 485,020 | 574,991 | 93,305 | 274,976 | 42,897 | 463,364 |

TABLE 3—2018 EMISSIONS INVENTORY SUMMARY FOR TENNESSEE

[Tons per year]

| | VOC | $NO_X$ | $PM_{2.5}$ | $PM_{10}$ | $NH_3$ | $SO_2$ |
|---|---|---|---|---|---|---|
| Point | 93,432 | 94,234 | 46,680 | 57,940 | 2,454 | 169,354 |
| Area | 183,110 | 20,002 | 48,265 | 248,086 | 36,376 | 32,073 |
| On-Road Mobile | 67,324 | 69,385 | 1,544 | 3,092 | 9,021 | 948 |
| Off-road Mobile | 45,084 | 70,226 | 4,403 | 4,672 | 55 | 5,207 |
| Total | 388,950 | 253,847 | 100,892 | 313,790 | 47,906 | 207,582 |

2. Modeling To Support the LTS and Determine Visibility Improvement for Uniform Rate of Progress

VISTAS performed modeling for the regional haze LTS for the 10 southeastern states, including Tennessee. The modeling analysis is a complex technical evaluation that began with selection of the modeling system. VISTAS used the following modeling system:

- *Meteorological Model:* The Pennsylvania State University/National Center for Atmospheric Research Mesoscale Meteorological Model 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 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) modeling system is a photochemical grid model capable of addressing ozone, PM, visibility and acid deposition at a regional scale. The photochemical model selected for this study was CMAQ version 4.5. It was modified through VISTAS with a module for Secondary Organics Aerosols in an open and transparent manner that was also subjected to outside peer review.

CMAQ modeling of regional haze in the VISTAS region for 2002 and 2018 was carried out on a grid of 12x12 kilometer cells that covers the 10 VISTAS states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia) and states adjacent to them. This grid is nested within a larger national CMAQ modeling grid of 36x36 kilometer 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. VISTAS 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 VISTAS 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*, located at *http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf,* (EPA–454/B–07–002), April 2007, and EPA document, *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations,* located at *http://www.epa.gov/ttnchie1/eidocs/eiguid/index.html,* EPA–454/R–05–001, August 2005, updated November 2005 ("EPA's Modeling Guidance").

VISTAS 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. VISTAS used a diverse set of statistical parameters from the EPA's Modeling Guidance to stress and examine the model and modeling inputs. Once VISTAS determined the model performance to be acceptable, VISTAS 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 State of Tennessee provided the appropriate supporting documentation for all required analyses used to determine the State's LTS. The technical analyses and modeling used to develop the glidepath and to support the LTS are consistent with EPA's RHR, and interim and final EPA Modeling Guidance. EPA accepts the VISTAS technical modeling to support the LTS and determine visibility improvement for the uniform rate of progress because the modeling system was chosen and simulated according to EPA Modeling Guidance. EPA agrees with the VISTAS model performance procedures and results, and that the CMAQ is an appropriate tool for the regional haze assessments for the Tennessee LTS and regional haze SIP.

3. Relative Contributions to Visibility Impairment: Pollutants, Source Categories, and Geographic Areas

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, source sectors, and geographic areas, VISTAS 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 VISTAS region, VISTAS' contribution assessment, based on IMPROVE monitoring data, demonstrated that ammonium sulfate is the major contributor to $PM_{2.5}$ mass and visibility impairment at Class I areas in the VISTAS and neighboring states. On the 20 percent worst visibility days in 2000–2004, ammonium sulfate accounted for greater than 70 percent of the calculated light extinction at Class I areas in the Southern Appalachians. In particular, for Great Smoky Mountains National Park, sulfate particles resulting from $SO_2$ emissions contribute roughly 84 percent to the calculated light extinction on the haziest days. In contrast, ammonium nitrate contributed less than five percent of the calculated light extinction at VISTAS Class I areas on the 20 percent worst visibility days. Particulate organic matter (organic carbon) accounted for 10–20 percent of light extinction on the 20 percent worst visibility days.

VISTAS grouped its 18 Class I areas into two types, either "coastal" or "inland" (sometimes referred to as "mountain") sites, based on common/similar characteristics (*e.g.* terrain, geography, meteorology), to better represent variations in model sensitivity and performance within the VISTAS region, and to describe the common factors influencing visibility conditions in the two types of Class I areas. Tennessee's Class I areas are both "inland" areas.

Results from VISTAS' emission sensitivity analyses indicate that sulfate particles resulting from $SO_2$ emissions are the dominant contributor to visibility impairment on the 20 percent worst days at all Class I areas in VISTAS, including the two Tennessee areas. Tennessee concluded that reducing $SO_2$ emissions from EGU and non-EGU point sources in the VISTAS states would have the greatest visibility benefits for the Tennessee Class I areas. Because ammonium nitrate is a small contributor to $PM_{2.5}$ mass and visibility impairment on the 20 percent worst days at the inland Class I areas in VISTAS, which include Joyce-Kilmer Wilderness Area and Great Smoky Mountains National Park, the benefits of reducing $NO_X$ and $NH_3$ emissions at these sites are small.

The VISTAS sensitivity analyses show that VOC emissions from biogenic sources such as vegetation also contribute to visibility impairment. However, control of these biogenic sources of VOC would be extremely difficult, if not impossible. The anthropogenic sources of VOC emissions are minor compared to the biogenic sources. Therefore, controlling anthropogenic sources of VOC emissions would have little if any visibility benefits at the Class I areas in the VISTAS region, including Tennessee. The sensitivity analyses also show that reducing primary carbon from point sources, ground level sources, or fires is projected to have small to no visibility benefit at the VISTAS Class I areas.

Tennessee considered the factors listed in under 40 CFR 51.308(d)(3)(v) and in section III.E. of this action to develop its LTS as described below. Tennessee, in conjunction with VISTAS, demonstrated in its SIP that elemental carbon (a product of highway and non-road diesel engines, agricultural burning, prescribed fires, and wildfires), fine soils (a product of construction activities and activities that generate fugitive dust), and ammonia are relatively minor contributors to visibility impairment at the Class I areas in Tennessee. Tennessee considered agricultural and forestry smoke management techniques to address visibility impacts from elemental carbon. TDEC is currently working with the Tennessee Division of Forestry to develop a smoke management program that utilizes basic smoke management practices and addresses the issues laid out in the EPA's 1998 *Interim Air Quality Policy on Wildland and Prescribed* Fires available at: *http://www.epa.gov/ttncaaa1/t1/memoranda/firefnl.pdf.* With regard to fine soils, the State considered those activities that generate fugitive dust, including construction activities. With regard to construction activities, the Tennessee Department of Transportation has agreed to include discussions related to the control of road construction project dust emissions as part of its contract bid specifications. In addition, TDEC's Rule 1200–3–8–.03 requires additional control measures in air source operating permits to control dust emissions. The State has chosen not to develop controls for fine soils in this first implementation period because of its relatively minor contribution to visibility impairment. With regard to ammonia emissions from agricultural sources, TDEC will wait for the results of emissions sampling and Best Management Practices arising from EPA's Combined Animal Feeding Operation Consent Order Agreements prior to initiating any control measures for agricultural ammonia. EPA concurs with the State's technical demonstration

showing that elemental carbon, fine soils and ammonia are not significant contributors to visibility in the State's Class I areas, and therefore, finds that Tennessee has adequately satisfied 40 CFR 51.308(d)(3)(v). EPA's TSD to this **Federal Register** action and Tennessee's SIP provide more details on the State's consideration of these factors for Tennessee's LTS.

The emissions sensitivity analyses conducted by VISTAS 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 VISTAS region, more than any other visibility-impairing pollutant. Specific to Tennessee, the VISTAS sensitivity analysis projects visibility benefits in Great Smoky Mountains National Park and Joyce-Kilmer Slickrock Wilderness Area from $SO_2$ reductions from EGUs in eight of the 10 VISTAS states: Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Additional, smaller benefits are projected from $SO_2$ emission reductions from non-utility industrial point sources. $SO_2$ emissions contributions to visibility impairment from other RPO regions are comparatively small in contrast to the VISTAS states' contributions, and thus, controlling sources outside of the VISTAS region is predicted to provide less significant improvements in visibility in the Class I areas in VISTAS.

Taking the VISTAS sensitivity analyses results into consideration, Tennessee concluded that reducing $SO_2$ emissions from EGU and non-EGU point sources in certain VISTAS states would have the greatest visibility benefits for the Tennessee Class I areas. The State chose to focus solely on evaluating certain $SO_2$ sources contributing to visibility impairment to the State's Class I areas for additional emission reductions for reasonable progress in this first implementation period (described in sections V.4. and V.5. of this notice). EPA agrees with the State's analyses and conclusions used to determine the pollutants and source categories that most contribute to visibility impairment in the Tennessee Class I areas, and finds the State's approach to focus on developing a LTS that includes largely additional measures for point sources of $SO_2$ emissions to be appropriate.

$SO_2$ sources for which it is demonstrated that no additional controls are reasonable in this current implementation period will not be exempted from future assessments for controls in subsequent implementation periods or, when appropriate, from the five-year periodic SIP reviews. In future implementation periods, additional controls on these $SO_2$ sources evaluated in the first implementation period may be determined to be reasonable, based on a reasonable progress control evaluation, for continued progress toward natural conditions for the 20 percent worst days and to avoid further degradation of the 20 percent best days. Similarly, in subsequent implementation periods, the State may use different criteria for identifying sources for evaluation and may consider other pollutants as visibility conditions change over time.

4. Procedure for Identifying Sources To Evaluate for Reasonable Progress Controls in Tennessee and Surrounding Areas

As discussed in section V.C.3. of this notice, through comprehensive evaluations by VISTAS and the Southern Appalachian Mountains Initiative (SAMI),[11] the VISTAS states concluded that sulfate particles resulting from $SO_2$ emissions account for the greatest portion of the regional haze affecting the Class I areas in VISTAS states, including those in Tennessee. Utility and non-utility boilers are the main sources of $SO_2$ emissions within the southeastern United States. VISTAS developed a methodology for Tennessee, which enables the State to focus its reasonable progress analysis on those geographic regions and source categories that impact visibility at each of its Class I areas. Recognizing that there was neither sufficient time nor adequate resources available to evaluate all emission units within a given area of influence (AOI) around each Class I area that Tennessee's sources impact, the State established a threshold to determine which emission units would be evaluated for reasonable progress control. In applying this methodology, TDEC first calculated the fractional contribution to visibility impairment from all emission units within the $SO_2$ AOI for each of its Class I areas, and those surrounding areas in other states potentially impacted by emissions from emission units in Tennessee. The State then identified those emission units with a contribution of one percent or more to the visibility impairment at that particular Class I area, and evaluated each of these units for control measures for reasonable progress, using the following four "reasonable progress factors" as required under 40 CFR 51.308(d)(1)(i)(A): (i) Cost of compliance; (ii) time necessary for compliance; (iii) energy and non-air quality environmental impacts of compliance; and (iv) remaining useful life of the emission unit.

Tennessee's $SO_2$ AOI methodology captured greater than 60 percent of the total point source $SO_2$ contribution to visibility impairment in the two Class I areas in Tennessee, and required an evaluation of 15 emission units. Capturing a significantly greater percentage of the total contribution would involve an evaluation of many more emission units that have substantially less impact. EPA believes the approach developed by VISTAS and implemented for the Class I areas in Tennessee is a reasonable methodology to prioritize the most significant contributors to regional haze and to identify sources to assess for reasonable progress control in the State's Class I areas. The approach is consistent with EPA's Reasonable Progress Guidance. The technical approach of VISTAS and Tennessee was objective and based on several analyses, which included a large universe of emission units within and surrounding the State of Tennessee and all of the 18 VISTAS Class I areas. It also included an analysis of the VISTAS emission units affecting nearby Class I areas surrounding the VISTAS states that are located in other RPOs' Class I areas.

5. Application of the Four CAA Factors in the Reasonable Progress Analysis

TDEC identified 15 emission units at 10 facilities in Tennessee (see Table 4) with $SO_2$ emissions that were above the State's minimum threshold for reasonable progress evaluation because they were modeled to fall within the sulfate AOI of any Class I area and have a one percent or greater contribution to the sulfate visibility impairment to at least one Class I area.[12] Of these 15 units, 13 emission units were exempted from preparing a reasonable progress analysis because they were already subject to BART or CAIR, had shut down, or provided additional information documenting that they had been improperly identified as meeting

[11] Prior to VISTAS, the southern states cooperated in a voluntary regional partnership "to identify and recommend reasonable measures to remedy existing and prevent future adverse effects from human-induced air pollution on the air quality related values of the Southern Appalachian Mountains". States cooperated with FLMs, the USEPA, industry, environmental organizations, and academia to complete a technical assessment of the impacts of acid deposition, ozone, and fine particles on sensitive resources in the Southern Appalachians. The SAMI Final Report was delivered in August 2002.

[12] See also EPA's TSD, section III.C.2, fractional contribution analysis tables for each Class I area, excerpted from the Tennessee SIP, Appendix H.

the State's minimum threshold for reasonable progress evaluation.

TABLE 4—TENNESSEE FACILITIES SUBJECT TO REASONABLE PROGRESS ANALYSIS

| |
|---|
| Facilities With a Unit Subject to Reasonable Progress Analysis: |
| Bowater Newsprint and Directory—Calhoun (Bowater), Unit 015 |
| Invista—Hixon/Chattanooga (INVISTA), Unit 0002 |
| Facilities With Unit(s) Exempt from Reasonable Progress Analysis: |
| EGUs Subject to BART and CAIR |
| Tennessee Valley Authority—Cumberland Facility, Units 001, 002 |
| Tennessee Valley Authority—Bull Run Facility, Unit 001 |
| Non-EGUs Subject to BART |
| Alcoa—South Plant, Units 09, 16, 17 |
| Eastman Chemical Company Units 021520, 020101, 261501 |
| Shut down Facility |
| Intertrade Holdings, Inc. |
| Exempted With Updated Information |
| A.E. Staley Manufacturing Company |
| APAC–TN, Inc./Harrison Construction Division |
| U.S. DOE—Y–12 Plant |

*A. Facilities With an Emissions Unit Subject to Reasonable Progress Analysis*

TDEC analyzed whether $SO_2$ controls should be required for two facilities, Bowater Newsprint and Directory—Calhoun, unit 015 (Bowater), and Invista-Hixson/Chattanooga, unit 0002 (INVISTA), based on a consideration of the four factors set out in the CAA and EPA's regulations. For the limited purpose of evaluating the cost of compliance for the reasonable progress assessment in this first regional haze SIP for the non-EGUs, TDEC concluded that it was not equitable to require non-EGUs to bear a greater economic burden than EGUs for a given control strategy. Using the CAIR rule as a guide, a cost of $2,000 per ton of $SO_2$ controlled or reduced was used as a determiner of cost effectiveness.

1. Bowater

Bowater is a Kraft pulp mill with three coal-fired boilers burning 1.1 percent sulfur coal. Bowater presented information and data in its reasonable progress control analysis that led TDEC to conclude that Bowater should not be required to install $SO_2$ post-combustion controls or to switch to lower sulfur fuels during this first regional haze SIP implementation period. Bowater evaluated switching to a lower sulfur (0.6 percent) western sub-bituminous coal and determined that it is not technologically feasible since Bowater's boilers were designed to burn eastern bituminous coal, and the different physical properties (*e.g.,* ash fusion temperature, *etc.*) of western sub-bituminous coal make its use incompatible with the Bowater boilers. Bowater also evaluated installing $SO_2$ wet scrubbers, which is technically feasible, but the estimated cost-effectiveness exceeds $5,000 per ton of $SO_2$ removed, which exceeds the State's $2,000 cost-effectiveness threshold for reasonableness. Other environmental factors affecting the application of wet scrubbers are the water scarcity in the local area due to seasonal droughts and the treatment and disposal of wastewater and sludge.

2. INVISTA

INVISTA produces polymers and fibers and operates three coal-fired boilers. $SO_2$ emissions from these boilers averaged 944 tons per year over three years (2004, 2005, and 2006). The current title V permit limits coal sulfur content to 1.25 percent; however, actual sulfur content has averaged nearly 1.0 percent over these three years. INVISTA evaluated the following options: low sulfur coals, wet Flue Gas Desulfurization (FGD) System (wet scrubbers), Spray Dryer Absorber (SDA) System, Fluidized Bed Combustion (FBC) with Limestone, and Dry Sorbent Injection (DSI) System. Of these options, only low sulfur coal fell below the $2,000 per ton cost threshold TDEC used to determine reasonableness.

A wet FGD system was determined to be a technically feasible option for control of $SO_2$ emissions from the boilers used by INVISTA, but cost prohibitive. Cost-effectiveness was calculated to be approximately $3,508 per ton of $SO_2$ removed, which exceeds the State's cost threshold for reasonableness. In assessing other environmental impacts, the company raised the possibility of causing a steam plume from the installation of a scrubber. It is not known whether the possible presence of a persistent, highly opaque steam plume from the scrubbers' stacks would be an issue. If it is, additional costs would be incurred from installing a separate stack to address this problem.

Similarly, an SDA system was determined to be a technically feasible control option but also cost prohibitive. The cost-effectiveness of applying SDA to this unit is estimated to be at least $4,000 per ton of $SO_2$ removed. In addition, this option has the potential to result in an overall ash with properties so different from the current ash that it will no longer be acceptable for sale to cement kilns. If that becomes the case, INVISTA would be required to truck the ash offsite for disposal in a landfill at a substantial increase in cost relative to the current disposal cost.

As was the case for FGD and SDA, TDEC determined that the DSI system was also technically feasible but cost prohibitive as a control option. The cost-effectiveness of applying DSI was estimated to be at least $4,037 per ton of $SO_2$ removed. As with SDA, this option could result in an overall ash with properties so different from the ash that is currently produced that it will no longer be acceptable for sale to cement kilns. If that becomes the case, INVISTA would be required to truck the ash offsite for disposal in a landfill at a substantial increase in cost relative to the current disposal cost.

Finally, INVISTA evaluated switching to a lower sulfur (0.75 percent) western sub-bituminous coal, and determined that this is both a technologically feasible and cost effective control technology option. The cost-effectiveness was calculated to be approximately $1,225 per ton of $SO_2$ removed. The decrease in $SO_2$ emissions from the facility's baseline by switching to lower sulfur coal was calculated to be approximately 214 tons of $SO_2$ per year. INVISTA concluded that the cost of switching to a lower sulfur coal would

cost more than the $2,000 per ton used by TDEC to determine reasonableness of control costs and therefore, it was a cost prohibitive option. INVISTA based its conclusion on research that demonstrated that the $1,225 per ton control cost used by TDEC was unjustifiable because it was based on the current cost of low sulfur coal instead of the future costs it would be expected to pay. Taking into consideration INVISTA's entire analysis, TDEC agreed that although fuel-switching seemed to be a favored option among a number of sources, the future cost of coal switching at the INVISTA facility may be cost prohibitive. For this reason, TDEC is deferring a decision to require INVISTA to use the fuel-switching option during this implementation period.

3. EPA Assessment

As noted in EPA's Reasonable Progress Guidance, the states have wide latitude to determine appropriate additional control requirements for ensuring reasonable progress, and there are many ways for a state to approach identification of additional reasonable measures. In determining reasonable progress, states must consider, at a minimum, the four statutory factors, but states have flexibility in how to take these factors into consideration.

Tennessee applied the methodology developed by VISTAS for identifying appropriate sources to be considered for additional controls under reasonable progress for the implementation period addressed by this SIP, which ends in 2018. Using this methodology, TDEC first identified those emissions and emissions units most likely to have an impact on visibility in the State's Class I areas. Units with emissions of $SO_2$ with a relative contribution to visibility impairment of at least a one percent contribution at any Class I area were then subject to further analysis to determine whether it would be appropriate to require controls on these units for purposes of reasonable progress. As noted above, of the emission units in Tennessee, two were subject to this analysis. TDEC concluded, based on their evaluation of these two facilities, Bowater and INVISTA, that no further controls were warranted at this time.

Having reviewed TDEC's methodology and analyses presented in the SIP materials prepared by TDEC, EPA is proposing to approve Tennessee's conclusion that no further controls are reasonable for this implementation period for the reviewed sources. EPA agrees with the State's approach of identifying the key pollutants contributing to visibility impairment at its Class I areas, and consider their methodology to identify sources of $SO_2$ most likely to have an impact on visibility on any Class I area, to be an appropriate methodology for narrowing the scope of the State's analysis. In general, EPA also finds Tennessee's evaluation of the four statutory factors for reasonable progress to be reasonable. Although the use of a specific threshold for assessing costs means that Tennessee may not have fully considered other available emissions reduction measures above their threshold, EPA believes that the Tennessee SIP still ensures reasonable progress. EPA notes that given the emissions reductions resulting from CAIR, Tennessee's BART determinations, and the measures in nearby states, the visibility improvements projected for the affected Class I areas are in excess of that needed to be on the uniform rate of progress glidepath. In considering Tennessee's approach, EPA is also proposing to place great weight on the fact that there is no indication in the SIP submittal that Tennessee, as a result of using a specific cost effectiveness threshold, rejected potential reasonable progress measures that would have had a meaningful impact on visibility in its Class I areas.

EPA also finds that TDEC's conclusion regarding the fuel switching option evaluated for INVISTA acceptable. Although the $1,225 per ton of $SO_2$ reduced is below the cost-effectiveness threshold established by TDEC, a 214 ton per year reduction in $SO_2$ is expected to produce limited visibility improvement at the only Class I area that INVISTA impacts (Cohutta Wilderness Class I Area in Georgia) and is therefore an acceptable basis for deferral of consideration of additional controls to the next assessment period. In addition, EPA finds that Tennessee fully evaluated, in terms of the four reasonable progress factors, all control technologies available at the time of its analysis and applicable to these facilities. EPA also finds that Tennessee consistently applied its criteria for reasonable compliance costs, and where it differed, the State included justification for the other factors influencing the control determination.

*B. Emission Units Exempted From Preparing a Reasonable Progress Control Analysis*

1. EGUs Subject to BART and CAIR

Three of the 15 emission units identified for a reasonable progress control analysis are EGUs. These three EGUs are subject to CAIR and were also found to be subject to BART, as discussed in section V.C.6. These three EGUs, located at two facilities, are Tennessee Valley Authority [13] (TVA) Bull Run Fossil Plant, unit 001, and TVA Cumberland Fossil Plant, units 001 and 002.

To determine whether any additional controls beyond those required by CAIR would be considered reasonable for Tennessee's EGUs for this first implementation period, TDEC evaluated the $SO_2$ reductions expected from the EGU sector, factoring in updated information provided by TVA, which owns and operates the EGUs in Tennessee. The EGUs located in Tennessee are expected to reduce their 2002 $SO_2$ emissions by approximately 75 percent by 2018. TDEC believes it has an accurate understanding of where EGU emission reductions will occur in Tennessee based upon existing and planned installations of post combustion FGD scrubber controls.

To further evaluate whether CAIR requirements will satisfy reasonable progress for $SO_2$ for EGUs, TDEC considered the four reasonable progress factors set forth in EPA's RHR as they apply to the State's entire EGU sector for available control technologies in section 7.6 of the Tennessee SIP. The State also reviewed CAIR requirements that include 2015 as the "earliest reasonable deadline for compliance" for EGUs installing retrofits. *See* 70 FR 25162, 25197–25198 (May 12, 2005). This is a particularly relevant consideration because CAIR addresses the reasonable progress factors of cost and time necessary for compliance. In the preamble to CAIR, EPA recognized there are a number of factors that influence compliance with the emission reduction requirements set forth in CAIR, which make the 2015 compliance date reasonable. For example, each EGU retrofit requires a large pool of specialized labor resources, which exist in limited quantities. In addition, retrofitting an EGU is a very capital-intensive venture and therefore undertaken with caution. Hence, allowing retrofits to be installed over time enables the industry to learn from early installations. Lastly, EGU retrofits over time minimize disruption of the power grid by enabling industry to take advantage of planned outages.

[13] On April 14, 2011, a landmark CAA settlement was achieved with TVA involving 59 units across the TVA system. Information on the settlement may be obtained at: *http://yosemite.epa.gov/opa/admpress.nsf/2467feca6036872985257359004044 3d/45cbf1a4262af67b8525787200516dd7!OpenDocument.* This settlement will assure that these facilities have controls consistent with Best Available Control Technology.

Since EPA made the determination in CAIR that the earliest reasonable deadline for compliance for reducing emissions was 2015, TDEC concluded that the emission reductions required by CAIR constitute reasonable measures for Tennessee EGUs during this first assessment period (between baseline and 2018). In addition, TDEC notes that while the reasonable progress evaluation only applies to existing sources, the State will continue to follow the visibility analysis requirements as part of all new major source review (NSR) and prevention of significant deterioration (PSD) permitting actions.

Prior to the CAIR remand by the DC Circuit, EPA believed the State's demonstration that no additional controls beyond CAIR are reasonable for $SO_2$ for affected EGUs for the first implementation period to be acceptable on the basis that the CAIR requirements reflected the most cost-effective controls that can be achieved over the CAIR $SO_2$ compliance timeframe, which spans out to 2015. However, as explained in section IV of this notice, the State's demonstration regarding CAIR and reasonable progress for EGUs, and other provisions in this SIP revision, are based on CAIR and thus, the Agency proposes today to issue a limited approval and a limited disapproval of the State's regional haze SIP revision.

2. Non-EGUs Subject to BART

Six of the 15 non-EGU emission units in Tennessee falling within the sulfate AOI of a Class I area are industrial facilities that TDEC found to be also subject to BART: Aluminum Company of America (Alcoa)—South Plant, units 09, 16, 17, and Eastman Chemical Company, units 021520, 020101, 261501. TDEC has concluded that, for this implementation period, the application of BART constitutes reasonable progress for these six units and thus, is not requiring any additional controls for reasonable progress. As discussed in EPA's Reasonable Progress Guidance, since the BART analysis is based, in part, on an assessment of many of the same factors that must be addressed in establishing the RPG, EPA believes it is reasonable to conclude that any control requirements imposed in the BART determination also satisfy the RPG-related requirements for source review in the first implementation period.[14] Thus, EPA agrees with the State's conclusions that the BART control evaluations satisfy reasonable progress for the first implementation period for these six non-EGU emission units at Alcoa and Eastman Chemical.

3. Other Units Exempted From Preparing a Reasonable Progress Control Analysis

Four other facilities have emission units that were later determined to be exempt from preparing a reasonable progress control analysis. The emission unit 001 at Intertrade Holdings, Inc. that was to be considered for evaluation for reasonable progress shut down prior to analysis. In addition, TDEC identified three emission units that should not have been included on the list of sources to evaluate because updated information showed they did not meet Tennessee's minimum threshold for evaluation for reasonable progress control. A.E. Staley Manufacturing (now Tate & Lyle) Company, unit 005, was already subject to emission limits contained in a construction permit issued March 9, 2007, that reduces $SO_2$ emissions from unit 005, the power boiler, by approximately 62 percent. APAC–TN, Inc./Harrison Construction Division, unit 002, was erroneously modeled at almost 10 times its allowable emission rate. Finally, unit 002 (coal-fired boilers) at the U.S. Department of Energy's Y–12 Plant was repowered to operate on natural gas, virtually eliminating its $SO_2$ emissions.

6. BART

BART is an element of Tennessee's LTS for the first implementation period. The BART evaluation process consists of three components: (a) An identification of all the BART-eligible sources, (b) an assessment of whether the BART-eligible sources are subject to BART and (c) a determination of the BART controls. These components, as addressed by TDEC and TDEC's findings, are discussed as follows.

*A. BART-Eligible Sources*

The first phase of a BART evaluation is to identify all the BART-eligible sources within the state's boundaries. TDEC identified the BART-eligible sources in Tennessee by utilizing the three eligibility criteria in the BART Guidelines (70 FR 39158) and EPA's regulations (40 CFR 51.301): (1) One or more emission units at the facility fit within one of the 26 categories listed in the BART Guidelines; (2) emission unit(s) was constructed on or after August 6, 1962, and was in existence prior to August 6, 1977; and (3) potential emissions of any visibility-impairing pollutant from subject units are 250 tons or more per year.

The BART Guidelines also direct states to address $SO_2$, $NO_X$ and direct PM (including both $PM_{10}$ and $PM_{2.5}$) emissions as visibility-impairment pollutants, and to exercise judgment in determining whether VOC or ammonia emissions from a source impair visibility in an area. 70 FR 39160. VISTAS modeling demonstrated that VOC from anthropogenic sources and ammonia from point sources are not significant visibility-impairing pollutants in Tennessee, as discussed in section V.C.3. of this action. TDEC has determined, based on the VISTAS modeling, that with one exception (PCS Nitrogen facility near Memphis, Tennessee), ammonia emissions from the State's point sources are not anticipated to cause or contribute significantly to any impairment of visibility in Class I areas and should be exempt for BART purposes.

*B. BART-Subject Sources*

The second phase of the BART evaluation is to identify those BART-eligible sources that may reasonably be anticipated to cause or contribute to visibility impairment at any Class I area, *i.e.,* those sources that are subject to BART. The BART Guidelines allow states to consider exempting some BART-eligible sources from further BART review because they may not reasonably be anticipated to cause or contribute to any visibility impairment in a Class I area. Consistent with the BART Guidelines, Tennessee required each of its BART-eligible sources to develop and submit dispersion modeling to assess the extent of their contribution to visibility impairment at surrounding Class I areas.

1. Modeling Methodology

The BART Guidelines allow states to use the CALPUFF[15] modeling system (CALPUFF) or another appropriate model to predict the visibility impacts from a single source on a Class I area and to therefore, determine whether an individual source is anticipated to cause or contribute to impairment of visibility in Class I areas, *i.e.,* "is subject to BART." The Guidelines state that EPA believes CALPUFF is the best regulatory modeling application currently available for predicting a single source's

[14] EPA's Reasonable Progress Guidance, pages 4.2–4–3.

[15] Note that our reference to CALPUFF encompasses the entire CALPUFF modeling system, which includes the CALMET, CALPUFF, and CALPOST models and other pre and post processors. The different versions of CALPUFF have corresponding versions of CALMET, CALPOST, *etc.* which may not be compatible with previous versions (*e.g.,* the output from a newer version of CALMET may not be compatible with an older version of CALPUFF). The different versions of the CALPUFF modeling system are available from the model developer on the following Web site: *http://www.src.com/verio/download/download.htm.*

contribution to visibility impairment (70 FR 39162). Tennessee, in coordination with VISTAS, used the CALPUFF modeling system to determine whether individual sources in Tennessee were subject to or exempt from BART.

The BART Guidelines also recommend that states develop a modeling protocol for making individual source attributions, and suggest that states may want to consult with EPA and their RPO to address any issues prior to modeling. The VISTAS states, including Tennessee, developed a "Protocol for the Application of CALPUFF for BART Analyses." Stakeholders, including EPA, FLMs, industrial sources, trade groups, and other interested parties, actively participated in the development and review of the VISTAS protocol.

VISTAS developed a post-processing approach to use the new IMPROVE equation with the CALPUFF model results so that the BART analyses could consider both the old and new IMPROVE equations. TDEC sent a letter to EPA justifying the need for this post-processing approach, and the EPA Region 4 Regional Administrator sent the State a letter of approval dated October 5, 2007. Tennessee's justification included a method to process the CALPUFF output and a rationale on the benefits of using the new IMPROVE equation. The State's description of the new post-processing methodology and the State and Region 4 letters are located in the Tennessee regional haze SIP submittal and the docket for this action.

2. Contribution Threshold

For states using modeling to determine the applicability of BART to single sources, the BART Guidelines note that the first step is to set a contribution threshold to assess whether the impact of a single source is sufficient to cause or contribute to visibility impairment at a Class I area. The BART Guidelines state that, "A single source that is responsible for a 1.0 deciview change or more should be considered to 'cause' visibility impairment." The BART Guidelines also state that "the appropriate threshold for determining whether a source 'contributes to visibility impairment' may reasonably differ across states," but, "[a]s a general matter, any threshold that you use for determining whether a source 'contributes' to visibility impairment should not be higher than 0.5 deciviews." The Guidelines affirm that states are free to use a lower threshold if they conclude that the location of a large number of BART-eligible sources in proximity of a Class I area justifies this approach.

Tennessee used a contribution threshold of 0.5 deciview for determining which sources are subject to BART. EPA agrees with the State's rationale for choosing this threshold value. There are a limited number of BART-eligible sources in close proximity to each of the State's Class I areas, and the overall impact of the BART-eligible sources on visibility near Class I areas is relatively minimal. In addition, the results of the visibility impacts modeling demonstrated that the majority of the individual BART-eligible sources had visibility impacts well below 0.5 deciview.

TDEC demonstrated that there is a clear spatial separation of sources across the State and little risk of multiple source interactions. For example, there are no clusters of Tennessee BART-eligible sources near the Great Smoky Mountains and Joyce Kilmer Class I areas. In addition, only two sources, TVA–Bull Run and Alcoa, are located within 32 kilometers from each other and the remainder of the State's BART-eligible sources are over 100 kilometers from one another with respect to these Class I areas. Similarly, with regard to Class I areas in nearby states, Tennessee's BART sources are all located greater than 180 kilometers from the Class I areas of Mingo Wilderness (MO), Sipsey Wilderness (AL), and Mammoth Cave (KY).

3. Identification of Sources Subject to BART

Tennessee initially identified 16 facilities with BART-eligible sources. The State subsequently determined that four sources are exempt from being considered BART-eligible. Liberty Fibers Corporation has permanently shut down, and the BART-eligible boilers located at the facility have been dismantled. Intertrade Holdings, Inc. has permanently shut down the acid plant that was determined to be BART-eligible. Similarly, the power boiler at the Weyerhaeuser facility (formerly Willamette Industries) in Sullivan County has been retired and is no longer BART-eligible. Finally, Holston Army Ammunition Plant requested and was issued an operating permit (February 25, 2008) with a 249 tons per year Federally enforceable emission limit for $NO_X$ for the eight emission units that make up their acid plant which enabled it to exempt these units from consideration as a BART-eligible source. Table 5 identifies the remaining 12 BART-eligible sources located in Tennessee, and identifies the four sources subject to BART.

TABLE 5—TENNESSEE BART-ELIGIBLE AND SUBJECT-TO-BART SOURCES

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|---|
| Facilities With Unit(s) Subject to BART Analysis: |
| Alcoa—South Plant |
| Eastman Chemical Company—Tennessee Operations |
| E.I. DuPont de Nemours and Company, Inc. (Old Hickory) |
| TVA—Cumberland Fossil Plant |
| Facilities With Unit(s) Found Not Subject to BART: |
| EGU CAIR and BART Modeling (PM only) Sources [16] |
| TVA—Bull Run Fossil Plant |
| Non-EGU BART Modeling |
| E.I. DuPont de Nemours and Company, Inc. (Shelby County) |
| DuPont White Pigment and Mineral Products (Humphreys County) |
| Lucite International |
| Owens Corning |
| Packaging Corporation of America |
| PCS Nitrogen |
| Zinifex |

Tennessee found that four of its BART-eligible sources (*i.e.,* Alcoa—South Plant, Eastman Chemical Company—Tennessee Operations, DuPont—Old Hickory and TVA—Cumberland Fossil Plant) had modeled visibility impacts of more than the 0.5 deciview threshold for BART exemption. These four facilities are considered to be subject to BART and submitted State permit applications including their proposed BART determinations.

The remaining eight sources demonstrated that they are exempt from being subject to BART by modeling less than a 0.5 deciview visibility impact at the affected Class I areas. The two Tennessee EGU sources, TVA—Cumberland and TVA—Bull Run, only modeled $PM_{10}$ emissions because Tennessee relied on CAIR to satisfy BART for $SO_2$ and $NO_X$ for its EGUs in CAIR, in accordance with 40 CFR 51.308(e)(4). The TVA—Bull Run Fossil Plant demonstrated that its $PM_{10}$ emissions do not contribute to visibility impairment in any Class I area. Modeling at the TVA—Cumberland Fossil Plant, on the other hand, demonstrated that its $PM_{10}$ emissions exceeded the 0.5 deciview contribution threshold and thus, required a BART analysis. Prior to the CAIR remand, the State's reliance on CAIR to satisfy BART for $NO_X$ and $SO_2$ for affected CAIR EGUs was fully approvable and in accordance with 40 CFR 51.308(e)(4). However, as explained in section IV of this notice, the BART assessments for CAIR EGUs for $NO_X$ and $SO_2$ and other provisions in this SIP revision are based on CAIR, and thus, the Agency proposes today to issue a limited approval and a limited disapproval of the State's April 4, 2008, regional haze SIP revision.

*C. BART Determinations*

Four BART-eligible sources (*i.e.,* Alcoa South Plant, Eastman Chemical Company—Tennessee Operations, DuPont Old Hickory, and TVA—Cumberland Fossil Plant) had modeled visibility impacts of more than the 0.5 deciview threshold for BART exemption. These four facilities are therefore considered to be subject to BART. Consequently, they each submitted to the State permit applications that included their proposed BART determinations.

In accordance with the BART Guidelines, to determine the level of control that represents BART for each source, the State first reviewed existing controls on these units to assess whether these constituted the best controls currently available, then identified what other technically feasible controls are available, and finally, evaluated the technically feasible controls using the five BART statutory factors. The State's evaluations and conclusions, and EPA's assessment, are summarized below.

1. Alcoa

a. Background

The Alcoa facility, located in Alcoa, Tennessee, is a BART-eligible source containing 24 BART-eligible emission units. Potlines 1 and 2 emit $SO_2$ and PM, and the anode bake furnace emits $SO_2$, $NO_X$, and PM. Two of the remaining 21 material-handling transfer operations are negligible sources of VOC and the remaining 19 emit PM only. Each pollutant and its effect on the visibility on Class I areas was analyzed by the State. Although eventually considered when taken together, for ease of reference, the analysis of existing controls for each pollutant is set forth below.

b. Potlines 1 and 2, and Anode Bake Furnace

*(1) PM BART Review.* Potlines 1 and 2 and the anode bake furnace are already equipped with a sophisticated fluidized reactor emission control system followed by fabric filters for PM control. Tennessee determined that these controls are BART for PM for these units. Given that this high-efficiency control system is superior or equal to other feasible control options, no further analysis of PM controls for these three units was performed, as allowed by the BART Guidelines in cases where the best level of control is already in place.

*(2) $SO_2$ BART Review.* For potline $SO_2$ emissions, TDEC evaluated eight different $SO_2$ control options as having potential application as part of the BART analysis. Of the eight control options, TDEC identified two technically feasible options for controlling $SO_2$ emissions from the potlines and anode bake furnace: adding a wet scrubber to the potline and/or anode bake furnace exhausts, and limiting the sulfur content in the coke used to produce anodes to three percent. Tennessee determined BART for $SO_2$ for Potlines 1 and 2, and the anode bake furnace, to be a limit of three percent sulfur in the coke used to manufacture anodes. This limit will cap potline $SO_2$ emissions below current allowable emissions. Use of wet scrubbing technology to reduce potline $SO_2$ emissions was rejected as BART due to excessive costs. The estimated total cost-effectiveness of wet scrubbing was $7,500 per ton of $SO_2$ removed, and capital and total annualized costs were estimated to be $200,000,000 and $39,000,000 per year, respectively. The potlines were not identified as being a source of $NO_X$.

[16] EGUs were only evaluated for PM emissions. Tennessee relied on CAIR to satisfy BART for $SO_2$ and $NO_X$ for its EGUs in CAIR, in accordance with 40 CFR 51.308(e)(4). Thus, $SO_2$ and $NO_X$ were not analyzed.

*(3) $NO_X$ BART Review.* The potlines were not identified as being a source of $NO_X$, however, the company did identify the anode bake furnace as a source of $NO_X$. The company also identified two potentially applicable $NO_X$ emission controls for the anode bake furnace: Advanced firing systems and add-on controls. TDEC determined that add-on controls were not feasible because of the low temperature (less than 450° F) and presence of tar vapor. Add-on controls for $NO_X$ typically require elevated temperatures (in excess of 850° F) and tar vapor would foul a catalyst. Advanced firing systems, which reduce $NO_X$ formation by using less natural gas to operate, were found to be technically feasible for anode baking and were evaluated further as part of the BART determination analysis.

TDEC determined that $NO_X$ emissions from the anode bake furnace could be reduced by installing an advanced firing system, which not only reduces total gas usage (by 20 percent), but also reduces $NO_X$ emissions by 20 percent, or approximately 17 tons per year. While the advanced firing system for the anode bake furnace is cost neutral (meaning the savings in reduced natural gas consumption would offset the cost of the installation of the system), the visibility impact analysis predicts only a 0.001 deciview improvement in visibility at the nearest Class I area from use of this technology. Based on the negligible change in visibility resulting from the installation of an advanced firing system, Tennessee concluded that this technology does not represent BART for $NO_X$ for the Alcoa anode bake furnace. Tennessee also determined that the available controls are not reasonable and that it was reasonable to find that BART for the anode baking furnace at the Alcoa facility located in Alcoa, Tennessee was no control for $NO_X$ emissions.

c. Support Operations

The remaining 21 BART-eligible emission units at Alcoa are material handling and transfer operations that support the potlines and the anode bake furnace. Two of these support operations are negligible sources of VOC. TDEC has determined that controlling anthropogenic sources of VOC emissions would have little, if any, visibility benefits at the Class I areas in or nearby Tennessee, and, thus, as noted in section V.C.1 of this action, Tennessee did not further evaluate VOC emissions sources for potential controls under BART or reasonable progress.

*PM BART Review.* Emissions from the remaining 19 support operations consist of relatively small amounts of PM that are controlled by fabric filter control devices. Fabric filters effectively remove greater than 99 percent of particulate emissions. Based on a control technology review, this type of control represents the best available control for the material handling and transfer operations at the Alcoa facility. Given that fabric filters represent the best available control for PM, and the relatively low level of PM emissions, these emission sources were excluded from both visibility modeling and further BART engineering analysis, as allowed by the BART Guidelines in cases where the best level of control is already in place (70 FR 39163–39164). Additionally, based on modeling results provided by Alcoa, visibility impacts from individual fabric filters are projected to be less than or equal to 0.01 deciview. Therefore, Tennessee determined that BART for PM for these 19 support operations is the existing level of control.

d. EPA Assessment

EPA agrees with Tennessee's analyses and conclusions for the BART emission units located at this Alcoa facility. EPA has reviewed the Tennessee analyses and concluded they were conducted in a manner that is consistent with EPA's BART Guidelines and EPA's *Air Pollution Control Cost Manual* (*http://www.epa.gov/ttncatc1/products.html#cccinfo*). Therefore the conclusions reflect a reasonable application of EPA's guidance to this source.

2. Eastman Chemical

a. Background

The Eastman Chemical facility located in Kingsport, Tennessee ("Kingsport plant") is a BART-eligible source with nine emission units including: Five tangentially fired 655 million British Thermal Units per hour (MMBtu/hr), pulverized coal boilers (boilers 25–29), two cracking furnaces, a batch chemical manufacturing operation, and a 500 MMBtu/hr stoker boiler (boiler 24).

b. Boilers 25–29

Boilers 25–29 are used for co-production of steam and electricity in support of manufacturing operations at the Kingsport plant.

*(1) $SO_2$ BART Review.* The average $SO_2$ emission rate for calendar year 2005 was 1.4 pounds of $SO_2$ per MMBtu of heat input (lb $SO_2$/MMBtu). TDEC identified four technically feasible technologies for control of $SO_2$ emissions from boilers 25–29: (1) Spray dryer absorbers with fabric filters (SDA–FF); (2) sodium hydroxide (caustic) scrubbers; (3) wet-FGD (*i.e.,* limestone scrubbing with forced oxidation); and (4) dual alkali systems. TDEC concluded that it would be reasonable to install SDA–FF on boilers 25–29. To meet an emission rate of 0.2 lb/MMBtu or 92 percent $SO_2$ control using the current regionally available coal supply, Eastman Chemical will also need to convert the existing electrostatic precipitator (ESP) to fabric filters. TDEC established as BART for $SO_2$ from Boilers 25–29 as the less stringent of the following limits: 0.20 lb $SO_2$/MMBtu, or a reduction in uncontrolled $SO_2$ emissions by 92 percent. TDEC also recognized in its SIP that the $SO_2$ emission limits for BART will require the installation of additional PM controls, which will further reduce PM, but since the facility is already well controlled for PM, the State did not adopt as BART any additional PM limits for these boilers. Installing SDA–FF on Boilers 25–29 will reduce the three-year average of the maximum 98th percentile impact on visibility, as modeled, from 2.38 deciviews to 0.95 deciviews.

*(2) PM and $NO_X$ BART Review.* In the early 1990s, an ESP was installed on each unit to control PM emissions. As discussed in the previous subsection V.C.6.C, 2.b.(1), *$SO_2$ BART review,* additional PM controls must be installed on Boilers 25–29 to meet the new BART $SO_2$ limits. During 2001–2003, the burners on these boilers were retrofitted with a vaned close coupled overfire-air system to control $NO_X$ emissions. At lower loads, the boiler's mode of operation is equivalent to a $NO_X$ control strategy known as Burner Out of Service, and results in significantly lower $NO_X$ emissions.

For $NO_X$, TDEC concluded that while the available technologies (running low-$NO_X$ burners year-round and application of Separated Over-Fire Air (SOFA)) might be considered cost-effective on a dollars per ton basis, there are other environmental factors that, when weighed against the visibility benefits, led the State to conclude that existing seasonal $NO_X$ controls would be considered BART. The impact of reducing the $NO_X$ would be to reduce the three-year average of the maximum 98th percentile impact on visibility, as modeled for this source, from 0.95 deciviews to 0.76 deciviews.

The environmental factors include: (a) disposal of fly ash rather than sales to the concrete industry would increase use of aggregate by the cement manufacturing industry and increase waste being sent to landfills, and (b) an increase in emissions associated with burning coal (*i.e.,* $SO_2$ and PM) due to an increase in fuel use caused by a loss

of boiler efficiency due to higher amounts of unburned carbon in the fly ash. The efficiency loss is projected to be around 0.5 percent, which is equivalent to about an extra 3,500 tons of coal that must be burned each year to generate the same output.

c. Cracking Furnaces

The two cracking furnaces are used to fire natural gas to provide heat to drive a cracking reaction of acetic acid that occurs inside the tube assemblies of the furnaces. The furnaces also burn a fuel gas which is off-gassed from the manufacturing process. $SO_2$ and PM emissions from these units are negligible.

The $NO_X$ emissions potential from these small furnaces is low (10.5 tons per year each). Therefore, post-combustion technologies such as selective non-catalytic reduction (SNCR) or selective catalytic reduction (SCR) would not be cost-effective. Although several different combustion control technologies were considered, only the replacement of the 24 natural gas burners with new low $NO_X$ burners (LNB) was considered to be cost-effective. However, because $NO_X$ emissions are already low using the current technology, the impact on visibility from the LNB would be very limited. Additionally, replacing the existing burners with LNB would change the natural gas flame profile, which would have unknown effects on the heat profile. Changing the heat profile could adversely affect the ability of the cracking furnaces to provide for the cracking reaction to take place and to continue to provide for 98 percent reduction of the total organic carbon in the fuel gas. The cracking furnaces also serve as control devices for the New Source Performance Standards (NSPS) under 40 CFR 60 Subpart NNN. CALPUFF model runs show that the visibility impairment caused by these emission units for the 98th percentile daily maximum impact is 0.01 deciviews at Great Smoky Mountains National Park. For these reasons, TDEC concluded that there are no $NO_X$ control technologies that are both technically feasible and reasonably cost-effective to reduce visibility in Class I Areas for these furnaces.

d. Batch Chemical Manufacturing

The batch chemical manufacturing operation has an operating permit to emit $NO_X$, $SO_2$, ammonia and PM. The operation is a compilation of specialty organic chemical batch manufacturing equipment located in five different buildings. Each of these pieces of equipment is controlled by fabric filters, water scrubbers, or caustic scrubbers.

$SO_2$ is controlled by caustic scrubbers, which are estimated to achieve 98 percent control. PM is controlled to a minimum efficiency of 95 percent. $NO_X$ has not been emitted by this unit in several years. However, if products were to be manufactured that emitted $NO_X$, they would be controlled by caustic scrubbers and the annual emissions would be limited to 14 tons. Ammonia emissions are controlled by water scrubbers which achieve control efficiencies from 20–60 percent and are limited to annual emissions of 22.4 tons. Given these high control efficiencies and the low total annual emissions allowed, TDEC concluded further control of $SO_2$, $NO_X$, ammonia, and PM would not be reasonable for the batch chemical manufacturing operation.

e. Boiler 24

Boiler 24 burns bituminous coal along with wastewater treatment biosludge and liquid chemical wastes. This unit is used for co-production of steam and electricity in support of manufacturing operations at the Kingsport plant as well as the destruction of biosludge from Eastman's wastewater treatment facility and waste chemicals.

Boiler 24 is equipped with an ESP for PM, and an overfire air system is built into the stoker design for $NO_X$ emission control. Additionally, because this boiler routinely burns a wastewater treatment biosludge that is about 85 percent water, the injection of this material cools the flame temperature and reduces $NO_X$ by approximately 20 percent. No additional $NO_X$ control technology was considered technically feasible. The most cost-effective option for control of $SO_2$ that is technically feasible has a cost-effectiveness of about $3,000–$4,000 per ton.

Eastman Chemical evaluated several $SO_2$ scrubbing options for boiler 24. Boiler 24 is in a different building than boilers 25–29. Therefore, there is no economy of scale with the lime handling system or caustic storage system. Also, there is little available space adjacent to Boiler 24. The absorber would have to be either elevated above the adjacent rail yard or located some distance away with ductwork spanning railroad tracks or a roadway. Similarly, to accommodate a new fabric filter, Eastman Chemical's options include retrofitting the ESP to a fabric filter, or demolishing the existing ESP and building a baghouse in its place. As a result, the most cost-effective option for control of $SO_2$ that is technically feasible has a cost-effectiveness of about $3,000-$4,000 per ton, and would reduce the three-year average of the maximum 98th percentile impact on visibility by approximately 0.1 deciview. TDEC concluded that no additional control of PM, $NO_X$ or $SO_2$ for BART should be required for Boiler 24.

f. EPA Assessment

EPA reviewed the TDEC BART determinations summarized above and agrees with Tennessee's analyses and conclusions for BART for Eastman Chemical, because the analyses were conducted consistent with EPA's BART Guidelines and EPA's *Air Pollution Control Cost Manual,* and reflect a reasonable application of EPA's guidance to this source.

3. TVA Cumberland

a. Background

The TVA Cumberland Fossil Plant has two pulverized-coal-fired steam generators that are considered BART-eligible. Units 1 and 2 are nominally rated at about 1,325 megawatts each.

b. BART Assessment

EGU Units 1 and 2 are both equipped with FGD for $SO_2$ control, SCR systems for controlling $NO_X$, and ESPs to control PM emissions. In addition, TVA Cumberland currently uses hydrated lime injection on both units to mitigate stack opacity.

*(1) $SO_2$ and $NO_X$ BART Review.* The two emission units at TVA Cumberland are also subject to the EPA CAIR. TVA Cumberland has already installed scrubbers and $NO_X$ controls on the emission units at this facility. As discussed in section V.C., Tennessee has opted to rely on CAIR to satisfy BART for $SO_2$ and $NO_X$ for its EGUs subject to CAIR, as allowed by 40 CFR 51.308(e)(4). Thus, TVA Cumberland submitted a BART exemption modeling demonstration for PM emissions only.

*(2) PM BART Review.* TDEC prepared an engineering analysis to determine whether there is a technically and economically feasible control scenario that represents BART for PM. The modeling analysis demonstrated that approximately 96 percent of the visibility impacts at the affected Class I areas can be attributed to condensable $PM_{10}$ emissions (*i.e.,* sulfites ($SO_3$)). Thus, the engineering evaluation for TVA Cumberland focuses on control of $SO_3$/sulfuric acid ($H_2SO_4$) emissions. The only option identified as technically feasible for controlling PM was to reduce additional $SO_3$ emissions at the Cumberland facility with a wet ESP. While application of a wet ESP would reduce visibility impacts, TDEC determined that not only would the

costs associated with retrofitting the facility with a wet ESP be high, but that the ESP would also require large volumes of water to operate it. TDEC estimated that the total capital investment required to install a wet ESP at this facility is approximately $176 million per emission unit, with total annual costs of approximately $50.5 million per year, and a corresponding cost-effectiveness of over $85,000 per ton of PM removed.

TDEC determined that for the TVA Cumberland Fossil Plant, no additional controls for PM will be required. Since the facility is currently well controlled for $SO_2$ and PM, additional control was removed from consideration during this implementation period based on cost and environmental impacts. Consistent with this determination, TDEC has adopted into the SIP and as a title V permit condition a limit of 0.5 lbs $SO_2$ per MMBtu of heat input which can be met with existing controls.

c. EPA Assessment

EPA agrees with Tennessee's analyses and conclusions for BART for the TVA Cumberland facility for PM. EPA notes that while TVA Cumberland presently operates a sorbent injection system on each unit to reduce $SO_3/H_2SO_4$ emissions to seven parts per million by volume, recent advances in this technology can also allow this technology to achieve emission rates comparable to those of a wet ESP at much lower cost. EPA expects Tennessee will evaluate this improved technology further in the next implementation period as part of its reasonable progress assessment. EPA concludes that the analyses conducted for the PM emissions are consistent with EPA's BART Guidelines and EPA's *Air Pollution Control Cost Manual,* and the conclusions reflect a reasonable application of EPA's guidance to this source.

Prior to the CAIR remand by the, EPA believed the State's demonstration that CAIR satisfies BART for $SO_2$ and $NO_X$ for affected EGUs for the first implementation period to be approvable and in accordance with 40 CFR 51.308(e)(4). However, as explained in section IV of this notice, the State's demonstration regarding CAIR and BART for EGUs, and other provisions in this SIP revision, are based on CAIR and thus, the Agency proposes today to issue a limited approval and a limited disapproval of the State's regional haze SIP revision.

4. DuPont-Old Hickory Plant

a. Background

The DuPont-Old Hickory Plant operates two BART-eligible units, boilers 20 and 24. Boiler 20 is a tangentially-fired coal unit with a rated capacity of 445 MMBtu/hr. Boiler 24 is a tangentially fired coal unit with a rated capacity of 315 MMBtu/hr. Boiler 24 is presently operated only during periods of peak demand, which typically occur in the winter, when boiler 20 has insufficient capacity to meet both the process and space heating demands of the facility.

b. BART Assessment

TDEC evaluated nine control strategies for reducing $SO_2$ and seven strategies for reducing $NO_X$ emissions. Based on boiler operating data supplied by DuPont Old Hickory, TDEC concluded that none of the control strategies were appropriate because the strategies did not address the different ways the boilers were operated during the year, depending upon the season. The strategies all overstated the actual impacts of the facility on regional haze. Therefore, instead of requiring the installation of control technology on the boilers, TDEC adopted seasonal operating limits in the DuPont operating permit. These limits constrain the ability of both boilers to operate at the same time, with more stringent limits in the summer when visibility impacts are the greatest. With these new limits, the facility's impacts on visibility near the Mammoth Cave Class I area are less than 0.5 deciview.

The emission limits adopted by TDEC, and incorporated into DuPont's title V operating permit, reduce the combined allowable $SO_2$ emissions from the boilers 20 and 24 by 20,834 lbs per day (lbs/d) in the summer (May through September) to 32,256 lbs/d and by 14,522 lbs/d in the winter (October through April) to 38,568 lbs/d. Therefore, the facility is reducing allowable $NO_X$ emissions from these units by 3,978 lbs/d in the summer to 6,120 lbs/d and by 3,330 lbs/d in the winter to 6,768 lbs/d. CALPUFF modeling based on these operating rates results in a reduction in visibility impact due to the facility's contribution which falls below the 0.5 deciview threshold TDEC applied for determining whether BART-eligible sources are subject to BART.

c. EPA Assessment

EPA agrees with Tennessee's analyses and conclusions for BART for the DuPont-Old Hickory Plant because the analyses were conducted in a manner that is consistent with EPA's BART Guidelines and EPA's *Air Pollution Control Cost Manual.* In addition, the conclusions reflect a reasonable application of EPA's guidance to this source.

5. Enforceability of Limits

The BART determinations for each of the facilities discussed above and the resulting BART emission limits were adopted by Tennessee into the State's regional haze SIP. TDEC incorporated the BART emission limits into state operating permits, and submitted these permits as part the State's regional haze SIP. The BART limits will also be added to the facilities' title V permits according to the procedures established in 40 CFR part 70 or 40 CFR part 71. The BART limits adopted in the SIP are as follows: (a) for Alcoa, a limitation of three percent sulfur in the petroleum coke used in the facility's electrode production operations; (b) for Eastman Chemical, a condition requiring compliance with more stringent $SO_2$ limitation on its boilers (*i.e.,* boilers 25–29 shall comply with the less stringent of the following emission limits: 0.20 lb $SO_2$/MMBtu of heat input or reduce uncontrolled $SO_2$ emissions by 92 percent); (c) for TVA-Cumberland Fossil Plant, emission limits consistent with existing controls (*i.e.,* 0.5 lb $SO_2$/MMBtu of heat input) are denoted as BART with no additional control measures; and (d) for DuPont-Old Hickory, a limit on the total combined daily emissions for boilers 20 and 24, based upon seasonal operating limits that reduce allowable $SO_2$ emissions from the affected units to 32,256 lbs/d in the summer and to 38,568 lbs/d in the winter, and allowable $NO_X$ emissions from these units to 6,120 lbs/d in the summer and to 6,768 lbs/d in the winter.

Tennessee is requiring Eastman Chemical, DuPont-Old Hickory and Alcoa to comply with these BART emission limits as follows: "*No later than five (5) years after publication in the Federal Register of U.S. EPA's approval of Tennessee's Regional Haze State Implementation Plan revision* * * *" to allow time for needed operational changes. The emission limits for TVA-Cumberland are consistent with existing controls and thus, are immediately effective. (For further details of the specific BART requirements, *see* also EPA's TSD to this action, section III.D.4, or section 7.5.2 of the Tennessee SIP Narrative.)

7. RPGs

The RHR at 40 CFR 51.308(d)(1) requires states to establish RPGs for each Class I area within the state

(expressed in deciviews) that provide for reasonable progress towards achieving natural visibility. VISTAS modeled visibility improvements under existing Federal and state regulations for the period 2004–2018, and additional control measures which the VISTAS states planned to implement in the first implementation period. At the time of VISTAS modeling, some of the other states with sources potentially impacting visibility at the Tennessee Class I areas had not yet made final control determinations for BART and/or reasonable progress, and thus, these controls were not included in the modeling submitted by Tennessee. Any controls resulting from those determinations will provide additional emissions reductions and resulting visibility improvement, which give further assurances that Tennessee will achieve its RPGs. This modeling demonstrates that the 2018 base control scenario provides for an improvement in visibility better than the uniform rate of progress for both of the Tennessee Class I areas for the most impaired days over the period of the implementation plan and ensures no degradation in visibility for the least impaired days over the same period.

As shown in Table 6 below, Tennessee's RPGs for the 20 percent worst days provide greater visibility improvement by 2018 than the uniform rate of progress for the State's Class I areas (*i.e.,* 25.79 deciviews in 2018). Also, the RPGs for the 20 percent best days provide greater visibility improvement by 2018 than current best day conditions. The modeling supporting the analysis of these RPGs is consistent with EPA guidance prior to the CAIR remand. The regional haze provisions specify that a state may not adopt a RPG that represents less visibility improvement than is expected to result from other CAA requirements during the implementation period. 40 CFR 51.308(d)(1)(vi). Therefore, the CAIR states with Class I areas, like Tennessee, took into account emission reductions anticipated from CAIR in determining their 2018 RPGs.[17]

TABLE 6—TENNESSEE 2018 RPGS

[In deciviews]

| Class I area | Baseline visibility—20 percent worst days | 2018 RPG—20 percent worst days (improvement from baseline) | Uniform rate of progress at 2018—20 percent worst days | Baseline visibility—20 percent best days | 2018 RPG—20 percent best days (improvement from baseline) |
|---|---|---|---|---|---|
| Great Smoky Mountains National Park | 30.28 | 23.50 (6.78) | 25.79 | 13.58 | 12.11 (1.47) |
| Joyce Kilmer-Slickrock Wilderness Area | 30.28 | 23.50 (6.78) | 25.79 | 13.58 | 12.11 (1.47) |

The RPGs for the Class I areas in Tennessee are based on modeled projections of future conditions that were developed using the best available information at the time the analysis was done. These projections can be expected to change as additional information regarding future conditions becomes available. For example, new sources may be built, existing sources may shut down or modify production in response to changed economic circumstances, and facilities may change their emission characteristics as they install control equipment to comply with new rules. It would be both impractical and resource-intensive to require a state to continually adjust the RPG every time an event affecting these future projections changed.

EPA recognized the problems of a rigid requirement to meet a long-term goal based on modeled projections of future visibility conditions, and addressed the uncertainties associated with RPGs in several ways. EPA made clear in the RHR that the RPG is not a mandatory goal. *See* 64 FR at 35733. At the same time, EPA established a requirement for a midcourse review and, if necessary, correction of the states' regional haze plans. *See* 40 CFR 52.308(g). In particular, the RHR calls for a five year progress review after submittal of the initial regional haze plan. The purpose of this progress review is to assess the effectiveness of emission management strategies in meeting the RPG and to provide an assessment of whether current implementation strategies are sufficient for the state or affected states to meet their RPGs. If a state concludes, based on its assessment, that the RPGs for a Class I area will not be met, the RHR requires the state to take appropriate action. *See* 40 CFR 52.308(h). The nature of the appropriate action will depend on the basis for the state's conclusion that the current strategies are insufficient to meet the RPGs. Tennessee specifically committed to follow this process in the long-term strategy portion of its submittal.

EPA anticipates that the Transport Rule will result in similar or better improvements in visibility than predicted from CAIR. Because the Transport Rule is not final, however, EPA does not know at this time how it will affect any individual Class I area and cannot accurately model future conditions based on its implementation. By the time Tennessee is required to undertake its five year progress review, however, it is likely that the impact of the Transport Rule and other measures can be meaningfully assessed. If, in particular Class I areas, the Transport Rule does not provide similar or greater benefits than CAIR and meeting the RPGs at one of its Class I Federal areas is in jeopardy, the State will be required to address this circumstance in its five year review. Accordingly, EPA proposes to approve Tennessee's RPGs for the Great Smoky Mountains National Park and the Joyce Kilmer-Slickrock Wilderness Area.

### *D. Coordination of RAVI and Regional Haze Requirements*

EPA's visibility regulations direct states to coordinate their RAVI LTS and monitoring provisions with those for regional haze, as explained in sections III.F and III.G. of this action. Under EPA's RAVI regulations, the RAVI portion of a state SIP must address any integral vistas identified by the FLMs pursuant to 40 CFR 51.304. An *integral vista* is defined in 40 CFR 51.301 as a "view perceived from within the mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the mandatory Class I Federal area." Visibility in any mandatory Class I Federal area includes any integral vista associated with that

[17] Many of the CAIR states without Class I areas similarly relied on CAIR emission reductions within the state to address some or all of their contribution to visibility impairment in other states' Class I areas, which the impacted Class I area state(s) used to set the RPGs for their Class I area(s). Certain surrounding non-CAIR states also relied on reductions due to CAIR in nearby states to develop their regional haze SIP submittals.

area. The FLMs did not identify any integral vistas in Tennessee. In addition, neither Class I area in Tennessee is experiencing RAVI, nor are any of its sources affected by the RAVI provisions. Thus, the April 4, 2008, Tennessee regional haze SIP submittal does not explicitly address the two requirements regarding coordination of the regional haze with the RAVI LTS and monitoring provisions. However, Tennessee previously made a commitment to address RAVI should the FLM certify visibility impairment from an individual source.[18] EPA finds that this regional haze submittal appropriately supplements and augments Tennessee's RAVI visibility provisions to address regional haze by updating the monitoring and LTS provisions as summarized below in this section.

In the April 4, 2008, submittal, TDEC updated its visibility monitoring program and developed a LTS to address regional haze. Also in this submittal, TDEC affirmed its commitment to complete items required in the future under EPA's RHR. Specifically, TDEC made a commitment to review and revise its regional haze implementation plan and submit a plan revision to EPA by July 31, 2018, and every 10 years thereafter. *See* 40 CFR 51.308(f). In accordance with the requirements listed in 40 CFR 51.308(g) of EPA's regional haze regulations and 40 CFR 51.306(c) of the RAVI LTS regulations, TDEC made a commitment to submit a report to EPA on progress towards the RPGs for each mandatory Class I area located within Tennessee, and in each mandatory Class I area located outside Tennessee which may be affected by emissions from within Tennessee. The progress report is required to be in the form of a SIP revision and is due every five years following the initial submittal of the regional haze SIP. Consistent with EPA's monitoring regulations for RAVI and regional haze, Tennessee will rely on the IMPROVE network for compliance purposes, in addition to any RAVI monitoring that may be needed in the future. *See* 40 CFR 51.305, 40 CFR 51.308(d)(4). Also, the Tennessee NSR rules, previously approved in the State's SIP, continue to provide a framework for review and coordination with the FLMs on new sources which may have an adverse impact on visibility in either form (*i.e.,* RAVI and/or regional haze) in any Class I Federal area. The Tennessee SIP contains a plan addressing the associated monitoring and reporting requirements. *See* 62 FR 35681 (July 2, 1997); 40 CFR 52.2239(c)(147). Although EPA's approvals of these rules neglected to remove the Federally promulgated provisions set forth in 40 CFR 52.2234, EPA corrected this omission in a separate rulemaking on April 21, 2010 (75 FR 20783).

[18] Tennessee submitted its visibility SIP revisions addressing RAVI on February 9, 1993, and December 19, 1994, which EPA approved on July 2, 1997 (62 FR 35681). Tennessee also submitted a SIP revision addressing PSD/NSR visibility provisions on January 17, 1995, that EPA approved on July 18, 1996 (61 FR 37387).

*E. Monitoring Strategy and Other Implementation Plan Requirements*

The primary monitoring network for regional haze in Tennessee is the IMPROVE network. As discussed in section V.B.2. of this notice, there is currently one IMPROVE site in Tennessee, which serves as the monitoring site for both the Great Smoky Mountains National Park and Joyce Kilmer-Slickrock Wilderness Area, both of which lie partly in Tennessee and partly in North Carolina.

IMPROVE monitoring data from 2000–2004 serves as the baseline for the regional haze program, and is relied upon in the April 4, 2008, regional haze submittal. In the submittal, Tennessee states its intention to rely on the IMPROVE network for complying with the regional haze monitoring requirement in EPA's RHR for the current and future regional haze implementation periods.

Data produced by the IMPROVE monitoring network will be used nearly continuously for preparing the five-year progress reports and the 10-year SIP revisions, each of which relies on analysis of the preceding five years of data. The Visibility Information Exchange Web System (VIEWS) Web site has been maintained by VISTAS and the other RPOs to provide ready access to the IMPROVE data and data analysis tools. Tennessee is encouraging VISTAS and the other RPOs to maintain the VIEWS or a similar data management system to facilitate analysis of the IMPROVE data.

In addition to the IMPROVE measurements, there is long-term limited monitoring by FLMs which provides additional insight into progress toward regional haze goals. Such measurements include:

- Web cameras operated by the National Park Service at Look Rock, Tennessee at the Great Smoky Mountains National Park
- An integrating nephelometer for continuously measuring light scattering, operated by the National Park Service at Look Rock, Tennessee
- A Tapered Element Oscillating Microbalance for continuously measuring $PM_{2.5}$ mass concentration, operated by the National Park Service at Look Rock, Tennessee.

In addition, Tennessee and the local air agencies in the State operate a comprehensive $PM_{2.5}$ network of filter-based Federal reference method monitors, continuous mass monitors, filter based speciated monitors and the continuous speciated monitors.

*F. Consultation With States and FLMs*

1. Consultation With Other States

In December 2006 and in May 2007, the State Air Directors from the VISTAS states held formal interstate consultation meetings. The purpose of the meetings was to discuss the methodology proposed by VISTAS for identifying sources to evaluate for reasonable progress. The states invited FLM and EPA representatives to participate and to provide additional feedback. The Directors discussed the results of analyses showing contributions to visibility impairment from states to each of the Class I areas in the VISTAS region.

TDEC has evaluated the impact of Tennessee sources on Class I areas in neighboring states. The state in which a Class I area is located is responsible for determining which sources, both inside and outside of that state, to evaluate for reasonable progress controls. Because many of these states had not yet defined their criteria for identifying sources to evaluate for reasonable progress, Tennessee applied its AOI methodology to identify sources in the State that have emission units with impacts large enough to potentially warrant further evaluation and analysis. The State identified 13 emission units in Tennessee with a contribution of one percent or more to the visibility impairment at the following four Class I areas in three neighboring states: Cohutta Wilderness area, Georgia; Mammoth Cave National Park, Kentucky; and Linville Gorge and Shining Rock Wilderness areas, North Carolina. Based on an evaluation of the four reasonable progress statutory factors, Tennessee determined that there are no additional control measures for these Tennessee emission units that would be reasonable to implement to mitigate visibility impacts in Class I areas in these neighboring states. TDEC has consulted with these states regarding its reasonable progress control evaluations showing no cost-effective controls available for those emission units in Tennessee contributing at least one percent to visibility impairment at Class I areas in the states. Additionally, TDEC sent letters to the other states in the VISTAS region documenting its

analysis using the State's AOI methodology that no $SO_2$ emission units in Tennessee contribute at least one percent to the visibility impairment at the Class I areas in those states. No adverse comments were received from the other VISTAS states. The documentation for these formal consultations is provided in Appendix J of Tennessee's SIP.

Regarding the impact of sources outside of the State on Class I areas in Tennessee, TDEC sent letters to Alabama, Arkansas, Georgia, Kentucky, Missouri, Mississippi, North Carolina, South Carolina, Virginia and West Virginia pertaining to emission units within these states that the State believes contributed one percent or higher to visibility impairment in the Tennessee Class I areas. At that time, these neighboring states were still in the process of evaluating BART and reasonable progress for their sources. Any controls resulting from those determinations will provide additional emissions reductions and resulting visibility improvement, which gives further assurances that Tennessee will achieve its RPGs. Therefore, to be conservative, Tennessee opted not to rely on any additional emission reductions from sources located outside the State's boundaries beyond those already identified in the State's regional haze SIP submittal and as discussed in section V.C.1. (Federal and state controls in place by 2018) of this action.

Tennessee received letters from the Mid-Atlantic/Northeast Visibility Union (MANE–VU) RPO States of Maine, New Jersey, New Hampshire, and Vermont in the spring of 2007, stating that based on MANE–VU's analysis of 2002 emissions data, Tennessee contributed to visibility impairment to Class I areas in those states. The MANE–VU states identified five TVA EGU stacks [19] in Tennessee that they would like to see controlled to 90 percent efficiency. They also requested a control strategy to provide a 28 percent reduction in $SO_2$ emissions from sources other than EGUs that would be equivalent to MANE–VU's proposed low sulfur fuel oil strategy. Working with Tennessee, TVA has controlled or is expecting to control three of the EGUs, (Kingston 1 & 2 and John Sevier), by the end of 2011. The remaining two EGUs, (Gallatin and Johnsonville), have been discussed with TVA. TVA has indicated that it will either repower or shut down the Johnsonville facility by the next implementation period in 2018 and will ultimately control Gallatin if needed to meet its CAIR obligations or more stringent controls to meet increasingly stringent NAAQS. TDEC evaluated both EGU and non-EGU sources to determine what controls are reasonable in this first implementation period. TDEC believes that these emissions reductions satisfy MANE–VU's request.

EPA finds that Tennessee has adequately addressed the consultation requirements in the RHR and appropriately documented its consultation with other states in its SIP submittal.

2. Consultation With the FLMs

Through the VISTAS RPO, Tennessee and the nine other member states worked extensively with the FLMs from the U.S. Departments of the Interior and Agriculture to develop technical analyses that support the regional haze SIPs for the VISTAS states. The proposed regional haze plan for Tennessee was out for public comment and FLM discussions in the November to December 2007 period. Tennessee subsequently modified the plan to address comments received on this initial version and reissued it for a second round of public participation in the February to March 2008 period. The FLMs submitted no significant adverse comments regarding the State's regional haze SIP. The FLMs requested that Tennessee add more details to support the State's conclusions. Additionally, some of the FLM staff had difficulty in navigating through the compact disc of electronic support materials. Improvements were made to improve navigability. To address the requirement for continuing consultation procedures with the FLMs under 40 CFR 51.308(i)(4), TDEC made a commitment in the SIP to ongoing consultation with the FLMs on regional haze issues throughout implementation of its plan, including annual discussions. TDEC also affirms in the SIP that FLM consultation is required for those sources subject to the State's NSR regulations.

*G. Periodic SIP Revisions and Five-Year Progress Reports*

As also summarized in section V.D. of this action, consistent with 40 CFR 51.308(g), TDEC affirmed its commitment to submitting a progress report in the form of a SIP revision to EPA every five years following this initial submittal of the Tennessee regional haze SIP. The report will evaluate the progress made towards the RPGs for each mandatory Class I area located within Tennessee and in each mandatory Class I area located outside Tennessee which may be affected by emissions from within Tennessee. Tennessee also offered recommendations for several technical improvements that, as funding allows, can support the State's next LTS. These recommendations are discussed in detail in the Tennessee submittal in Appendix K.

If another state's regional haze SIP identifies that Tennessee's SIP needs to be supplemented or modified, and if, after appropriate consultation Tennessee agrees, today's action may be revisited, or additional information and/or changes will be addressed in the five-year progress report SIP revision.

**VI. What action is EPA proposing to take?**

EPA is proposing a limited approval and a limited disapproval of a revision to the Tennessee SIP submitted by the State of Tennessee on April 4, 2008, as meeting some of the applicable regional haze requirements as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300–308, as described previously in this action.

**VII. Statutory and Executive Order Reviews**

*A. Executive Order 12866, Regulatory Planning and Review*

The Office of Management and Budget (OMB) has exempted this regulatory action from Executive Order 12866, entitled "Regulatory Planning and Review."

*B. Paperwork Reduction Act*

Under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.,* OMB must approve all "collections of information" by EPA. The Act defines "collection of information" as a requirement for answers to * * * identical reporting or recordkeeping requirements imposed on ten or more persons * * *. 44 U.S.C. 3502(3)(A). The Paperwork Reduction Act does not apply to this action.

*C. Regulatory Flexibility Act (RFA)*

The RFA generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions.

This rule will not have a significant impact on a substantial number of small entities because SIP approvals under section 110 and subchapter I, part D of the CAA do not create any new

[19] These five TVA EGUs have been addressed by the April 14, 2011, CAA settlement discussed in V.C.5.B.1.

requirements but simply approve requirements that the State is already imposing. Therefore, because the Federal SIP approval does not create any new requirements, I certify that this action will not have a significant economic impact on a substantial number of small entities.

Moreover, due to the nature of the Federal-state relationship under the CAA, preparation of flexibility analysis would constitute Federal inquiry into the economic reasonableness of state action. The CAA forbids EPA to base its actions concerning SIPs on such grounds. *Union Electric Co.,* v. *EPA,* 427 U.S. 246, 255–66 (1976); 42 U.S.C. 7410(a)(2).

*D. Unfunded Mandates Reform Act*

Under sections 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act"), signed into law on March 22, 1995, EPA must prepare a budgetary impact statement to accompany any proposed or final rule that includes a Federal mandate that may result in estimated costs to State, local, or tribal governments in the aggregate; or to the private sector, of $100 million or more. Under section 205, EPA must select the most cost-effective and least burdensome alternative that achieves the objectives of the rule and is consistent with statutory requirements. Section 203 requires EPA to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the rule.

EPA has determined that today's proposal does not include a Federal mandate that may result in estimated costs of $100 million or more to either State, local, or tribal governments in the aggregate, or to the private sector. This Federal action proposes to approve pre-existing requirements under State or local law, and imposes no new requirements. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, result from this action.

*E. Executive Order 13132, Federalism*

*Federalism* (64 FR 43255, August 10, 1999) revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or EPA consults with state and local officials early in the process of developing the proposed regulation. EPA also may not issue a regulation that has federalism implications and that preempts state law unless the Agency consults with state and local officials early in the process of developing the proposed regulation.

This rule will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, because it merely approves a state rule implementing a Federal standard, and does not alter the relationship or the distribution of power and responsibilities established in the CAA. Thus, the requirements of section 6 of the Executive Order do not apply to this rule.

*F. Executive Order 13175, Coordination With Indian Tribal Governments*

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." This proposed rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rule. EPA specifically solicits additional comment on this proposed rule from tribal officials.

*G. Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks*

*Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This rule is not subject to Executive Order 13045 because it does not involve decisions intended to mitigate environmental health or safety risks.

*H. Executive Order 13211, Actions That Significantly Affect Energy Supply, Distribution, or Use*

This rule is not subject to Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

*I. National Technology Transfer and Advancement Act*

Section 12 of the National Technology Transfer and Advancement Act (NTTAA) of 1995 requires Federal agencies to evaluate existing technical standards when developing a new regulation. To comply with NTTAA, EPA must consider and use "voluntary consensus standards" (VCS) if available and applicable when developing programs and policies unless doing so would be inconsistent with applicable law or otherwise impractical.

EPA believes that VCS are inapplicable to this action. Today's action does not require the public to perform activities conducive to the use of VCS.

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Intergovernmental relations, Nitrogen oxides, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

**Authority:** 42 U.S.C. 7401 *et seq.*

Dated: May 31, 2011.

**A. Stanley Meiburg,**

*Acting Regional Administrator, Region 4.*

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