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40 CFR Part 52
Approval and Promulgation of Implementation Plans; Texas and Oklahoma; Regional Haze State Implementation Plans; Interstate Transport State Implementation Plan to Address Pollution Affecting Visibility and Regional Haze; Federal Implementation Plan for Regional Haze and Interstate Transport of Pollution Affecting Visibility; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R06–OAR–2014–0754; FRL–9920–11–Region–6]

Approval and Promulgation of Implementation Plans; Texas and Oklahoma; Regional Haze State Implementation Plans; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze; Federal Implementation Plan for Regional Haze and Interstate Transport of Pollution Affecting Visibility

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to partially approve and partially disapprove a revision to the Texas State Implementation Plan (SIP) received from the State of Texas on March 31, 2009, that addresses regional haze for the first planning period from 2008 through 2018. This SIP revision was submitted to address the requirements of the Clean Air Act (CAA) and EPA's rules that require states to prevent any future, and remedy any existing, manmade impairment of visibility to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas. The EPA is proposing to partially approve this SIP revision as meeting certain requirements of the regional haze program, including the majority of the requirement to procure and install the Best Available Retrofit Technology (BART) at certain categories of existing major stationary sources built between 1962 and 1977. The EPA is also proposing to partially disapprove the SIP revision for not adequately addressing other requirements of the regional haze program related to reasonable progress, the long-term strategy, and the calculation of natural visibility conditions. The EPA is also proposing to disapprove SIP revisions submitted by Texas for the purpose of addressing the requirements of the CAA regarding interference with other states' programs for visibility protection for the 1997 fine particulate matter ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS), the 1997 ozone NAAQS, the 2006 $PM_{2.5}$ NAAQS, the 2008 ozone NAAQS, the 2010 Nitrogen Dioxide (NO_2) NAAQS, and the 2010 Sulfur Dioxide (SO_2) NAAQS.

Finally, the EPA is proposing to partially disapprove a revision to the Oklahoma SIP submitted in February 19, 2010, that addresses regional haze for the first planning period. Specifically, EPA is proposing to disapprove Oklahoma's Reasonable Progress Goals (RPGs) for the Wichita Mountains Class I area.

The EPA is proposing a Federal Implementation Plan (FIP) for each Texas and Oklahoma to remedy certain deficiencies in the SIP. The proposed FIP would implement SO_2 emission limits on fifteen Texas sources as part of a long-term strategy for making reasonable progress at three Class I areas in Texas and Oklahoma, sets new RPGs for the Big Bend, the Guadalupe Mountains, and Wichita Mountains Class I areas, and substitutes Texas' reliance on the Clean Air Interstate Rule (CAIR) to satisfy BART requirements at its EGUs with reliance on CAIR's successor, the Cross-State Air Pollution Rule (CSAPR). Our proposed FIP for Oklahoma does not establish any additional requirements on sources within Oklahoma. The EPA is taking this action under the CAA.

Comments must be received on or before February 17, 2015.

Public Hearings. EPA is holding open houses—for the purpose of providing additional information and informal discussion for our proposal, and public hearings—to accept oral comments into the record, as follows:

Date: Tuesday, January 13, 2015.
Time: Open House: 1:30 p.m.–3:30 p.m.
Public hearing: 4:00 p.m.–8:00 p.m. (including short break).
Location: Eastview Campus, Austin Community College, Building 8500, Room 8500, 3401 Webberville Road, Austin, Texas 78702.

Date: Thursday, January 15, 2015.
Time: Open House: 2:30 p.m.–4:30 p.m.
Public hearing: 5:00 p.m.–7:00 p.m.
Location: Metro Technology Centers, Springlake Campus, Business Conference Center Meeting, Room H, 1900 Springlake Drive, Oklahoma City, Oklahoma 73111.

The public hearings will provide interested parties the opportunity to present information and opinions to EPA concerning our proposal. Interested parties may also submit written comments, as discussed in the proposal. Written statements and supporting information submitted during the comment period will be considered with the same weight as any oral comments and supporting information presented at the public hearing. We will not respond to comments during the public hearings. When we publish our final action, we will provide written responses to all significant oral and written comments received on our proposal. To provide opportunities for questions and discussion, we will hold an open house prior to each public hearing. During the open house, EPA staff will be available to informally answer questions on our proposed action. Any comments made to EPA staff during an open house must still be provided orally during one of the public hearings, or formally in writing within 30 days after completion of the hearings, in order to be considered in the record.

At the public hearings, the hearing officer may limit the time available for each commenter to address the proposal to three minutes or less if the hearing officer determines it to be appropriate. We will not be providing equipment for commenters to show overhead slides or make computerized slide presentations. Any person may provide written or oral comments and data pertaining to our proposal at the public hearings. Verbatim English language transcripts of the hearing and written statements will be included in the rulemaking docket.

ADDRESSES: Submit your comments, identified by Docket No. EPA–R06–OAR–2014–0754, by one of the following methods:

- Federal e-Rulemaking Portal: *http://www.regulations.gov*. Follow the online instructions for submitting comments.
- Email: *R6_TXOKRegionalHaze@epa.gov*.
- Mail: Mr. Guy Donaldson, Chief, Air Planning Section (6PD–L), Environmental Protection Agency, 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202–2733.
- Hand or Courier Delivery: Mr. Guy Donaldson, Chief, Air Planning Section (6PD–L), Environmental Protection Agency, 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202–2733. Such deliveries are accepted only between the hours of 8 a.m. and 4 p.m. weekdays, and not on legal holidays. Special arrangements should be made for deliveries of boxed information.
- Fax: Mr. Guy Donaldson, Chief, Air Planning Section (6PD–L), at fax number 214–665–7263.

Instructions: Direct your comments to Docket No. EPA–R06–OAR–2014–0754. Our policy is that all comments received will be included in the public docket without change and may be made available online at *www.regulations.gov*, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *www.regulations.gov* or email. The *www.regulations.gov* Web site is an

''anonymous access'' system, which means we will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to us without going through *www.regulations.gov* your email 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, we recommend 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 we cannot read your comment due to technical difficulties and cannot contact you for clarification, we may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the docket are listed in the *www.regulations.gov* index. Although listed in the index, some information is not publicly available, *e.g.,* CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically at *www.regulations.gov* or in hard copy at the Air Planning Section (6PD–L), Environmental Protection Agency, 1445 Ross Avenue, Suite 700, Dallas, Texas 75202–2733. The file will be made available by appointment for public inspection in the Region 6 FOIA Review Room between the hours of 8:30 a.m. and 4:30 p.m. weekdays except for legal holidays. Contact the person listed in the **FOR FURTHER INFORMATION CONTACT** paragraph below or Mr. Bill Deese at 214–665–7253 to make an appointment. If possible, please make the appointment at least two working days in advance of your visit. There will be a 15 cent per page fee for making photocopies of documents. On the day of the visit, please check in at our Region 6 reception area at 1445 Ross Avenue, Suite 700, Dallas, Texas.

The Texas regional haze SIP is available online at: *https://www.tceq.texas.gov/airquality/sip/bart/haze_sip.html*. It is also available for public inspection during official business hours, by appointment, at the Texas Commission on Environmental Quality, Office of Air Quality, 12124 Park 35 Circle, Austin, Texas 78753.

The Oklahoma regional haze SIP is available online at: *http://www.deq.state.ok.us/AQDnew/rulesandplanning/Regional_Haze/SIP/index.htm*. It is also available for public inspection during official business hours, by appointment, at the Oklahoma Department of Environmental Quality, Air Quality Division, 707 North Robinson Avenue, Oklahoma City, OK 73102.

FOR FURTHER INFORMATION CONTACT: Joe Kordzi, Air Planning Section (6PD–L), Environmental Protection Agency, Region 6, 1445 Ross Avenue, Suite 700, Dallas, Texas 75202–2733, telephone 214–665–7186; fax number 214–665–7263; email address *Kordzi.joe@epa.gov*.

SUPPLEMENTARY INFORMATION: Throughout this document wherever ''we,'' ''us,'' or ''our'' is used, we mean the EPA.

Table of Contents

I. Background

A. Regional Haze

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles ($PM_{2.5}$) (*e.g.,* sulfates, nitrates, organic carbon, elemental carbon, and soil dust) and their precursors. Fine particle precursors react in the atmosphere to form $PM_{2.5}$, which also impair visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. $PM_{2.5}$ also can 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 [1] in many Class I Federal areas [2] (*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.[3] 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.[4]

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 which impairment results from man-made air pollution.'' [5] The terms ''impairment of visibility'' and ''visibility impairment'' are defined in the CAA to include a reduction in visual range and atmospheric discoloration.[6] Section 169A(g)(6). In 1980, we promulgated regulations to address visibility impairment in Class I areas that is ''reasonably attributable'' to a single source or small group of sources, *i.e.,* ''reasonably attributable visibility impairment'' (RAVI).[7] These regulations represented the first phase in addressing visibility impairment. We 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 improved.

Congress added Section 169B to the CAA in 1990 to address regional haze issues, and we promulgated regulations addressing regional haze in 1999.[8] The Regional Haze Rule revised the existing visibility regulations to integrate into the regulations 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 our visibility protection regulations at 40 CFR 51.300–309. For a detailed description of those requirements, please refer to Section IV of our previous action on the Oklahoma regional haze SIP.[9] The requirement to submit a regional haze SIP applies to all 50 states, the District of Columbia, and the Virgin Islands. States were required to submit the first SIP addressing regional haze visibility impairment for the first ten year planning period no later than December 17, 2007.[10] States are required to submit subsequent SIPs every ten years leading up to 2064, when the national goal of a return to natural visibility at all Class I areas is scheduled to be realized.

We have acted on all of the states' regional haze SIPs for the first planning period except for the Texas regional haze SIP and certain portions of the Oklahoma regional haze SIP. Previously, we proposed a partial approval and partial disapproval of, and a FIP for portions of the Oklahoma SIP on March 22, 2011. We finalized that action on December 28, 2011.[11] However, for the reasons we explain below, we did not complete our review of Oklahoma's regional haze SIP. Due to the special interrelationship of the visibility impairing transport of pollution between Texas and Oklahoma, we are proposing action on the remaining portions of the Oklahoma regional haze SIP and all portions of the Texas regional haze SIP simultaneously.

B. Interstate Transport of Air Pollutants and Visibility Protection

Section 110(a)(2)(D)(i)(II) of the CAA requires that states have a SIP, or submit a SIP revision, containing provisions prohibiting emissions from within a state from interfering with measures required to be included in the implementation plan for any other state under the provisions of Part C of the CAA protecting visibility. Because of the impacts on visibility from the interstate transport of pollutants, we interpret this ''good neighbor'' provision in Section 110 of CAA as requiring states to include in their SIPs measures to prohibit emissions that would *interfere with the reasonable progress goals set to protect Class I areas in other states. This is* consistent with the requirements in the regional haze program which explicitly require each state to address its share of the emission reductions needed to meet the reasonable progress goals for surrounding Class I areas.[12]

SIPs addressing the good neighbor provisions of Section 110(a)(2)(D)(i)(II) of the CAA are due to us within three years after the promulgation of a new or revised NAAQS (or within such shorter period as we may prescribe).[13] In this action, we propose to take action on SIP

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

[2] Areas designated as mandatory Class I Federal areas (or Class I areas for short) 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* CAA section 162(a) below. 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. CAA section 162(a). Although States and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to ''mandatory Class I Federal areas.'' Each mandatory Class I Federal area is the responsibility of a ''Federal Land Manager'' (FLM). *See* CAA section 302(i).

We use the term, ''Class I Federal Area'' and ''Class I Area'' interchangeably throughout this document.

[3] 64 FR 35714, 35715 (July 1, 1999).

[4] *Id.*

[5] CAA section 169A(a)(1).

[6] *Id.*

[7] 45 FR 80084 (December 2, 1980).

[8] 64 FR 35714 (July 1, 1999), codified at 40 CFR part 51, subpart P.

[9] 76 FR 16168, 16172–75 (Mar. 22, 2011).

[10] 40 CFR 51.308(b).

[11] Proposal: 76 FR 16168 (March 22, 2011). Final: 76 FR 81728 (December 28, 2011).

[12] 64 FR 35714, 35735 (July 1, 1999).

[13] CAA Section 110(a)(1).

revisions addressing these good neighbor requirements that were submitted by Texas following promulgation of the following new or revised NAAQS: (1) 1997 8-hour ozone, (2) 1997 $PM_{2.5}$ (annual and 24 hour), (3) 2006 $PM_{2.5}$ (24-hour), (4) 2008 8-hour ozone, (5) 2010 NO_2 and (6) 2010 1-hour SO_2.

In 2005, we made a finding that a number of states, including Texas, did not submit SIPs to address the interstate transport of air pollution and visibility protection for the 1997 ozone and $PM_{2.5}$ NAAQS.[14] Pursuant to Section 110(c)(1) of the CAA, this finding started a 24 month time period for us to promulgate a FIP to address interstate transport of air pollution and visibility protection, unless a SIP was approved during that time period.

While Texas did not make a timely SIP submittal to address the interstate transport of air pollution and visibility protection for the 1997 ozone and $PM_{2.5}$ NAAQS, Texas later made SIP submittals for all new or revised NAAQS. Specifically, Texas made the following submittals for new or revised NAAQS that pertain to this action:

- April 4, 2008: 1997 8-hour Ozone, 1997 $PM_{2.5}$ (24-hour and annual)
- May 1, 2008: 1997 8-hour Ozone, 1997 $PM_{2.5}$ (24-hour and annual)
- November 23, 2009: 2006 24-hour $PM_{2.5}$
- December 7, 2012: 2010 NO_2
- December 13, 2012: 2008 8-hour Ozone
- May 6, 2013: 2010 1-hour SO_2 (Primary NAAQS)

We previously acted on portions of the April 4, 2008, and November 23, 2009, Texas SIP submittals that addressed other ''infrastructure'' elements specified in CAA Section 110(a)(2), necessary to implement, maintain, and enforce the 1997 8-hour ozone and 1997 and 2006 $PM_{2.5}$ NAAQS.[15] Texas' submittals addressing transport for the ozone, $PM_{2.5}$, NO_2 and SO_2 NAAQS may be accessed through the *www.regulations.gov* Web site (Docket No. EPA–R06–OAR–2014–0754). Texas indicated in the submittals that its regional haze SIP fulfilled its obligation for addressing emissions that would interfere with measures required to be included in the SIP for any other state to protect visibility. Because of our 2005 finding that Texas did not make a timely SIP submission for the 1997 ozone and $PM_{2.5}$ NAAQS and the expiration of the 24-month FIP clock, we are obligated to either approve the SIP or, disapprove the SIP and promulgate a FIP to address interstate transport of air pollution and visibility protection for Texas emissions for the 1997 ozone and $PM_{2.5}$ NAAQS. We believe our proposal addresses this obligation.

C. Our Prior Limited Disapproval of Texas' Regional Haze SIP Concerning CAIR

In 2005, we promulgated CAIR, which required 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 1997 NAAQS for ozone and $PM_{2.5}$.[16] Also in 2005, we determined that states could rely on CAIR to meet certain requirements of the Regional Haze Rule.[17] In particular, we amended our regulations to provide that states participating in the CAIR cap-and-trade programs under 40 CFR part 96 pursuant to an EPA-approved CAIR SIP or states that remain subject to a 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.[18] A number of states, including Texas, relied on CAIR in their regional haze SIPs as an alternative to BART for EGU emissions of SO_2 and NO_X and as an element of their long-term strategy.

Following our determination in 2005 that states could rely on CAIR in their regional haze SIPs, the D.C. Circuit Court of Appeals ruled on several petitions challenging CAIR and remanded CAIR to us.[19] We issued a new rule in 2011 to replace CAIR.[20] The Cross-State Air Pollution Rule (CSAPR), which replaced CAIR, also requires a number of states to improve air quality by reducing SO_2 and NO_X emissions that cross state lines and significantly contribute to ozone and/or fine particulate pollution in other states. We amended our regulations in 2012 to allow CSAPR to serve as an alternative to SO_2 and NO_X BART for EGUs in states in the CSAPR region.[21] In that same rulemaking, we also finalized a limited disapproval of the regional haze SIPs of 14 states, including Texas. Although at the time that we completed our limited disapproval of these SIPs, CAIR remained in place pursuant to an order of the D.C. Circuit, we explained that as CAIR had been remanded, it remained in place temporarily. We also finalized FIPs replacing reliance on CAIR with reliance on CSAPR as an alternative to BART for several states but not for Texas.[22] We more fully explained the basis for our limited disapproval in that rulemaking and are not taking comment on our limited disapproval of Texas' regional haze SIP in this action.

II. Why are we acting on the Texas and Oklahoma Regional Haze SIPs simultaneously?

As we explained in our 2011 proposed rulemaking on the Oklahoma regional haze SIP,[23] we did not take action on Oklahoma's RPGs for the Wichita Mountains at that time because we first had to evaluate and act upon the regional haze SIP submitted by Texas. To properly assess whether Oklahoma had satisfied the reasonable progress requirements of Section 51.308(d)(1), which include the requirement to set RPGs that take into account the visibility improvement that will result from reasonable controls in upwind states, we concluded that we had to review and evaluate Texas' regional haze SIP before proposing action on Oklahoma's RPGs.

In our Regional Haze Rule, we stated that ''successful implementation of the regional haze program will involve long-term regional coordination among States,'' and that ''States will need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction to air quality in another.'' [24] We also noted that RPGs and Long-Term Strategies (long-term strategies) were intricately linked. The Regional Haze Rule requires each state submitting a long-term strategy to (1) consult with other states to develop coordinated emission strategies; (2) demonstrate that the SIP includes all measures necessary for the state to obtain its share of the emission reductions needed to meet the RPGs for the Class I areas it affects; (3) document the technical basis the state used to determine its apportionment of emission reduction obligations for the Class I areas it affects; (4) consider all anthropogenic sources of emissions; and (5) consider a list of seven other enumerated factors.[25]

As detailed within this proposal and within our Technical Support Documents (TSDs), the Texas and Oklahoma regional haze SIPs reveal that sources in Texas not only significantly impact visibility in the Wichita Mountains National Wildlife Refuge in

[14] 70 FR 21147 (April 25, 2005).

[15] 76 FR 81371 (December 28, 2011).

[16] 70 FR 25162 (May 12, 2005).

[17] 70 FR 39104 (July 6, 2005).

[18] 40 CFR 51.308(e)(4) (Aug. 6, 2012).

[19] *North Carolina* v. *EPA,* 531 F3d 896; modified by 550 F.3d 1176 (D.C. Cir. 2008).

[20] 76 FR 48208 (Aug. 8, 2011).

[21] 77 FR 33642 (June 7, 2012).

[22] 77 FR 33642, 33643. (June 7, 2012)

[23] 76 FR 16168 (March 22, 2011).

[24] 64 FR 35714, 35728 (July 1, 1999).

[25] 64 FR 35735 (July 1, 1999).

Oklahoma, but that the impacts from Texas point sources are shown to be several times greater than the impact from Oklahoma's own point sources. Additionally, information in the Oklahoma Regional Haze SIP demonstrates that even if every source in Oklahoma were fully controlled, the Wichita Mountains would not meet the Uniform Rate of Progress (URP) in 2018 absent additional emission reductions from upwind sources, principally Texas. As detailed in the Texas SIP, however, Texas determined that no additional controls at its sources were warranted during the first planning period to help achieve reasonable progress at the Wichita Mountains, and Oklahoma did not request any additional reductions from Texas. As a result, Oklahoma set RPGs for the Wichita Mountains that do not reflect any reasonable emission reductions from Texas beyond those that will be achieved by compliance with other requirements of the CAA.

This situation demonstrates the difficulties states face when working to address air pollution problems that do not respect state borders. It also highlights the respective roles and responsibilities of upwind and downwind states in addressing visibility impairment in national parks and wilderness areas. In order to address these intricately intertwined issues between Oklahoma and Texas, it is appropriate to review them simultaneously.

III. Summary of Our Proposed Actions

A. Texas

We propose to partially approve and partially disapprove the regional haze SIP that Texas submitted to us on March 31, 2009, to meet the requirements of Section 308 of the Regional Haze Rule. Specifically, we propose to take action on Texas' BART determinations, RPGs for the Big Bend and Guadalupe Mountains Class I areas, and long-term strategy for making reasonable progress at all Class I areas impacted by emissions from Texas sources. We are also proposing to take action on the requirements that support these major components of the state's plan, including Texas' calculations of baseline and natural visibility conditions, calculation of the URP, identification of anthropogenic sources of visibility impairment within the state, and Texas' monitoring strategy. We take very seriously a decision to propose disapproval of provisions in Texas' plan, as we believe that it is preferable that all emission control requirements needed to protect visibility be implemented through the Texas SIP. However, in order to approve the state's plan, we must be able to find that the state's plan is consistent with the requirements of the CAA. Our proposed actions are summarized as follows:

BART: We propose to approve Texas' determination of which sources in the state are BART-eligible. We also propose to approve Texas' determination that none of the state's BART-eligible non-EGUs are subject to the BART requirements because they are not reasonably anticipated to cause or contribute to visibility impairment in any Class I areas. We propose to approve the provisions in Texas' BART rules at 30 Tex. Admin. Code (TAC) 116.1500—116.1540, with the exception of 30 TAC 116.1510(d), which relies on CAIR. With respect to EGUs, we previously issued a limited disapproval of the Texas regional haze SIP due to Texas' reliance on CAIR to satisfy the BART requirements. This action does not impact the limited disapproval.

Reasonable Progress Goals: We propose to disapprove Texas' RPGs for 2018 on the 20-percent least impaired and 20-percent most impaired days for the Big Bend and Guadalupe Mountains Class I areas. We propose to find that the state has not demonstrated that its RPGs provide for reasonable progress towards meeting the national visibility goal. Specifically, we propose to find that Texas did not satisfy several of the requirements at Section 51.308(d)(1) with regard to setting RPGs, most notably the requirement to reasonably consider the four statutory reasonable progress factors and the requirement to adequately justify RPGs that are less stringent than the URP.

Calculations of Baseline and Natural Visibility Conditions: We propose to approve Texas' calculation of baseline visibility conditions at the Big Bend and Guadalupe Mountains Class I areas. We propose to disapprove Texas' calculation of natural visibility conditions at these Class I areas. Because we propose to disapprove Texas' calculation of natural visibility conditions, we must also propose to disapprove Texas' calculation of the URP.

Long-Term Strategy: We propose to disapprove Texas' long-term strategy because it does not sufficiently address regional haze visibility impairment for all Class I areas impacted by Texas sources. Specifically, we propose to find that Texas did not satisfy several of the requirements of Section 51.308(d)(3) with regard to developing long-term strategies. We propose to find that Texas' long-term strategy does not include all measures necessary to obtain the state's share of emission reductions needed to make reasonable progress in the Wichita Mountains Class I area in Oklahoma. We also propose to find that the technical basis on which Texas relied to determine its apportionment of emission reduction obligations necessary for achieving reasonable progress in Wichita Mountains was inadequate. Finally, we propose to find that Texas did not adequately consider the emissions limitations and schedules for compliance needed to achieve reasonable progress in Big Bend, Guadalupe Mountains, or Wichita Mountains. We propose to find that Texas satisfied the remaining long-term strategy requirements, including the identification of anthropogenic sources of visibility impairment and the consideration of emission reductions due to ongoing air pollution control programs; measures to mitigate the impacts of construction activities; source retirement and replacement schedules; smoke management techniques; enforceability; and projected changes in emissions.

Monitoring Strategy: We propose to approve Texas' monitoring strategy.

To remedy the deficiencies identified above, we propose a FIP for Texas that consists of a long-term strategy with SO_2 emission limits for fifteen coal-fired EGUs that impact visibility in multiple Class I areas. We propose that these SO_2 emission limits, listed below in Table 1, be met on a 30-boiler-operating-day rolling average.

TABLE 1—PROPOSED 30-BOILER-OPERATING-DAY SO_2 EMISSION LIMITS

Unit	Proposed SO_2 emission limit (lbs/MMBtu)
Scrubber Upgrades:	
Sandow 4	0.20
Martin Lake 1	0.12
Martin Lake 2	0.12
Martin Lake 3	0.11
Monticello 3	0.06
Limestone 2	0.08
Limestone 1	0.08
San Miguel*	0.60
Scrubber Retrofits:	
Big Brown 1	0.04
Big Brown 2	0.04
Monticello 1	0.04
Monticello 2	0.04
Coleto Creek 1	0.04
Tolk 172B	0.06
Tolk 171B	0.06

* As we note elsewhere, we do not anticipate that San Miguel will have to install any additional control in order to comply with this emission limit.

We propose to find that these emission limits will result in emission reductions that will achieve reasonable progress at Big Bend, the Guadalupe

Mountains, and the Wichita Mountains. These emission limits reflect the degree of emission reduction that can be achieved by seven SO_2 scrubber retrofits and seven SO_2 scrubber upgrades,[26] but we do not prescribe how the facilities must meet these emission limits. We determined that these emission limits are necessary to achieve reasonable progress based on our four-factor analysis, which demonstrates that the underlying controls are cost-effective and result in significant visibility improvement. We propose that those sources whose proposed emission limits can be achieved by installing scrubber retrofits must comply with the emission limits within five years of the effective date of our final rule. We propose that those sources whose emission limits can be achieved by conducting scrubber upgrades must comply with the emission limits within three years of the effective date of our final rule, except for San Miguel, for which we propose compliance within one year because that unit has been recently meeting our proposed emission limit. Our proposed FIP also includes new RPGs for Big Bend and Guadalupe Mountains that we believe reflect the visibility improvement that will result from the aforementioned SO_2 emission limits, as well as new calculations of the natural visibility conditions for these Class I areas.

We propose to replace Texas' reliance on CAIR to satisfy the BART requirement for EGUs with reliance on CSAPR.

Finally, we are also proposing to disapprove the portions of the infrastructure SIP revisions submitted by Texas to address the requirements of CAA Section 110(a)(2)(D)(i)(II) with respect to visibility. This provision of the CAA requires that each state's SIP have adequate provisions to prohibit in-state emissions from interfering with measures required to protect visibility in any other state. We refer to this and similar provisions pertaining to other states' air quality as the ''good-neighbor'' requirements. We propose to disapprove portions of the Texas' infrastructure SIP revisions addressing the ''good-neighbor'' visibility protection requirements for the 1997 $PM_{2.5}$ NAAQS, the 1997 ozone NAAQS, the 2006 $PM_{2.5}$ NAAQS, the 2008 ozone NAAQS, the 2010 NO_2 NAAQS, and the 2010 SO_2 NAAQS. We propose to find that the controls in our proposed FIP address the deficiencies in Texas' regional haze SIP, in combination with the existing controls that Texas has relied upon in its regional haze SIP, will serve to prevent emissions from sources in Texas from interfering with measures required to protect visibility in other states.

B. Oklahoma

We propose to partially disapprove the regional haze SIP that Oklahoma submitted to us on February 19, 2010, to meet the requirements of Section 308 of the Regional Haze Rule. Specifically, we propose to disapprove Oklahoma's RPGs for 2018 on the 20-percent least impaired and 20-percent most impaired days for the Wichita Mountains Class I area. We propose to find that Oklahoma has not adequately demonstrated that its RPGs provide for reasonable progress towards meeting the national visibility goal. Specifically, we propose to find that Oklahoma did not satisfy several of the requirements at Section 51.308(d)(1) with regard to setting RPGs, including the requirement to adequately consult with other states that may reasonably be anticipated to cause or contribute to visibility impairment at the Wichita Mountains and the requirement to adequately justify RPGs that are less stringent than the URP.

To remedy the deficiencies identified above, we propose a FIP for Oklahoma that includes revised RPGs for the Wichita Mountains that reflect the visibility improvement that will result from the SO_2 emission limits in our long-term strategy for Texas included in our proposed FIP. Our proposed FIP for Oklahoma does not establish any additional requirements on sources within the state.

IV. Discussion of the Regional Haze Rule Requirements as They Relate to Visibility Transport

A. Introduction

The Texas and Oklahoma regional haze SIPs reveal that sources in Texas not only impact visibility in the Wichita Mountains National Wildlife Refuge in Oklahoma, but that the impact from sources in Texas is several times greater than the impact from Oklahoma's own sources. Additionally, the Oklahoma regional haze SIP demonstrates that, even if every source in Oklahoma were fully controlled, the Wichita Mountains would not meet the URP in 2018 absent additional emission reductions from upwind sources. Oklahoma and Texas discussed the significant contribution of sources in Texas to visibility impairment in Wichita Mountains during the interstate consultation process required by the Regional Haze Rule. Ultimately, however, Texas determined that no additional controls at its sources were warranted during the first planning period to help achieve reasonable progress at the Wichita Mountains, and Oklahoma did not request any additional reductions from Texas. As a result, Oklahoma set a reasonable progress goal for Wichita Mountains that does not achieve the URP and which does not reflect any emission reductions from Texas beyond those that will be achieved by compliance with other requirements of the CAA. During the notice-and-comment period on Oklahoma's proposed SIP, several commenters criticized Oklahoma for not requesting additional reductions from Texas. They argued that without such reductions, Oklahoma would not make reasonable progress toward the national goal at the Wichita Mountains. In responding to these comments, Oklahoma acknowledged that sources in Texas had significant impacts on visibility in Wichita Mountains, but maintained that it did not have the regulatory authority to require emission reductions in other states. Oklahoma asserted that only Texas and the EPA could require such reductions.

This situation demonstrates the difficulties states face when working to address air pollution problems that do not respect state borders. It also shows that some uncertainty exists as to the respective roles and responsibilities of upwind and downwind states in addressing visibility impairment in national parks and wilderness areas. Consequently, we believe that it is necessary at this time to provide clarification to the states on this issue, which hereafter will be referred to generally as the issue of ''visibility transport.'' Specifically, this section describes the regulatory requirements found at 40 CFR Sections 51.308(d)(1) and (d)(3), which pertain to RPGs, interstate consultation, and long-term strategies, and explains how these requirements apply in the visibility-transport context. This section also explains how our interpretation of these requirements is consistent with the provisions of the CAA that seek to prevent interstate transport of visibility-impairing pollutants,[27] achieve reasonable progress toward the national goal,[28] and address regional haze.[29]

B. Statutory and Regulatory Background

Congress enacted Section 169A as part of the 1977 CAA Amendments,

[26] As we explain later in our notice, San Miguel has already upgraded its scrubber and we are proposing that it maintain an emission rate consistent with recent monitoring data.

[27] 42 U.S.C. Section 7410(a)(2)(D)(i)(II).

[28] *Id.* Section 7491(b)(2).

[29] *Id.* Section 7492.

declaring as a national goal ''the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I areas which impairment results from manmade air pollution.'' [30] The term ''mandatory Class I Federal areas'' refers to international parks, national wilderness areas and memorial parks that exceed 5,000 acres in size, and national parks that exceed 6,000 acres in size, which were in existence on August 7, 1977.[31] Congress directed the Secretary of the Interior, in consultation with the federal land managers to review all mandatory Class I Federal areas in the country and to identify those where visibility was an important value.[32] Congress then directed us to confer with the Secretary of the Interior regarding the results of his review and to promulgate a final list of mandatory Class I Federal areas that would become subject to the protections of Section 169A.[33] On November 30, 1979, we finalized a list of 156 mandatory Class I Federal areas deserving of such protection.[34]

Congress also required us to issue regulations that would provide guidelines to the states on appropriate techniques and methods for identifying and measuring visibility impairment; modeling the extent to which manmade air pollution causes or contributes to such impairment; and preventing and remedying such pollution and impairment.[35] In addition, Congress required our regulations to direct both states that contained mandatory Class I Federal areas, and states ''the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area,'' to include three specific components in their SIPs.[36]

The first component consists of ''emission limitations, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal.'' [37] In determining what constitutes ''reasonable progress,'' Congress directed states to take into consideration four statutory factors: (1) The costs of compliance, (2) the time necessary for compliance, (3) the energy and non-air quality impacts of compliance, and (4) the remaining useful life of any existing source subject to such requirements.[38] The second component is a requirement that a specified group of older major stationary sources ''procure, install, and operate, as expeditiously as practicable . . . the best available retrofit technology,'' more commonly referred to as BART.[39] Like the emission limitations required to make reasonable progress, the emission limitations representing BART must be determined by taking into consideration a list of statutory factors.[40] Lastly, the third component consists of ''a long-term (ten to fifteen years) strategy for making reasonable progress toward the national goal.'' [41] This section focuses specifically on the first and third components: Reasonable progress and long-term strategies.

In addition to enacting Section 169A, Congress also amended Section 110 of the CAA to require that all SIPs ''contain adequate provisions prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . interfere with measures required to be included in the applicable implementation plan for any other State . . . to protect visibility.'' [42] A Senate Committee Report described this provision and similar requirements as being ''intended to equalize the positions of the States with respect to interstate pollution by making a source at least as responsible for polluting another State as it would be for polluting its own State.'' [43]

To comply with Congress's mandate, we issued a notice of proposed rulemaking titled, ''Visibility Protection for Federal Class I Areas,'' on May 22, 1980.[44] In that notice, we proposed a phased approach to combating visibility impairment.[45] In the first phase, we intended to address visibility impairment attributable to ''a single source or small group of sources,'' such as plume blight, which could be identified using visual observation or other simple monitoring techniques.[46] We referred to this type of visibility impairment as ''reasonably attributable visibility impairment,'' or RAVI.[47] Then, once modeling and monitoring techniques had improved sufficiently, we intended to engage in a second phase of rulemaking to address the more complex problem of regional haze,[48] which we defined as ''visibility impairment that is caused by the emission of air pollutants from numerous sources located over a wide geographic area.'' [49]

We finalized our first phase of rulemaking on December 2, 1980.[50] These regulations, hereafter referred to as the ''RAVI Rule,'' applied only to the 36 states that contain mandatory Class I Federal areas.[51] Notably, the RAVI Rule did not apply to upwind states, *i.e.,* those states, ''the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area,'' as required by Section 169A.[52] Among other things, the RAVI Rule authorized the federal land managers to determine whether visibility impairment existed in any mandatory Class I Federal area.[53] The RAVI Rule also required states to revise their SIPs to assure reasonable progress toward the national goal, to determine whether BART should be installed at sources causing visibility impairment certified by the federal land managers, and to implement long-term strategies for making reasonable progress.[54] Ultimately, however, we concluded that ''[p]reliminary indications are that few, if any, existing stationary facilities will have to retrofit controls,'' and that ''many of the basic elements of an acceptable [long-term] strategy already exist within the framework of other air pollution programs.'' [55]

Most states did not submit the SIP revisions required by the RAVI Rule. To resolve a lawsuit brought by environmental litigants, we promulgated FIPs for these states on November 24, 1987.[56] Despite the fact that the federal land managers had certified that visibility impairment existed in nearly all mandatory Class I Federal areas, we ultimately determined

[30] *Id.* Section 7491(a)(1).

[31] *Id.* Section 7472(a). Although we often use the term, ''Class I area'' within this document, we mean, ''Mandatory Class I Federal areas.''

[32] *Id.* Section 7491(a)(2).

[33] *Id.*

[34] ''National Visibility Goal for Federal Class I Areas; Identification of Mandatory Class I Federal Areas Where Visibility Is an Important Value,'' 44 FR 69,122 (Nov. 30, 1979).

[35] 42 U.S.C. Section 7491(b)(1).

[36] *Id.* Section 7491(b)(2).

[37] *Id.*

[38] *Id.* Section 7491(g)(1).

[39] *Id.* Section 7491(b)(2)(A).

[40] *Id.* Section 7491(g)(2).

[41] *Id.* Section 7491(b)(2)(B).

[42] 42 U.S.C. Section 7410(a)(2)(D)(i)(II).

[43] S. Rep. No. 95–127, at 41 (1977).

[44] ''Visibility Protection for Class I Areas,'' 45 FR 34762 (May 22, 1980).

[45] 45 FR 34763/3.

[46] *Id.*

[47] 40 CFRCFR Section 51.301.

[48] 45 FR 34763/3.

[49] 40 CFRCFR Section 51.301.

[50] ''Visibility Protection for Federal Class I Areas,'' 45 FR 80084 (Dec. 2, 1980) (codified at 40 CFR Sections 51.300–307).

[51] *Id.* at 80086/1.

[52] *See Id.* at 80086/1 n.2 (''We did not identify, nor did any commenters identify any State that did not contain a mandatory Class I Federal area, but which could contain a source the emissions from which could reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class 1 Federal area.'').

[53] *Id.* at 80086/3.

[54] *Id.* at 80086/1.

[55] *Id.* at 80088/3.

[56] ''State Implementation Plans for Visibility Long-Term Strategies, Integral Vistas, and Control Strategies,'' 52 FR 45132 (Nov. 24, 1987).

that neither BART nor any other controls were necessary to address the impairment because it was primarily in the form of regional haze and could not be attributed to a single source or small group of sources at that time.[57]

The following year, two decisions of the U.S. Courts of Appeal placed further emphasis on the fact that visibility impairment was largely a regional problem. The first case, *Vermont* v. *Thomas,*[58] involved the State of Vermont's challenge to our decision not to take action on aspects of Vermont's SIP revision that were intended to address regional haze. In its SIP revision, Vermont had concluded that visibility impairment at the Lye Brook Wilderness Area was not caused by plume blight, but rather was comprised of regional haze caused primarily by sulfur dioxide emissions from out-of-state sources.[59] As such, only a reduction program that targeted those out-of-state sources could assure reasonable progress toward the national visibility goal. Vermont therefore proposed a long-term strategy that included a summertime ambient sulfate standard and a 48-state emission reduction plan.[60] Vermont also requested that we disapprove and revise the SIPs of the upwind states that were contributing to regional haze in Lye Brook and require SIP revisions from those upwind states not currently subject to the RAVI Rule.[61] We agreed with Vermont's assessment of the visibility impairment at Lye Brook, but took no action on those parts of Vermont's SIP revision aimed at controlling regional haze, explaining that they were outside the scope of the RAVI Rule.[62]

In its petition for review, Vermont argued that our decision not to act on the SIP revision in its entirety violated the CAA and the RAVI Rule.[63] The Second Circuit upheld our interpretation, holding that Vermont's proposed interstate measures were outside the scope of the RAVI Rule and thus were not subject to federal enforcement under the CAA. While the court sympathized with Vermont, recognizing ''that without federal enforcement of Vermont's plan, little, if any, progress will be made on regional haze at Lye Brook,'' the court determined that, ''until such time as a federal regional haze program is in place, Vermont may not impose its standards on upwind States.'' [64] The court concluded its opinion by stating that it hoped EPA would act quickly to create a national program to address regional haze.[65]

The second case, *Maine* v. *Thomas,*[66] involved a citizen suit brought by seven Northeastern states [67] and six environmental groups in which they sought to compel us to promulgate regulations addressing regional haze. The plaintiffs alleged that we had a nondiscretionary duty to issue regulations to achieve the national visibility goal by August 7, 1979,[68] and that we had violated that duty because the RAVI Rule did not address regional haze and was therefore not a full response to the CAA's directive.[69] The district court rejected that argument, explaining that we had affirmatively chosen to take a phased approach to issuing visibility regulations when we promulgated the RAVI Rule.[70] The district court therefore viewed the plaintiffs' claim as a challenge to the RAVI Rule, which was not cognizable under the CAA's citizen-suit provision. Therefore, the court dismissed the suit for lack of subject matter jurisdiction.[71] On appeal, the First Circuit affirmed the district court's judgment under largely the same reasoning.[72] Like the Second Circuit, however, the court noted that EPA had long delayed in promulgating the promised rulemaking to address regional haze.[73]

Reacting to our delay in promulgating regulations to address regional haze and the courts' decisions in *Vermont* and *Maine,*[74] Congress enacted Section 169B of the CAA as part of the 1990 CAA Amendments.[75] Congress designed Section 169B to provide regional solutions to what was, by definition, a regional problem. To address the technical limitations identified by us in the RAVI Rule, Congress required us to ''conduct research to identify and evaluate sources and source regions of both visibility impairment and regions that provide predominantly clean air in Class I areas.'' [76] This research had to include an expansion of visibility monitoring in Class I areas, an assessment of the current sources of visibility-impairing pollution, the adaptation of regional air quality models for the assessment of visibility, and studies of the atmospheric chemistry and physics of visibility.[77] Congress also provided us with the authority to establish visibility transport regions and commissions whenever we had reason to believe that ''current or projected interstate transport of air pollutants from one or more States contributes significantly to visibility impairment in Class I areas located in the affected States.'' [78] Once established, the visibility transport commissions and their member states were required to assess the available scientific and technical data regarding visibility impairment and to report back to us with recommendations regarding how existing statutory requirements for clean air corridors, new source review, and long-term strategies could be employed to reduce such impairment.[79] Finally, Congress required us to carry out our overdue regulatory responsibilities under Section 169A, which had to include ''criteria for measuring 'reasonable progress' toward the national goal'' and a requirement that states revise their SIPs within 12 months.[80]

On July 31, 1997, we issued a notice of proposed rulemaking to revise the existing visibility regulations to address regional haze, commonly referred to as the ''Regional Haze Rule.'' [81] In that notice, we explained that ''[t]he role of regional transport of fine particles in contributing to . . . regional haze impairment has been well documented by many researchers and recognized as a significant issue by many policy makers.'' [82] Furthermore, we discussed how the studies required by the 1990 CAA Amendments had revealed that, ''to varying degrees, emissions from each of the contiguous 48 States contribute to . . . visibility impairment in at least one mandatory Class I Federal area.'' [83] Consequently, we proposed to expand the applicability of the visibility program to all states for the purpose of

[57] *Id.*

[58] *Vermont* v. *Thomas,* 850 F.2d 99 (2d Cir. 1988).

[59] *Id.* at 101.

[60] *Id.*

[61] *Id.*

[62] ''Approval and Promulgation of Implementation Plans; Vermont; Visibility in Federal Class I Areas; Lye Brook Wilderness,'' 52 FR 26973 (July 17, 1987).

[63] *Vermont,* 850 F.2d at 103–04.

[64] *Id.* at 104.

[65] *Id.*

[66] *Maine* v. *Thomas,* 690 F. Supp. 1106 (D. Maine 1988).

[67] The States were Connecticut, Maine, Massachusetts, New Jersey, New York, Rhode Island, and Vermont.

[68] *See* 42 U.S.C. Section 7491(a)(4).

[69] *Id.* at 1108.

[70] *Id.* at 1109.

[71] *Id.* at 1112.

[72] *Maine* v. *Thomas,* 874 F.2d 883 (1st Cir. 1989).

[73] *Id.* at 885–86.

[74] *See, e.g.,* 136 Cong. Rec. 2608 (1990) (statement of Sen. Tim Wirth); 136 Cong. Rec. 2771 (1990) (statement of Rep. Ron Wyden); 136 Cong. Rec. 2875 (statement of Sen. Brock Adams).

[75] 42 U.S.C. Section 7492.

[76] *Id.* Section 7492(a)(1).

[77] *Id.*

[78] *Id.* Section 7492(c)(1).

[79] *Id.* Section 7492(d).

[80] *Id.* Section 7492(e)(1) & (2).

[81] ''Regional Haze Regulations,'' 62 FR 41138 (July 31, 1997).

[82] *Id.* at 41139.

[83] *Id.* at 41144–45.

addressing regional haze.[84] We explained that this expansion of applicability was consistent with Section 169A(b)(2), which ''requires States containing mandatory Class I Federal areas or having emissions which 'may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area' to revise their visibility SIPs in order to make reasonable progress toward the national visibility goal.'' [85] We noted, however, that the expanded applicability of the visibility program should not be interpreted to mean that control strategies would be necessary in all cases. Instead, states should participate in regional air quality planning groups to establish and refine their relative contributions to regional haze, develop regional recommendations on state apportionment of emission reductions and control measure responsibilities, and identify existing SIP authorities or other proposed planning requirements necessary to address states' contributions to visibility problems in other states.[86]

To satisfy Congress's mandate that we establish criteria for measuring reasonable progress, we proposed to set presumptive ''reasonable progress targets'' for each Class I area.[87] Under this framework, the reasonable progress targets would provide for perceptible improvement of at least 1.0 deciview [88] over a 10-year or 15-year period on the 20-percent haziest days and allow no degradation from the baseline on the 20-percent clearest days.[89] States could satisfy their reasonable progress obligations under Section 169A for a given Class I area by meeting the reasonable progress target for that area.[90] States could also develop alternative targets so long as they justified those targets based on the four statutory factors.[91] Finally, states would be required to provide a demonstration of reasonable progress every three years and revise their SIPs as necessary.[92]

To satisfy the CAA's long-term strategy requirement, we proposed that states develop a procedure to determine natural and current visibility conditions for each Class I area for the 20-percent haziest and 20-percent clearest days.[93] For Class I areas with existing anthropogenic impairment greater than 1.0 deciview, states would be required to adopt measures, including BART and a combination of local and regional measures from non-BART sources, that would meet the reasonable progress targets over a three-year period.[94] We also proposed that the long-term strategies explicitly address the contribution by each state needed to meet reasonable progress targets, explaining that ''each State is ultimately responsible for determining its contribution to ensure reasonable progress in mandatory Class I areas affected by its emissions sources and implementing appropriate emissions control strategies.'' [95] We further explained that it would consider this information, as well as any relevant regional planning analyses, in evaluating a state's long-term strategy.[96] Finally, we proposed requirements that would apply if a state did not meet its reasonable progress targets within a three-year period or when a state wished to develop alternative progress targets.[97]

We finalized the Regional Haze Rule on July 1, 1999.[98] In the final rule, we reiterated that ''[s]uccessful implementation of the regional haze program will involve long-term regional coordination among States,'' and that ''States will need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction to air quality in another.'' [99] Consistent with the proposal, we concluded that all states had sources whose emissions were reasonably anticipated to cause or contribute to regional haze in at least one Class I area and therefore required all states to submit regional haze SIPs.[100]

In response to adverse comments, however, we also made significant changes to the proposal. We eliminated the requirement for presumptive reasonable progress targets of 1.0 deciview.[101] Instead, the final rule called upon states to establish ''reasonable progress goals,'' or RPGs, for each Class I area.[102] Like the reasonable progress targets, the RPGs had to be expressed in deciviews, provide for improvement on the 20-percent haziest days, and provide for no degradation on the 20-percent clearest days.[103] Unlike the reasonable progress targets, however, the RPGs were to be set on a more flexible basis after consideration of the statutory factors.[104] To provide greater equity between the RPGs set for the more impaired eastern states and the less impaired western states, we also introduced a new analytical requirement in the final rule.[105] This requirement mandated that, for each Class I area, states (1) determine the amount of progress needed to reach natural background conditions in 60 years; (2) identify the URP, over that 60-year period; (3) identify the amount of progress that would result if the URP were achieved during the planning period; and (4) identify the emissions measures that would be needed to achieve that amount of progress and analyze whether the measures were reasonable based on the statutory factors.[106] If a state found that the amount of progress necessary to achieve the URP (or some greater amount) was reasonable, then the final rule required the state to adopt that amount of progress as its RPG.[107] If a state found that the amount of progress necessary to achieve the URP was unreasonable, however, then the state could set a less ambitious goal, but only after providing an analysis and rationale supporting its determination based on the statutory factors.[108] Additionally, the final rule included a new requirement whereby states establishing RPGs had to consult with other states that were anticipated to contribute to visibility impairment in the Class I area under consideration and describe in their SIPs any actions taken to resolve disagreements over the apportionment of emission measures necessary to achieve the RPGs.[109]

In regard to the long-term strategy requirement, we explained that the RPGs and the long-term strategies were intricately linked. We interpreted the term ''long-term strategy'' as ''the control measures that are needed to ensure reasonable progress, together with a demonstration that those

[84] *Id.* at 41144.

[85] *Id.*

[86] *Id.* at 41145.

[87] *Id.* at 41145–47.

[88] As we note in the Regional Haze Rule (64 FR 35725, July 1, 1999), the ''deciview'' or ''dv'' is an atmospheric haze index that expresses changes in visibility. This visibility metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions.

[89] ''Regional Haze Regulations,'' 62 FR 41138 (July 31, 1997) at 41446.

[90] *Id.*

[91] *Id.*

[92] *Id.* at 41147.

[93] *Id.* at 41153.

[94] *Id.*

[95] *Id.*

[96] *Id.*

[97] *Id.* at 41153–54.

[98] ''Regional Haze Regulations,'' 64 FR 35714 (July 1, 1999).

[99] *Id.* at 35728.

[100] *Id.* at 35721.

[101] *Id.* at 35731.

[102] *Id.*; 40 CFR 51.308(d)(1).

[103] 64 FR 35731 (July 1, 1999).

[104] 64 FR 35731 (July 1, 1999); 40 CFR 51.308(d)(1)(i)(A).

[105] 64 FR 35731 (July 1, 1999).

[106] *Id.* at 35732; 40 CFR 51.308(d)(1)(i)(B).

[107] 64 FR 35732 (July 1, 1999).

[108] *Id.*; 40 CFR 51.308(d)(1)(ii).

[109] 64 FR 35732 (July 1, 1999); 40 CFR 51.308(d)(1)(iv).

measures will provide for reasonable progress during the 10 to 15 year period.'' [110] We abandoned our proposal to require states to update their long-term strategies every three years, providing instead for longer ten-year revisions.[111] We also modified the requirements components of the long-term strategy. In brief, the final rule required each state submitting a long-term strategy to (1) consult with other states to develop coordinated emission management strategies,[112] (2) demonstrate that the SIP includes all measures necessary for the state to obtain its share of the emission reductions needed to meet the RPGs for the Class I areas it affects,[113] (3) document the technical basis the state used to determine its apportionment of emission reduction obligations for the Class I areas it affects,[114] (4) consider all anthropogenic sources of emissions,[115] and (5) consider a list of seven other enumerated factors.[116]

Since 1999, the Regional Haze Rule has been the subject of several revisions and legal challenges. Because none of these revisions or challenges impacted the regulatory provisions that are the focus of this section, each is discussed only in brief. In *American Corn Growers* v. *EPA,* the D.C. Circuit invalidated the Regional Haze Rule's BART provisions because they required states to consider the visibility benefits of controls on a group-basis, rather than a source-basis.[117] In 2003, we revised the Regional Haze Rule to incorporate provisions that would allow certain Western states and eligible Indian Tribes to implement alternative measures in lieu of BART.[118] Shortly thereafter, in *Center for Energy and Economic Development (CEED)* v. *EPA,* the D.C. Circuit invalidated aspects of our 2003 revisions for using the same type of ''group BART'' approach that the court had forbade in *American Corn Growers.*[119] In 2005, we revised the Regional Haze Rule a second time in order to remedy the defects with the Rule's BART provisions that had been identified by the D.C. Circuit in *American Corn Growers.*[120] In that same rulemaking, we promulgated the BART Guidelines to assist states in determining which sources are subject to BART and the appropriate level of control for such sources.[121] Moreover, as noted above, we added a provision to the Regional Haze Rule that allowed certain Eastern states to rely on the CAIR in lieu of requiring BART at fossil fuel-fired EGUs.[122] Then, in 2006, we revised the Regional Haze Rule a third time in order to remedy the defects with the Rule's BART-alternative provisions that had been identified by the D.C. Circuit in *CEED.*[123] A few months later, the D.C. Circuit upheld the 2005 revisions in their entirety in *Utility Air Regulatory Group* v. *EPA.*[124] The 2006 revisions were never challenged. Finally, in 2012, we revised the Regional Haze Rule for a fourth time to replace the provision allowing Eastern states to rely on CAIR in lieu of BART with a provision allowing for reliance on CAIR's successor, CSAPR.[125] Challenges to the 2012 revisions are currently stayed and remain pending before the D.C. Circuit.[126]

During this same period, we also released several guidance documents pertaining to regional haze and visibility transport, some of which are helpful to the issues discussed in this section. In an August 3, 2006, document titled, ''Additional Regional Haze Questions,'' we responded to questions submitted by states as they were developing their initial regional haze SIP submissions.[127] Several states had questions regarding the interstate consultation process and the respective obligations of upwind and downwind states in setting RPGs and developing long-term strategies. For example, one state asked whether there was a protocol for resolving disputes between upwind and downwind states on apportionment and controls.[128] In response, we encouraged the early identification of any potential disputes to allow all parties ample opportunity to address and document any disagreements.[129] One state asked what would happen if a downwind state set a RPG that required an upwind state to make reductions that it would not make.[130] We responded by stating, ''If a State with a Class I area determines that a contributing State is not doing what is reasonable to meet the [RPG] set for the area, and has attempted to resolve this issue, the State with the Class I area should notify EPA and document this issue in its initial [regional haze] SIP.'' [131] We explained that such problems should be brought to our attention as early in the process as possible.[132] Finally, a third state asked whether a downwind state's regional haze SIP could be disapproved because an upwind state was not doing all it could to meet the RPG for a downwind Class I area.[133] We responded by reiterating the regulatory requirements and noting that, ''If there is a disagreement among States as to what constitutes reasonable progress, the question of whether [a downwind State's] or [an upwind State's regional haze] SIP could be disapproved will depend on the specific[s] of the situation.'' [134]

On June 1, 2007, we released a second document to provide guidance to states on how to set their RPGs and how to decide those measures necessary to meet the goals.[135] In the guidance, we provided a definition for the term ''reasonable progress goal,'' explaining that RPGs are ''interim goals that represent incremental visibility improvement over time toward the goal of natural background conditions and are developed in consultation with other affected States and Federal Land Managers.'' [136] The guidance also reiterates that the long-term strategy and BART emission limitations are inherently linked to the RPGs:

The long-term strategy is the compilation of ''enforceable emissions limitations,

[110] 64 FR 35734 (July 1, 1999).

[111] *Id.*; 40 CFR Section 51.308(f).

[112] 64 FR 35735 (July 1, 1999); 40 CFR 51.308(d)(3)(i).

[113] 64 FR 35735 (July 1, 1999); 40 CFR 51.308(d)(3)(ii).

[114] 64 FR 35735 (July 1, 1999); 40 CFR 51.308(d)(3)(iii).

[115] 64 FR 35735 (July 1, 1999); 40 CFR 51.308(d)(3)(iv).

[116] 64 FR 35736–37 (July 1, 1999); 40 CFR 51.308(d)(3)(v).

[117] *Am. Corn Growers* v. *EPA,* 291 F.3d 1 (D.C. Cir. 2002).

[118] ''Revisions to Regional Haze Rule to Incorporate Sulfur Dioxide Milestones and Backstop Emissions Trading Program for Nine Western States and Eligible Indian Tribes Within That Geographic Area,'' 68 FR 33764 (June 5, 2003).

[119] *Ctr. for Energy & Econ. Dev.* v. *EPA,* 298 F.3d 653 (D.C. Cir. 2005).

[120] ''Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations,'' 70 FR 39104 (July 6, 2005).

[121] *See Id.* at 39156–72 (codified at 40 CFR pt. 51, app. Y).

[122] *See Id.* at 39156 (codified at 40 CFR 51.308(e)(4)).

[123] ''Regional Haze Regulations; Revisions to Provisions Governing Alternative to Source-Specific Best Available Retrofit Technology (BART) Determinations,'' 71 FR 60612 (Oct. 13, 2006).

[124] *Util. Air Regulatory Grp.* v. *EPA,* 471 F.3d 1333 (D.C. Cir. 2006).

[125] ''Regional Haze: Revisions to Provisions Governing Alternatives to Source-Specific Best Available Retrofit Technology (BART) Determinations, Limited SIP Disapprovals, and Federal Implementation Plans,'' 77 FR 33641 (June 7, 2012).

[126] See, *e.g., Nat'l Parks Conservation Ass'n* v. *EPA,* No. 12–1480 (D.C. Cir. Dec. 17, 2012).

[127] U.S. Envtl. Protection Agency, Additional Regional Haze Questions (Aug. 3, 2006).

[128] *Id.* at 10.

[129] *Id.*

[130] *Id.* at 11.

[131] *Id.* at 11–12.

[132] *Id.* at 12.

[133] *Id.*

[134] *Id.*

[135] Office of Air Quality Planning & Standards, U.S. Envtl. Protection Agency, Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program (June 1, 2007).

[136] *Id.* at 1–3.

compliance schedules, and other measures as necessary to achieve the [RPGs],'' and is the means through which the State ensures that its RPG will be met. BART emissions limits . . . are one set of measures that must be included in the SIP to ensure that an area makes reasonable progress toward the national goal, and the visibility improvement resulting from BART (or a BART alternative) is included in the development of the RPG.[137]

The majority of the guidance focuses on providing an overview of the process for developing RPGs, potential methods for identifying which source categories should be evaluated for controls, and suggestions for evaluating the four statutory factors with respect to potentially affected stationary sources.[138] The guidance reiterates that the development of the RPG for each Class I area should be a collaborative process, but acknowledges that the Regional Haze Rule anticipated that states may not always agree on what measures would be reasonable or on the appropriateness of a given goal.[139]

Finally, in a series of three memoranda released in 2006, 2009, and 2013, we provided guidance to the states regarding their obligations under Section 110(a)(2)(D)(i)(II) with respect to visibility transport, hereafter referred to as ''prong 4.'' [140] In the 2006 memo, we informed states that they could satisfy prong 4 for the 1997 8-hour ozone and $PM_{2.5}$ NAAQS by making a simple SIP submission confirming that it was not possible at the time to assess whether there was any interference with measures in the SIPs of other states designed to protect visibility until the states submitted their regional haze SIPs the following year.[141] In the 2009 memo, we more plainly stated that states could satisfy prong 4 for the 2006 24-hour $PM_{2.5}$ NAAQS so long as they had fully approved regional haze SIPs.[142] Most recently, in the 2013 memo, we clarified states' prong 4 obligations with respect to the 2008 ozone NAAQS, 2010 NO_2 NAAQS, 2010 SO_2 NAAQS, and 2012 $PM_{2.5}$ NAAQS.[143] There, we reiterated that states could satisfy prong 4 by confirming that they had fully approved regional haze SIPs.[144] We reasoned that a fully approved regional haze SIP necessarily would ensure that emissions from a state's sources were not interfering with measures required to be included in other states' SIPs to protect visibility.[145] Alternatively, we explained that a state could satisfy its prong 4 obligations by including in its infrastructure SIP a demonstration that emissions within its jurisdiction do not cause interference.[146] We clarified that such a submission would need to include measures to limit visibility-impairing pollutants and ensure that the reductions were sufficient to comply with any mutually agreed upon RPGs for downwind Class I areas.[147]

C. Our Interpretation of 40 CFR 51.308(d)(1) and (d)(3)

With this background in mind, we turn now to the provisions of the Regional Haze Rule that implement the CAA's reasonable progress and long-term strategy requirements in the visibility-transport context. Section 51.308(d)(1) of the Regional Haze Rule requires states with Class I areas, *i.e.,* downwind states, to ''establish goals (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility conditions.'' [148] In establishing a RPG, a downwind state must consider the four statutory factors outlined in Section 169A(g)(1) of the CAA—''the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources.'' [149] This requirement is commonly referred to as a four-factor analysis. States analyze the four factors to determine a reasonable set of control measures that will reduce visibility-impairing emissions. The visibility improvement that will result from these emission reductions is then factored into the state's RPGs.

In addition to conducting a four-factor analysis to determine what control measures are reasonable for a downwind state's own sources, the downwind state ''must consult with those States which may reasonably be anticipated to cause or contribute to visibility impairment in the mandatory Class I Federal area,'' [150] *i.e.,* upwind states. The purpose of the consultation requirement is to ensure that the upwind states adopt control measures sufficient to address their apportionment of emission reductions necessary to achieve reasonable progress and that the downwind state's RPGs properly account for the visibility improvement that will result from the reasonable control measures identified and included in the upwind state's long-term strategy. Where a downwind state and an upwind state cannot agree on the proper apportionment of emission reductions necessary to achieve reasonable progress, however, the downwind state ''must describe in its [SIP] submittal the actions taken to resolve the disagreement.'' [151] This documentation is necessary so that we have sufficient information to evaluate the downwind state's RPGs. Ultimately, we must decide, among other things, ''whether the State's goal provides for reasonable progress towards natural visibility conditions,'' [152] or whether the goal is inadequate due to an upwind state's failure to include reasonable control measures in its long-term strategy.

Section 51.308(d)(3) of the Regional Haze Rule requires all states (both downwind and upwind) to ''submit a long-term strategy that addresses regional haze visibility impairment for each mandatory Class I Federal area within the State and for each mandatory Class I Federal area located outside the State which may be affected by emissions from the State.'' [153] As explained previously, a state's long-term strategy is inextricably linked to the RPGs because it ''must include enforceable emission limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals established by states having mandatory Class I Federal areas.'' [154]

In establishing its long-term strategy, a state must meet a number of requirements, three of which pertain to visibility transport. First, as a corollary to Section 51.308(d)(1)(iv), upwind states ''must consult with [downwind] State(s) in order to develop coordinated

[137] *Id.* at 1–4 (citing to 40 CFR 51.308(d)(3)).

[138] *See generally id.* at 3–1 to 5–3.

[139] *Id.* at 2–4.

[140] 42 U.S.C. Section 7410(a)(2)(D)(i) has four separate requirements or ''prongs,'' the last of which is that SIPs must address emissions that interfere with another State's measures to protect visibility.

[141] Office of Air Quality Planning & Standards, U.S. Envtl. Protection Agency, Guidance for State Implementation Plan (SIP) Submissions to Meet Current Outstanding Obligations Under Section 110(a)(2)(D)(i) for the 8-Hour Ozone and $PM_{2.5}$ National Ambient Air Quality Standards, at 9–10 (Aug. 15, 2006).

[142] Office of Air Quality Planning & Standards, U.S. Envtl. Protection Agency, Guidance on SIP Elements Required Under Sections 110(a)(1) and (2) for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS), at 5 (Sept. 25, 2009).

[143] Office of Air Quality Planning & Standards, U.S. Envtl. Protection Agency, Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2) (Sept. 13, 2013).

[144] *Id.* at 33.

[145] *Id.*

[146] *Id.* at 34.

[147] *Id.*

[148] 40 CFR 51.308(d)(1).

[149] *Id.* 51.308(d)(1)(i)(A).

[150] *Id.* n 51.308(d)(1)(iv).

[151] *Id.*

[152] *Id.*

[153] *Id.* 51.308(d)(3).

[154] *Id.*

management strategies.'' [155] Second, where multiple states cause or contribute to visibility impairment in a Class I area, each state ''must demonstrate that it has included in its implementation plan all measures necessary to obtain its share of the emission reductions needed to meet the progress goal for the area.'' [156] This requirement directly addresses situations where an upwind state agrees to achieve certain emission reductions during the consultation process, and downwind states rely upon those reductions when setting their RPGs, but the upwind state ultimately fails to include sufficient control measures in its long-term strategy to ensure that the emission reductions will be achieved. In such a situation, we must disapprove the upwind state's long-term strategy. However, the regulations do not explicitly address situations where the control measures in an upwind state's long-term strategy are sufficient to obtain its share of reductions needed to meet a RPG included in a downwind state's SIP, but the goal itself is flawed precisely because the upwind state never proposed sufficient control measures to ensure reasonable progress in the first place. To prevent such situations, we interpret the term ''progress goal'' in Section 51.308(d)(3)(ii) as an *approved or approvable* progress goal. Consequently, where a RPG in a downwind state's SIP does not account for adequate visibility improvement from an upwind state for this reason, we must disapprove both the downwind state's goal and the upwind state's long-term strategy.

Finally, each state ''must document the technical basis, including modeling, monitoring and emissions information, on which the State is relying to determine its apportionment of emission reduction obligations necessary for achieving *reasonable progress* in each mandatory Class I Federal area it affects.'' [157] To reiterate, Section 169A(g)(1) of the CAA requires states to determine ''reasonable progress'' by considering the four statutory factors.[158] Therefore, this provision requires states to consider both their own Class I areas and downwind Class I areas when they develop the technical basis underlying their four-factor analyses. This documentation is necessary so that the interstate consultation process can proceed on an informed basis and so that downwind states can properly assess whether any additional upwind emission reductions are necessary to achieve reasonable progress at their Class I areas. The regulations further provide that, ''States may meet this requirement by relying on technical analyses developed by the regional planning organization and approved by all State participants.'' [159] Thus, states have the option of meeting this requirement by relying on four-factor analyses and associated technical documentation prepared by a regional planning organization on behalf of its member states,[160] to the extent that such analyses and documentation were conducted. In situations where a regional planning organization's analyses are limited, incomplete or do not adequately assess the four factors, however, then states must fill in any remaining gaps to meet this requirement.

Under *Auer* v. *Robbins,* 519 U.S. 452, 461 (1997), an administrative agency is entitled to interpret its own regulations, and that interpretation will be entitled to judicial deference as long as the interpretation is not ''plainly erroneous or inconsistent with the regulation.'' [161] Moreover, as the D.C. Circuit has explained, ''a regulation must be interpreted as to harmonize with and further and not to conflict with the objective of the statute it implements.'' [162] We believe that our clarification of the requirements of Sections 51.308(d)(1) and (d)(3), as provided above, is reasonable, consistent with the overall framework of the Regional Haze Rule, and in harmony with the objectives of the CAA's visibility provisions.

First, we believe that our interpretation is consistent with the Regional Haze Rule as a whole. Section 51.308(d) of the Regional Haze Rule, which subsumes all of the provisions discussed above, provides that states ''must address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State.'' [163] Our interpretation gives this ''core requirement'' [164] force by ensuring that downwind states account for all reasonable emission reductions when setting their RPGs and by ensuring that upwind states thoughtfully consider their impacts on neighboring Class I areas when conducting their four-factor analyses.

Similarly, our interpretation harmonizes and furthers the goals of the CAA. Congress declared as a national goal ''the prevention of any future, and the remedying of any existing, impairment of visibility'' in *all* Class I areas.[165] We believe it would be impossible to achieve this goal if upwind states did not have the same responsibility to address their visibility-impairing emissions and achieve reasonable progress in downwind Class I areas as the downwind states themselves. Indeed, Section 169A(b)(2) explicitly required our implementing regulations to ''require each applicable implementation plan . . . for a State the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area [*i.e.,* upwind States] to contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal.'' [166] As explained previously, the CAA requires states to determine what emission limits and other measures are necessary to make reasonable progress by considering the four statutory factors.[167] Therefore, our interpretation of Section 51.308(d)(3)(ii) and (iii) ensures that the Regional Haze Rule requires what the CAA requires—that upwind states consider impacts at downwind Class I areas in their four-factor analyses and, where appropriate, include emission limits and other measures to make reasonable progress at those Class I areas in their long-term strategies.

Moreover, consistent with our guidance,[168] our interpretation ensures that regional haze SIPs will be able to satisfy the CAA's requirement that SIPs ''contain adequate provisions prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in

[155] *Id.* 51.308(d)(3)(i).

[156] *Id.* 51.308(d)(3)(ii). Similarly, ''[i]f the State has participated in a regional planning process, the State must ensure it has included all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process.'' *Id.*

[157] *Id.* 51.308(d)(3)(iii).

[158] 42 U.S.C. Section 7491(g)(1).

[159] 40 CFR 51.308(d)(3)(iii).

[160] *See WildEarth Guardians* v. *EPA,* 2014 U.S. App. LEXIS 20145, at *55 (10th Cir. Oct. 21, 2014) (explaining that 40 CFR 51.308(d)(3)(iii) ''permits a State conducting a reasonable-progress determination'' ''to rely on [a regional planning organization's] four-factor analysis.'').

[161] *Auer* v. *Robbins,* 519 U.S. 452, 461 (1997).

[162] Sec'y of Labor, Mine Safety & Health Admin. v. W. Fuels-Utah, 900 F.2d 318, 320 (D.C. Cir. 1990).

[163] 40 CFR 51.308(d).

[164] *Id.*

[165] 42 U.S.C. Section 7491(a)(1).

[166] *Id.* Section 7491(b)(2).

[167] *Id.* Section 7491(g)(1).

[168] *See, e.g.,* Office of Air Quality Planning & Standards, U.S. Envtl. Protection Agency, Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2) (Sept. 13, 2013).

amounts which will interfere with measures required to be included in the applicable implementation plan for any other State . . . to protect visibility.'' [169] Congress intended this provision of the CAA to ''equalize the positions of the States with respect to interstate pollution,'' [170] and our interpretation accomplishes this goal by ensuring that downwind states can seek recourse from us if upwind states are not doing enough to address visibility transport.

Finally, we believe that our interpretation is consistent with the long-standing recognition of Congress, the states, the courts, and us that regional haze is a regional problem that requires regional solutions. In 1987, the State of Vermont first envisioned a framework similar to the one ultimately adopted in the Regional Haze Rule by setting a goal sufficient to ensure reasonable progress (in that case, a summertime ambient sulfate standard) and requesting that we require upwind states to revise their SIPs to include measures that would provide the emission reductions necessary to meet that goal.[171] The Second Circuit sympathized with Vermont's plight despite upholding our inaction on Vermont's SIP.[172] Consequently, Congress enacted Section 169B of the CAA in 1990, which required us to issue new regulations to address regional haze.[173] The Congressional record indicates that Congress was motivated in part by the dilemma of Vermont and other downwind states.[174] After we promulgated the Regional Haze Rule in 1999, states were acutely aware of the complexities of the visibility-transport problem, inquiring as to how disputes regarding the proper appropriation of emission reductions between downwind states and upwind states would be resolved.[175] While we encouraged early collaboration among states in the hopes that such disputes would be minimized, we ultimately acknowledged that we might have to step in and disapprove either a downwind state or an upwind state's SIP because it did not adequately address interstate visibility impacts.[176]

[169] 42 U.S.C. 7410(a)(2)(D)(i)(II).

[170] S. Rep. No. 95–127, at 41 (1977).

[171] *See Vermont* v. *Thomas,* 850 F.2d 99, 101 (2d Cir. 1988).

[172] *Id.* at 104.

[173] 42 U.S.C. Section 7492(e)(1).

[174] *See, e.g.,* 136 Cong. Rec. 2608 (1990) (statement of Sen. Tim Wirth); 136 Cong. Rec. 2771 (1990) (statement of Rep. Ron Wyden); 136 Cong. Rec. 2875 (statement of Sen. Brock Adams).

[175] *See* U.S. Envtl. Protection Agency, Additional Regional Haze Questions, 10–12 (Aug. 3, 2006).

[176] *Id.* at 12.

V. Our Analysis of and Proposed Action on the Texas Regional Haze SIP

On March 31, 2009, we received a regional haze SIP revision from Texas. Prior to receiving Texas' submittal, we reviewed a draft of the Texas regional haze SIP and submitted comments to the TCEQ in February 2008. Many of the issues we discuss below were originally identified in that document. This includes comments relating to ensuring that Texas include in its SIP all measures necessary to obtain its share of the emission reductions needed to meet the progress goals of Class I areas. Additionally, we met with the TCEQ on July 24, 2013, to further discuss Texas' regional haze program and impacts from Texas sources on Class I areas. Provided below is a summary of our analysis of the various elements of Texas' submission. For a more comprehensive analysis, please see our TX TSD, which is located in our docket to this rulemaking action.

A. Affected Class I Areas

In accordance with Section 51.308(d) of the Regional Haze Rule, the TCEQ identified two Class I areas within Texas: Big Bend National Park, in Brewster County, which borders the Rio Grande and Mexico, and the Guadalupe Mountains National Park in Culberson County, which borders New Mexico. The TCEQ is responsible for developing RPGs for these two Class I areas. The TCEQ also determined that emissions from sources in Texas impact visibility at a number of Class I areas outside of Texas. The Central Regional Air Planning Association (CENRAP) source apportionment modeling results, part of the state's SIP, indicate that Texas emissions impact the visibility at a number of Class I areas in other states, including the Breton Wilderness Area in Louisiana, the Great Sand Dunes in Colorado, Caney Creek and the Upper Buffalo in Arkansas, the Wichita Mountains in Oklahoma, and several Class I areas in New Mexico. See the TX TSD for a summary of source apportionment modeling results for Class I areas in other states impacted by emissions from sources in Texas.

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

As required by Sections 51.308(d)(2)(i) and 51.308(d)(2)(iii) of the Regional Haze Rule, and in accordance with our 2003 Natural Visibility Guidance,[177] the TCEQ calculated baseline/current [178] and natural visibility conditions for its two Class I areas, Big Bend and the Guadalupe Mountains, on the most impaired and least impaired days.

1. Estimating Natural Visibility Conditions

Natural background visibility, as defined in our 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). This equation sums the light extinction [179] resulting from individual pollutants, such as sulfates and nitrates. Our guidance provides default natural conditions for the 20% worst and 20% best days for each Class I area based on the IMPROVE equation. As documented in our guidance, we allow states to use a ''refined'' approach or alternative approaches to the guidance defaults to estimate the values that characterize the natural visibility conditions of their Class I areas. Our guidance also states that states may wish to use a more refined approach to reduce uncertainty when baseline visibility is already near natural conditions or when there is marked seasonality. These alternative approaches can be implemented via alternative estimates of natural concentrations. One alternative approach is to develop and justify the use of alternative estimates of natural concentrations of fine particle components. Another option open to states is to use the ''new IMPROVE equation'' that was adopted for use by the IMPROVE Steering Committee in December 2005.[180] The purpose of this

[177] Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule, EPA–454/B–03–005, September 2003.

[178] Because this is the first regional haze planning period, baseline visibility conditions and current visibility conditions are the same. In future planning periods, we expect that baseline and current visibility conditions will be different due to reasonable progress being made and other changes in conditions.

[179] Light extinction, in units of inverse megameters (Mm^{-1}), is the amount of light lost as it travels over one million meters. The haze index, in units of deciviews (dv), is calculated directly from the total light extinction, b_{ext}, as follows: $HI = 10 \ln(b_{ext}/10)$.

[180] 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 federal land managers) and regional planning organizations. The IMPROVE monitoring program was established in 1985 to aid the creation

refinement to the ''old IMPROVE equation'' was to provide more accurate estimates of the various factors that affect the calculation of light extinction.

The new IMPROVE equation takes into account the most recent review of the science,[181] and it accounts for the effect of particle size distribution on light extinction efficiency of sulfate (SO_4), nitrate (NO_3), 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, do not change between the original and new IMPROVE equations. The default natural conditions in our 2003 guidance were updated by the Natural Haze Levels II Committee utilizing the new IMPROVE equation and included some refinements to the estimates for the PM components.[182] [183] These estimates are referred to as the ''NCII'' default natural visibility conditions.

The TCEQ chose to derive a ''refined'' estimate of natural visibility conditions rather than using the default NCII values. In calculating natural visibility conditions, the TCEQ used the new IMPROVE equation and PM concentration estimates (*i.e.,* the NCII values) for most components, but assumed that 100% of the fine soil and coarse mass concentrations in the baseline period should be attributed to natural causes and that the corresponding estimates in the NCII values should be replaced. The TCEQ noted there is some uncertainty with these calculations in the amount of natural fine and coarse mass assumption. The TCEQ also stated that, to the extent its assumption that 100% of coarse mass and fine soil is natural is an overestimate, it expects that its low organic carbon estimate will more than compensate for any errors in this assumption at this time. This issue is discussed in more detail in our TX TSD.

For the 20% worst days, the TCEQ calculated natural visibility conditions for Big Bend and the Guadalupe Mountains of 10.09 dv and 12.26 dv, respectively. For the 20% best days, the TCEQ calculated that natural visibility conditions for Big Bend and the Guadalupe Mountains of 2.19 dv, and 2.10 dv, respectively.

In response to FLM comments, the TCEQ also performed an additional calculation for the 20% worst days, assuming only 80% of fine soil and course mass as natural, in order to demonstrate the sensitivity of its approach to this assumption. Under this approach, the TCEQ estimated natural conditions to be 9.2 dv for the 20% worst days at Big Bend, compared to 10.09 dv using the assumption that 100% of fine soil and course mass is natural, and 7.16 dv using the NCII method. For the Guadalupe Mountains, the TCEQ's estimate was 11.0 dv under the 80% assumption, compared with 12.26 dv under the 100% assumption and 6.65 dv using the NCII method. These values are summarized below:

TABLE 2—TCEQ NATURAL VISIBILITY CALCULATIONS

	Guadalupe Mountains		Big Bend	
	20% Worst days	20% Best days	20% Worst days	20% Best days
100% fine soil and coarse mass	12.26	2.10	10.09	2.19
80% fine soil and coarse mass	11.0	(1)	9.2	(1)
NCII default	6.65	0.99	7.16	1.62

[1] Not calculated.

Ultimately, the TCEQ stated that it was including the 80% assumption for illustration purposes only and based its calculations of natural conditions on assuming that 100% coarse mass and fine soil assumption are due to natural sources.

We agree that dust storms and other blown dust from deserts are a significant contributor to visibility impairment at the Texas Class I areas that may not be captured accurately by our default method. However, we propose to find that the TCEQ has not adequately demonstrated that all coarse mass and fine soil measured in the baseline period can be attributed to 100% natural sources. Anthropogenic sources of coarse mass and fine soil in the baseline period could have included emissions associated with paved and unpaved roads, agricultural activity, and construction activities. We also note that the impact from dust at Big Bend is less certain than at Guadalupe Mountains and a different assumption may be appropriate in estimating natural conditions there. Given the significant uncertainty in the assumptions used in the Texas methodology and the demonstrated sensitivity to the assumption of 100% natural versus 80% soil and coarse mass

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.

[181] The science behind the revised IMPROVE equation is summarized in Appendix 5–1 of the Texas regional haze SIP 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, available at: *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, available at *http://vista.cira.colostate.edu/improve/Publications/GrayLit/029_NaturalCondII/naturalhazelevelsIIreport.ppt.*

[182] 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, available at: *http://vista.cira.colostate.edu/improve/Publications/GrayLit/029_NaturalCondII/naturalhazelevelsIIreport.ppt.*

[183] The second version of the natural haze level II estimates based on the work of the Natural Haze Levels II Committee is available at: *http://vista.cira.colostate.edu/Docs/IMPROVE/Aerosol/NaturalConditions/NaturalConditionsII_Format2_v2.xls.*

from natural sources, we propose to disapprove Texas' calculation of the natural visibility conditions for the Big Bend and Guadalupe Class I areas.

In its regional haze SIP, the TCEQ stated that it will continue to evaluate data, modeling, and any other sources of information in order to further improve its estimates. Furthermore, the TCEQ plans to work with us and the federal land managers to improve natural conditions estimates for future regional haze SIP revisions. We encourage these efforts.

As discussed elsewhere in this notice, we propose to rely on the NCII default values that were used for every other Class I area in the country for our proposed FIP to address this deficiency in the Texas regional haze SIP, but we solicit comment on the acceptability of alternate estimates in the range between the EPA default estimates and Texas' estimates. The federal land managers commented during the development of the Texas regional haze SIP that an assumption of 80% would be more reasonable than an assumption of 100%. We note that with any of the methodologies for calculating natural conditions discussed above, Texas' Class I areas are not projected to meet the URP in 2018 according to the CENRAP modeling and are not projected to meet the goal of natural visibility conditions by 2064.

2. Estimating Baseline Visibility Conditions

As required by Section 51.308(d)(2)(i) of the Regional Haze Rule, the TCEQ calculated baseline visibility conditions for Big Bend and the Guadalupe Mountains. The baseline condition calculation begins with the calculation of light extinction for each day with monitoring data, using the IMPROVE equation. As with the natural visibility conditions calculation, the TCEQ chose to use the new IMPROVE equation, as described above.

The period for establishing baseline visibility conditions is 2000–2004, and baseline conditions must be calculated using available monitoring data, as required under Section 51.308(d)(2). The TCEQ averaged the data from 2001 through 2004 for Big Bend [184] and calculated the baseline conditions at Big Bend to be 17.30 dv on the 20% worst days, and 5.78 dv on the 20% best days. In calculating the baseline conditions at the Guadalupe Mountains, the TCEQ averaged the visibility data for 2000–2004, and calculated the baseline conditions at the Guadalupe Mountains to be 17.19 dv on the 20% worst days, and 5.95 dv on the 20% best days. We have reviewed the TCEQ's estimation of baseline visibility conditions at Big Bend and the Guadalupe Mountains and are proposing to find that the TCEQ has satisfied the requirements of Section 51.308(d)(2)(i).

3. Natural Visibility Impairment

To address Section 51.308(d)(2)(iv)(A), the TCEQ also calculated the number of dv by which baseline conditions exceed natural visibility conditions for the best and worst days at Big Bend and the Guadalupe Mountains. The natural visibility impairment is calculated by subtracting the natural visibility calculation from the baseline visibility calculation. This information is summarized below:

TABLE 3—NATURAL VISIBILITY IMPAIRMENT

	Class I area	Baseline visibility	Natural visibility	Natural visibility impairment
20% Worst Days	Big Bend	17.30	10.09	7.21
	Guadalupe Mts	17.19	12.26	4.93
20% Best Days	Big Bend	5.78	2.19	3.59
	Guadalupe Mts	5.95	2.10	3.85

We have reviewed the TCEQ's estimates of the natural visibility impairment at Big Bend and the Guadalupe Mountains and we propose to disapprove these estimates because this calculation depends on the TCEQ's calculations for natural visibility conditions, which we also propose to disapprove for the reasons discussed in the previous section.

4. Uniform Rate of Progress

Under Section 51.308(d)(1)(i)(B), as part of its RPGs determination, the TCEQ analyzed and determined the URP needed to reach natural visibility conditions by the year 2064. Also in establishing its RPGs, the TCEQ considered the uniform rate of improvement in visibility and the emission reduction measures needed to achieve this rate for the period covered by the SIP. In so doing, the TCEQ compared the baseline visibility conditions to the natural visibility conditions for Big Bend and the Guadalupe Mountains, and determined the URP needed to attain natural visibility conditions by 2064. The TCEQ constructed the URP consistent with the requirements of the Regional Haze Rule and our 2003 Tracking Progress Guidance [185] by plotting a straight graphical line from the baseline level of visibility impairment to the level of visibility conditions representing no anthropogenic impairment in 2064 for both Big Bend and the Guadalupe Mountains.

Using the baseline visibility values and natural visibility values discussed above, the TCEQ calculated the URP for Big Bend to be 0.12 dv/year, and that for the Guadalupe Mountains to be 0.08 dv/yr. This information is summarized below:

TABLE 4—SUMMARY OF UNIFORM RATE OF PROGRESS

Visibility metric	Big Bend	Guadalupe Mts.
Baseline Conditions	17.30 dv	17.19 dv.
Natural Visibility	10.09 dv	12.26 dv.
Total Improvement by 2064	7.21 dv	4.93 dv.

[184] The TCEQ determined that the fourth quarter of 2000 for Big Bend was not sufficiently complete for use in calculating a baseline average for regulatory purposes, as it had only ten complete days.

[185] Guidance for Tracking Progress Under the Regional Haze Rule, EPA–454/B–03–004, September 2003.

TABLE 4—SUMMARY OF UNIFORM RATE OF PROGRESS—Continued

Visibility metric	Big Bend	Guadalupe Mts.
Uniform Rate of Progress	0.12 dv/year	0.08 dv/year.
Improvement needed by 2018	1.7 dv.	1.2 dv

The TCEQ notes that the URP calculations above have some degree of uncertainty due to its assumptions in calculating the natural visibility.

Based on the estimated cost and visibility benefit from NO_X and SO_2 controls identified during the TCEQ's four-factor analysis described below in Section V.C.2, the TCEQ estimated the costs and emission reduction measures of SO_2 and NO_X required to enable the Guadalupe Mountains and Big Bend to achieve the URP. However, it appears that in estimating the emission reductions and costs to meet its URPs in Table 10–9 of the Texas Regional Haze SIP, the TCEQ used estimates of visibility benefits from an earlier draft of the Texas Regional Haze SIP. In that draft SIP, the TCEQ estimated the visibility benefit from a certain set of controls to be 0.05 dv at each Texas Class I area.[186] Based on TCEQ's final estimation of the visibility benefit from the TCEQ control set, we have updated the TCEQ's calculations. See our TX TSD for more information.

Errors in its calculation aside, we note that while the TCEQ has, in establishing its RPG, correctly followed the procedures for analyzing and determining the rate of progress needed to attain natural visibility conditions by the year 2064, we propose to find the TCEQ has calculated this rate of progress on the basis of, and compared baseline visibility conditions to, a flawed estimation of natural visibility conditions for the Big Bend and Guadalupe Mountains, as we describe above. Therefore, we propose to disapprove the TCEQs calculation of the URP needed to attain natural visibility conditions by 2064. In addition, as we discuss in Section V.C, we identify problems with the TCEQ's reasonable progress four factor analysis, which the TCEQ partially relied upon in consideration of the emission reduction measures needed to achieve the natural visibility conditions. For these reasons, we must also propose disapproval of the TCEQ's estimation of the emission reduction measures needed to achieve the URP for the period covered by the SIP, under Section 51.308(d)(1)(i)(B).

5. Reasonable Progress Goal Minimum

Under Section 51.308(d)(1)(vi), Texas may not adopt a RPG that represents less visibility improvement than is expected to result from implementation of other requirements of the CAA during the applicable planning period.

The RPGs established by Texas are based on CENRAP 2018 modeling projections. The modeling projections conducted by CENRAP contain projections of the visibility conditions that are anticipated to be realized at each Class I area between the 2002 base year and the 2018 future year. These projections are based on the emission reductions resulting from federal and state control programs that are either currently in effect or with mandated future-year emission reduction schedules that predate 2018, including the long-term strategies of Texas, Oklahoma, and other states, and presumptive emission reductions expected to result from the submitted Oklahoma BART rule. Since CENRAP's 2018 modeling projections are based on local, state, and federal control programs that are either currently in effect or with mandated future-year emission reduction schedules, we believe that the TCEQ's RPGs represent at least as much visibility improvement as is expected to result from implementation of other requirements of the CAA (*i.e.,* requirements other than RH) during the applicable planning period. We therefore propose to approve Texas' submission as meeting Section 51.308(d)(1)(vi) because its RPGs for the Guadalupe Mountains and Big Bend do not represent less visibility improvement than is expected to result from the implementation of other requirements of the CAA during this planning period.

C. Evaluation of Texas' Reasonable Progress Goals

As required by Section 51.308(d)(1) of the Regional Haze Rule, the TCEQ has established RPGs for its two Class I areas, Big Bend and the Guadalupe Mountains. These RPGs must provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same planning period.

1. Establishment of the Reasonable Progress Goals

The TCEQ states that its RPGs are derived from the CENRAP modeling [187] and reflect emission reductions programs already in place, including CAIR and additional refinery SO_2 reductions as a result of our refinery consent decrees. The TCEQ states that these RPGs assume that either CAIR will remain in place or will be replaced by a comparable program to reduce visibility impairing pollution from Electric Generating Units (EGUs) in Texas and in the eastern United States. The following tables [188] summarize the TCEQ RPGs:

TABLE 5—TEXAS REASONABLE PROGRESS GOALS FOR 20% WORST DAYS

Class I area	Baseline conditions (dv)	Projected 2018 visibility (RPG) (dv)	Improvement projected by 2018 using RPG (dv)	Improvement by 2018 at URP (dv)	Date natural visibility attained at RPG rate
Big Bend	17.30	16.6	0.7	1.7	2155
Guadalupe Mountains	17.19	16.3	0.9	1.2	2081

[186] ''SIP Narrative comparison of changes from proposal to adoption'' available at: *http://www.tceq.texas.gov/assets/public/implementation/air/sip/haze/4HazeSIPcompare_rev.pdf*

[187] The TSD for CENRAP Emissions and Air Quality Modeling To Support Regional Haze State Implementation is found in Appendix 8.1 of the Texas regional haze SIP.

[188] Reproduced from Tables 10–2 and 10–3 of the Texas regional haze SIP.

TABLE 6—TEXAS REASONABLE PROGRESS GOALS FOR 20% BEST DAYS

Class I area	Baseline conditions (dv)	Projected 2018 visibility (RPG) (dv)	Improvement by 2018 (dv)
Big Bend	5.8	5.6	0.2
Guadalupe Mountains	5.9	5.7	0.2

Based on the results of Texas' required reasonable progress four-factor analysis (described in the following section), and the results of the CENRAP modeling and additional information developed by CENRAP, the TCEQ adopted the CENRAP modeled 2018 visibility conditions as the RPGs for the Big Bend and Guadalupe Mountains Class I areas. The TCEQ established a RPG of 16.6 dv for Big Bend and 16.3 dv for Guadalupe Mountains for the 20% worst days for 2018. This represents a 0.7 dv and 0.9 dv improvement in visibility over the baseline conditions at Big Bend and Guadalupe Mountains, respectively. Although Texas' RPGs do provide for some improvement in visibility for the most impaired days over the period of the SIP and ensure no degradation in visibility for the least impaired days over the same period, we believe the overall RPG goals that Texas established for its own Class I areas of Big Bend and Guadalupe Mountains do not provide for reasonable progress based on the four reasonable progress factors that a state is required to consider in selecting a RPG under (d)(1)(i)(A). For the reasons discussed below, we propose to find that the RPGs identified for the Texas Class I areas are not reasonable. We address our proposed finding regarding whether the Texas regional haze SIP satisfies the requirements under Section 51.308(d)(1) to set RPGs below.

2. Texas' Reasonable Progress Four Factor Analysis

In establishing a RPG for a Class I area located within a state, Texas is required by CAA Section 169A(g)(1) and Section 51.308(d)(1)(i)(A) to ''[c]onsider the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources, and include a demonstration showing how these factors were taken into consideration in selecting the goal.'' This requirement is often referred to as the reasonable progress ''four factor analysis.'' In addition to this explicit statutory and regulatory requirement, the Regional Haze Rule also establishes an analytical requirement to ensure that Texas carefully consider the suite of emission reduction measures necessary to attain the URP. Under Section 51.308(d)(1)(iii), the Regional Haze Rule provides that we will consider both Texas' consideration of the four factors in Section 51.308(d)(1)(i)(A) and its analysis of the URP ''[i]n determining whether the State's goal for visibility improvement provides for reasonable progress.'' As explained in the preamble to the Regional Haze Rule, the URP analysis was adopted to ensure that states use a common analytical framework and to provide an informed and equitable decision making process to ensure a transparent process that would, among other things, guarantee that the public would be provided with the information necessary to understand the emission reductions needed, the costs of such measures, and other factors associated with improvements in visibility.[189] The preamble to the Regional Haze Rule [190] also states that the URP does not establish a ''safe harbor'' for the state in setting its progress goals:

> If the State determines that the amount of progress identified through the [URP] analysis is reasonable based upon the statutory factors, the State should identify this amount of progress as its reasonable progress goal for the first long-term strategy, unless it determines that additional progress beyond this amount is also reasonable. If the State determines that additional progress is reasonable based on the statutory factors, the State should adopt that amount of progress as its goal for the first long-term strategy.

In establishing its RPGs for 2018 for the 20% worst days, the TCEQ relied on the improvements in visibility that are anticipated to result from federal, state, and local control programs. Based on the emission reductions from these measures, CENRAP modeled the projected visibility conditions anticipated at each Class I area in 2018 and the TCEQ used these results to establish its RPGs. The TCEQ states it developed its RPGs after considering the regulatory factors required under Section 51.308(d)(1)(i)(A), discussed above. The TCEQ focused its control strategy analysis on point source emissions of SO_2 and NO_X, as the sources of these pollutants are the main anthropogenic pollutants that affect visibility at Class I areas in Texas. It examined visibility impairment at the Texas Class I areas and Class I areas in nearby states. The TCEQ stated that source apportionment modeling results, summarized in Chapter 11 of the Texas regional haze SIP, demonstrate that NO_X and SO_2 are the main anthropogenic pollutants that affect visibility at the Class I areas in Texas and Class I areas in surrounding states. Source apportionment modeling also indicated that sulfur emissions that impact visibility are dominated by point sources, while impacts from NO_X emissions are more evenly distributed between area, mobile and point sources. The following table [191] summarizes the source category contributions from the 2002 base case CENRAP source apportionment modeling for the five Class I areas whose visibility is most impacted by Texas emissions. In evaluating the emission inventory projections, Texas concluded that for SO_2, point sources are responsible for over 90% of the projected 2018 statewide emissions, and for NO_X, point sources comprise over 45% of the projected statewide emissions. The TCEQ noted that NO_X emissions are more evenly distributed among point, mobile, and area sources, and that states have very limited authority to reduce mobile source emissions and are already addressing road and non-road mobile emissions. The TCEQ noted the largest category of area source NO_X is upstream oil and gas production, and it is taking all steps it has determined are reasonable at this time to control these sources as part of the Dallas-Fort Worth ozone SIP and is investing $4,000,000 in a grant program to assist with the retrofitting of gas-fired, rich burn compressor engines. The TCEQ also noted uncertainty in upstream oil and gas emission estimates. Therefore, the TCEQ reasoned that since point sources

[189] 64 FR 35733 (July 1, 1999).

[190] 64 FR 35732 (July 1, 1999).

[191] Reproduced from Table 3 in Appendix 10–1 of the Texas regional haze SIP.

are the single largest pollution category for SO_2 and NO_X, it should concentrate its RPG strategy on analyzing controls for point sources.

TABLE 7—PERCENTAGE SOURCE CATEGORY CONTRIBUTIONS TO SO_4 AND NO_3 AT THE FIVE CLASS I AREAS TEXAS MOST IMPACTS

	Big Bend			Guadalupe Mountains		
	Point	Mobile	Area	Point	Mobile	Area
SO_4	67.1	2.8	6.9	75.6	3.5	8.5
NO_3	26.6	28.6	14.3	29.2	36.5	13.9

	Wichita Mountains			Salt Creek			White Mountain		
	Point	Mobile	Area	Point	Mobile	Area	Point	Mobile	Area
SO_4	78.2	3.7	9.2	73.8	3.9	8.1	75.2	4.1	8.1
NO_3	28.1	44.7	13.4	35.8	29.9	17.1	27.9	40.3	12.0

Having narrowed the scope of the control analysis to point sources of NO_X and SO_2, the TCEQ developed a list of potential controls and costs associated with those controls to inform their four factor analysis. It used the control strategy analysis developed by CENRAP as the starting point for its analysis. CENRAP contracted with Alpine Geophysics to conduct an evaluation of possible additional point-source add-on controls for sources in CENRAP states. The Alpine Geophysics evaluation relied on AirControlNET,[192] a database tool we released in 2006 to enable cost-benefit analyses of potential emissions control measures and strategies. Alpine Geophysics prepared cost estimates for potential add-on controls for NO_X and SO_2 reductions in 2005 dollars for point sources in CENRAP states. The Iowa Department of Natural Resources and Kansas Department of Health and Environment staff developed Area-of-Influence (AOI) data for each Class I area in every CENRAP member state, as well as distance calculations for each source to each Class I area for inclusion in the Alpine Geophysics analysis. Available SO_2 and NO_X control strategies in the AirControlNET dataset were applied to EGU and non-EGU sources to develop a master list of available incremental control strategies for the CENRAP states.[193] The TCEQ reviewed this information for Texas sources and made changes based on additional information and past experience. The TCEQ also added some additional sources from source-types not included in the CENRAP AirControlNET dataset. This work resulted in a list of potential add-on controls for reducing SO_2 and NO_X at Texas point sources, an estimate of the costs associated with each control, and identification of the AOIs for each Class I area.

The TCEQ states its analysis focused on moderate cost controls for sources it believed were likely to contribute to visibility impairment at Class I areas. In an effort to further narrow the list of potential controls, the TCEQ followed the screening process summarized below and as detailed in Section 10–1.3 of Appendix 10–1 of the Texas regional haze SIP:

- Identified controls at sources with potential control strategy costs greater than $2,700 per ton SO_2 or NO_X were initially screened out.
- Remaining sources were reduced by eliminating the ones the TCEQ believed were so far away from any of the ten Class I areas, that any reduction in their emissions would likely not have a perceptible impact on visibility.
- Remaining sources were further reduced by eliminating the ones for which a ratio of the estimated projected 2018 base annual emissions (tons) of SO_2 or NO_X to distance (kilometers), to any Class I area, did not exceed five.
- Any source with predicted 2018 emissions less than 100 tons per year was excluded.

Separate from the above described screening process, the TCEQ also excluded additional NO_X controls on cement kilns from consideration, as it concluded it had already required all the measures it had determined reasonable to control NO_X emissions from these sources in the latest Dallas-Fort Worth ozone SIP revision. The TCEQ reasoned, based on a study performed for the Dallas-Fort Worth ozone SIP revision,[194] that a 35 to 50% NO_X control range was the most appropriate control level to address ozone formation. The TCEQ developed a source cap that required a reduction of approximately 9.69 tons per day (tpd) of NO_X emissions from the cement kilns in Ellis County starting March 2009.

The types of controls considered by the CENRAP study, based on industrial categories, are listed below:

SO_2 Control at 24 Facilities From 15 Sites

- Natural Gas Transmission—Flue Gas Desulfurization (FGD)
- Crude Petroleum—Sulfur recovery and/or tail gas treatment
- Inorganic chemical plants—coal washing and Spray Dryer Absorber (SDA) on boilers, increase efficiency of sulfuric acid plants
- Electric Generating Units (EGU)—coal washing and FGD wet scrubbing
- Carbon black—FGD

NO_X Control for 24 Facilities at 15 Sites

- Natural Gas Transmission—Low NO_X Burners (LNB), Selective Catalytic Reduction (SCR) + LNB
- EGU—LNB with Close Coupled Over-Fired Air (LNC1), and with both LNC1 and Separated Over-Fired Air (LNC3)
- Flat Glass—LNB, SCR
- Paper Mills SNCR and Oxygen Trim (OT) with water injection
- Chemical Plant Boiler—SCR

The total cost of controls and the resulting emission reductions were calculated by summing up the

[192] Additional information and a copy of the AirControl NET software can be found at: *http://www.epa.gov/ttn/ecas/AirControlNET.htm*

[193] Lists of NO_X and SO_2 controls meeting cost thresholds ranging from $1,500/ton to $10,000/ton developed by Alpine Geophysics are available in the docket to this action (See spreadsheets titled ''nox_cost_ton__2_'' and ''so2_cost_ton'')

[194] Assessment of NO_X Emission Reduction Strategies for Cement Kilns—Ellis County Final Report, TCEQ Contract No. 582–04–65589, Work Order No.05–06, Prepared by: ERG, Inc., 10200 Alliance Road, Suite 190, Cincinnati, Ohio 45242–4716. Available at: *http://www.tceq.state.tx.us/assets/public/implementation/air/sip/agreements/BSA/CEMENT_FINAL_REPORT_70514_final.pdf*

individual costs of those identified controls located within the AOI of Big Bend or the Guadalupe Mountains. The TCEQ also performed this calculation for eight additional Class I areas in other states impacted by Texas' emissions: Breton Island, Caney Creek, Carlsbad Caverns, Salt Creek, Upper Buffalo, Wheeler Peak, White Mountain, and the Wichita Mountains. The annualized costs [195] that would result from the imposition of the above controls within each Class I area's AOI are shown below.

TABLE 8—ANNUALIZED COST OF CONTROLS FOR EACH CLASS I AREA

[Controls at facilities within each class I area's AOI]

Class I area	NO_X	SO_2
Big Bend	$24,100,000	$215,900,000
Breton Island	27,000,000	231,000,000
Caney Creek	28,600,000	245,900,000
Carlsbad Caverns	24,100,000	255,500,000
Guadalupe Mountains	33,800,000	254,900,000
Salt Creek	27,000,000	251,900,000
Upper Buffalo	24,100,000	233,800,000
Wheeler Peak	22,700,000	229,500,000
White Mountains	23,000,000	244,500,000
Wichita Mountains	28,100,000	269,500,000

Many of these controls are in more than one AOI. The TCEQ reviewed the total cost of all state-wide point source controls identified by the process described above, as follows for 13 facilities with SO_2 controls and 15 facilities with NO_X controls.

TABLE 9—TOTAL ESTIMATED COST OF TEXAS CONTROL SET [196]

Pollutant	Reduction (tpy)	Estimated cost
Sulfur Dioxide (SO_2)	155,873	$270,800,000
Nitrogen Oxides (NO_X)	27,132	53,500,000
Total Costs	.....	$324,300,000

The196 TCEQ used the results of the 2018 CENRAP state-wide photochemical grid modeling analyses (that includes the 2018 modeling and a CENRAP control case modeling scenario) to estimate the visibility benefit that would result in 2018 from controlling those sources in Texas identified by it following the process described above. CENRAP developed a modeling scenario to estimate the effectiveness of a specific suite of controls on facilities in the CENRAP states. CENRAP based its control sensitivity analysis on a maximum estimated cost of $5,000 per ton of emissions of NO_X or SO_2 reduced estimated in the Alpine Geophysics report and evaluated only those point sources predicted to emit 100 tons or more of SO_2 or NO_X in the year 2018.[197] Similar to the Texas analysis, CENRAP further refined the sources for analysis, considering controls only for those sources with emissions of NO_X or SO_2 greater than or equal to five tons per year per kilometer of distance to the nearest Class I area. This distance-weighing criterion limited the sensitivity evaluation to sources with the greatest likely influence on visibility. The CENRAP control sensitivity modeling run included emission reductions beyond CAIR and BART in the CENRAP states at all point sources where the cost-effectiveness and Q/D [198] criteria discussed above were met, and projected the resulting visibility conditions in 2018 at the CENRAP Class I areas. This modeling was developed as a starting point for discussion and development of refined analyses as needed.[199]

The TCEQ used the CENRAP control sensitivity analysis and the CENRAP 2018 visibility projection modeling as the starting point for estimating the visibility benefit of implementing only the controls identified by it above for Texas point sources. The TCEQ used the results of this modeling analysis and the source apportionment modeling results to determine an ''effectiveness ratio'' for NO_X and SO_2 reductions, which it states provides an estimate of improvement in visibility for every ton of NO_X and SO_2 reduced in order to produce ''an order of magnitude estimate of the likely visibility improvements resulting from the point source.'' See Appendix 10–2 and 10–4 of the Texas regional haze SIP and our TX TSD for additional information on the methodology Texas used to develop this estimate.

The TCEQ summarizes the estimated visibility improvement that would result in 2018 from the imposition of all the above controls as follows [200]:

[195] Annualized costs are the total yearly costs, typically the sum of the yearly capital cost (amortized over the life of the control) and the yearly operational cost. In this instance, the TCEQ relied upon our AirControlNET model which for these types of controls typically assumed a 30 year control life.

[196] Reproduced from Table 4 in Appendix 10–1 of the Texas regional haze SIP.

[197] *See* Section 2.14 of the Technical Support Document for CENRAP Emissions and Air Quality Modeling to Support Regional Haze State Implementation Plans, September 12, 2007.

[198] Q/D is the ratio of annual emissions over distance to a Class I area.

[199] ''The results of the modeling were not intended to be prescriptive; instead, they were intended to be a starting point for control discussions that would require much greater refinement.'' CENRAP TSD, page 2–37.

[200] Table 5 in Appendix 10–1 of the Texas Regional Haze SIP.

TABLE 10—TCEQ PROJECTED VISIBILITY IMPROVEMENT TO SELECTED CLASS I AREAS FROM THE IMPOSITION OF POTENTIAL CONTROLS

Class I area	Visibility improvement (dv)
Big Bend	0.16
Breton Island	0.05
Caney Creek	0.33
Carlsbad Caverns	0.22
Guadalupe Mountains	0.22
Salt Creek	0.18
Upper Buffalo	0.16
Wheeler Peak	0.04
White Mountains	0.24
Wichita Mountains	0.36

After identification of potential controls for multiple sources, estimation of aggregate costs associated with those controls and estimation of the overall visibility improvement anticipated from implementation of those controls as described above, the TCEQ then weighed the four statutory factors in determining the reasonableness of additional controls and selecting the RPGs for Big Bend and Guadalupe Mountains. In general, the cost of compliance was the key factor considered by the TCEQ. It determined that the time necessary for compliance was not a critical factor for the determination of applicable additional controls for Texas sources. It stated that to the extent energy impacts are quantifiable for a particular control, they were included in its cost estimates. However, it stated that ''including [energy and non-air quality environmental] impacts on a source-by-source basis would have added further weight against finding that the potential additional controls were reasonable to apply.'' [201] The TCEQ also stated that for the purposes of initial analysis, no limited remaining useful life was assumed. The TCEQ describes the cost of compliance as a factor used to determine whether compliance costs for sources are reasonable compared to the emission reductions and visibility improvement they will achieve. The TCEQ weighed the four reasonable progress factors as follows:

a. Cost of Compliance

The TCEQ concluded that at a total estimated cost of over $300 million and (in its view) no perceptible visibility benefit, it was not reasonable to implement additional controls. All units in Texas that met the emissions over distance threshold were assessed. The TCEQ states it adopted its $2,700 cost threshold to limit the proposed controls group to cost-effective measures. Annualized cost values, and emission reductions based on proposed efficiencies listed in AirControlNET, were used. Modifications for Texas included the consideration of flue gas desulfurization for carbon black units.

b. Time Necessary for Compliance

The TCEQ determined that the time necessary for compliance was not a critical factor for the determination of applicable additional controls for its sources. It noted that in our CAIR regulatory impact statement, we estimated that approximately 30 months is required to design, build, and install SO_2 scrubbing technology for a single EGU boiler. The TCEQ stated that the total time for a single facility to comply with one of the NO_X caps would be about five years. It estimated that completion by 2018 would still be anticipated. For mobile sources, MOBILE and NONROAD model runs were completed for the 2018 emissions inventory. These model runs incorporated the degree of fleet and expected engine replacement prior to 2018. The completion of other proposed controls were anticipated by 2018.

c. Energy and Non-Air Quality Environmental Impacts of Compliance

The TCEQ stated that to the extent energy impacts are quantifiable for a particular control, they were included in its cost estimates. However, it stated that ''including [energy and non-air quality environmental] impacts on a source-by-source basis would have added further weight against finding that the potential additional controls were reasonable to apply. Source-by-source review of the non-air quality impacts of the potential controls would possibly have led to a different determination about the unreasonableness of the set of potential additional controls.'' [202] The TCEQ noted that scrubbers, SCR systems, and Selective Non-Catalytic Reduction (SNCR) systems installed under the EGU control strategies would require electricity to operate fans and other ancillary equipment. However, it noted that estimates were given that the electricity and steam required by controls installed to meet SO_2 and NO_X emission caps would be less than 1% of the total electricity and steam production of EGUs. TCEQ noted that Scrubbers, coal washing, and spray dryers would require additional safeguards for fuel handling and waste handling systems to avoid additional non-air environmental impacts such as increased effluents in waste water discharges and storm water runoff. The TCEQ expected that solid waste disposal and wastewater treatment costs would be less than five percent of the total operating costs of pollution control equipment. It noted that these factors would have to be considered specific to individual sources.

d. Remaining Useful life

The TCEQ noted that CENRAP considered the remaining useful life in modeling for mobile sources that assumes reduced emissions per vehicle mile traveled due to the turnover of the on-road mobile source fleet. It noted that for sources with a relatively short remaining useful life, this consideration would have weighed more heavily against a determination that controlling those sources would have been reasonable. The TCEQ believed that this factor was not critical for its sector analyses for the 2018 timeline and did not assume any limited useful equipment life. Only units that were scheduled for shutdown under enforceable decrees were eliminated from the 2018 inventory and further analysis.

e. TCEQ Noted Uncertainty in Visibility Projections Due to CAIR

The TCEQ noted that the majority of the emission reductions underlying the predicted visibility improvements in 2018 resulting from controls already in effect or scheduled to become effective will result from the CAIR program in particular. The CAIR program allows interstate trading of allowances, and does not put specific emission limits on specific sources. Further, it notes that because emission allowances can be purchased by EGUs, visibility improvement may be less or more that that predicted by the CENRAP's modeling. CENRAP used our Integrated Planning Model (IPM) to predict the emission reductions expected from CAIR in 2018. The TCEQ assumed that any replacement for CAIR will include interstate trading of emissions allowances. The TCEQ presents a comparison [203] of its baseline 2002 SO_2 emissions, the CAIR budget for EGUs in 2015 and the IPM predicted SO_2 emissions for the 2018 planning year:

[201] Page 10–8 of the Texas Regional Haze SIP.

[202] Texas Regional Haze SIP, page 10–8.

[203] Reproduced from Table 10–7 in the Texas Regional Haze SIP.

TABLE 11—COMPARISON OF TEXAS 2002 BASELINE SO_2 EMISSIONS, 2015 CAIR EGUS BUDGET AND 2018 IPM PREDICTED SO_2 EMISSIONS

SO_2 emissions	Texas SO_2 emissions (tpy)
Current (2002 base case)	550,000
EPA's CAIR budget for Texas EGUs for 2015	225,000
IPM projection CENRAP modeled for 2018	350,000

The TCEQ notes that the IPM model analysis used by CENRAP predicts that by 2018 EGUs in Texas will purchase approximately 125,000 tpy of emissions allowances from out of state. This represents more than 50% of Texas' total CAIR SO_2 budget. The TCEQ states that it requested that key EGUs in Texas review and comment on the predictions of the IPM model. However, no EGU made an enforceable commitment to any particular pollution control strategy and preferred to retain the flexibility offered by the CAIR program.

f. The TCEQ Reasonable Progress Conclusion

The TCEQ's assessment of reasonable progress rested primarily on its calculation of the total cost of the controls it analyzed versus the visibility benefits at the ten Class I areas it analyzed. It concluded, ''At a total estimated cost exceeding $300 million and no perceptible visibility benefit, Texas has determined that it is not reasonable to implement additional controls at this time.'' [204]

Section 51.308(d)(1)(iii) requires that in determining whether the state's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will evaluate the demonstrations developed by the state pursuant to Sections 51.308(d)(1)(i) and (d)(1)(ii). We perform that evaluation beginning in the next section.

3. Our Analysis of Texas' Reasonable Progress Four Factor Analysis

We agree with the TCEQ's decision to focus the analysis of the four statutory factors on point sources, as the CENRAP modeling results and the TCEQ's analysis in Chapter 11 and appendix 10–1 of the Texas regional haze SIP indicate that the predominant anthropogenic pollutants that affects the state's ability to meet the URP goals in 2018 on the worst 20% days at the Texas Class I areas are largely due to sulfate and nitrate, primarily from point sources. We agree with the TCEQ's assessment that the cost of compliance is the dominant factor, and its incorporation of the other factors into the cost, where applicable. We note, however, that because the TCEQ did not evaluate controls on a source-by-source basis, source–specific factors related to the evaluation of the reasonable progress four factor analysis could not be considered. We also agree with the TCEQ's decision to consider visibility benefits in weighing the factors and to assist in its consideration of the cost of compliance. While visibility is not an explicitly listed factor to consider when determining whether additional controls are reasonable, the purpose of the four-factor analysis is to determine what degree of progress toward natural visibility conditions is reasonable. Therefore, we believe it is appropriate to consider the projected visibility benefit of the controls when determining if cost-effective controls are warranted to make reasonable progress. However, the TCEQ did not discriminate between and analyze controls on those source(s) with the highest potential visibility benefit at each Class I area. We disagree with the set of potential controls identified by the TCEQ and how it analyzed and weighed the four reasonable progress factors in a number of key areas.

a. The TCEQ's Cost-Effectiveness Threshold Approach

The TCEQ eliminated controls with an estimated cost-efficiency greater than $2,700/ton from any further analysis, regardless of their potential visibility benefits. Given the large number of sources and their large geographic distribution, some consideration of location and emissions data is needed before controls should have been eliminated from further analysis. The TCEQ supports its selection of this value with reference to ''EPA estimated cost of implementing CAIR was up to $2,700/ton.'' However, although we demonstrated that CAIR was acceptable in lieu of BART, CAIR was not designed as a reasonable progress strategy. A state should look beyond BART for additional reductions when developing its long-term strategy to achieve reasonable progress at its Class I areas.[205] As a result of the application of this $2,700/ton threshold, potentially cost-effective controls were not evaluated at sources that may result in meaningful visibility benefits at Guadalupe Mountains or Big Bend. For example, potential SO_2 controls for the Tolk Station were estimated in the Alpine Geophysics analysis to cost an average of approximately $3,100/ton and result in nearly 20,000 tpy reduced across the two units. Applying the $2,700/ton threshold, the TCEQ did not consider potential controls on any EGUs in West Texas to improve visibility at the two Class I areas located in West Texas despite the potential visibility benefits from controlling these large point sources. Sensitivity analysis performed by CENRAP suggests to us that a threshold in the range of $4,000/ton to $5,000/ton would be reasonable for purposes of identifying potential cost-effective controls for further analysis.[206]

b. The TCEQ's Weighing of the Four Factors for Individual Sources

The TCEQ constructed a large potential control set consisting of a mix of large and small sources, located at various distances from Class I areas, with a large geographical distribution. Because of the variation in size, type, and location of these sources, the potential to impact visibility and potential benefit from controls at a given Class I area can vary greatly between the identified sources. This potential control set identified by the TCEQ included controls on some sources that would likely result in significant visibility benefits, but also included controls on many sources with much less anticipated visibility benefits. Because it only estimated the visibility benefit of all the controls together, the TCEQ was not able to assess the potential benefit of controlling individual sources with significant, and potentially cost-effective, visibility benefits. Also, we believe that individual benefits were masked by the inclusion of those controls with little visibility benefit that only served to increase the total cost figures. For example, the TCEQ identified SO_2 controls at Big Brown to be approximately $1,500/ton, significantly less than its $2,700/ton threshold. These controls were estimated to achieve greater than 40,000 tpy SO_2 emission reductions. Despite this evidence in the record of an identified cost-effective control that results in large emission reductions, and source apportionment modeling identifying large impacts from

[204] Texas Regional Haze SIP, page 10–7.

[205] Per Section 51.308(e)(5), ''After a State has met the requirements for BART or implemented emissions trading program or other alternative measure that achieves more reasonable progress than the installation and operation of BART, BART-eligible sources will be subject to the requirements of paragraph (d) of this section in the same manner as other sources.''

[206] See ''Sensitivity Run Specifications for CENRAP Consultation,'' available in the docket for this action.

EGU sources in northeast Texas, the TCEQ did not separately evaluate the visibility benefit from the implementation of this control, or appropriately weigh the four reasonable progress factors in determining the reasonableness of this individual control.

Because individual sources were not considered by the TCEQ, we found it is necessary to conduct an additional analysis to determine whether this approach materially affected the outcome of the TCEQ analysis. As we demonstrate in detail in our FIP TSD, by analyzing sources individually, we believe we have identified a small number of sources that are responsible for much of Texas' collective visibility impact on the Texas' Class I areas, which if controlled, would provide for visibility benefit at Texas' Class I areas. That modeling is summarized below.

Our preliminary modeling study identified those facilities with the largest impacts on the Texas Class I areas on the 20% worst days in 2018.[207] This modeling includes the same projections the TCEQ used to account for predicted reductions due to CAIR. The projected impacts[208] in 2018 from the top ten facilities in Texas that impact visibility at Big Bend and the Guadalupe Mountains are summarized in Tables 12 and 13 below (see our FIP TSD for more details). Texas point sources combined are projected in 2018 to contribute approximately 8% (3.56 Mm^{-1}) to the total visibility impairment at Big Bend, and 9% (3.84 Mm^{-1}) to the total visibility impairment at Guadalupe Mountains. These results below show that some facilities can have large impacts on certain days and significant impacts on the 20% worst days, even including facilities like Big Brown which is more than 700 km from Big Bend and more than 800 km from the Guadalupe Mountains. We note that Texas decided to invite states to consult using the CENRAP Particulate Matter Source Apportionment Technology (PSAT) results and included states with > 0.5 inverse megameter impact (from all sources in the state) on one of Texas' Class I areas.[209] These results also suggest that controlling a small number of sources will result in visibility benefits at both Class I areas, and that rather than evaluating controls at all facilities identified by Texas combined, a subset of those facilities (and some additional facilities not identified) may be reasonable.

TABLE 12—2018 PHASE 1 EPA SOURCE APPORTIONMENT MODELING RESULTS, TOP TEN FACILITIES IN TEXAS THAT IMPACT VISIBILITY AT BIG BEND

Rank	Facility name	Extinction (Mm^{-1}) 20% worst days	% Contribution to total visibility impairment 20% worst days	Max extinction during 20% worst days
1	SOMMERS DEELY S	0.276	0.57	1.193
2	COLETO CREEK PL	0.216	0.44	0.937
3	BIG BROWN	0.212	0.44	0.923
4	RELIANT ENERGY*	0.103	0.21	0.441
5	LIGNITE–FIRED P**	0.101	0.21	0.428
6	MONTICELLO STM	0.096	0.20	0.413
7	W A PARISH STAT	0.090	0.18	0.385
8	BIG SPRING CARB	0.084	0.17	0.356
9	SANDOW STEAM EL	0.080	0.16	0.342
10	MARTIN LAKE ELE	0.080	0.16	0.342

*This is the Limestone facility.
**This is the San Miguel facility.

TABLE 13—2018 PHASE 1 EPA SOURCE APPORTIONMENT MODELING RESULTS, TOP TEN FACILITIES IN TEXAS THAT IMPACT VISIBILITY AT GUADALUPE MOUNTAINS

Rank	Facility name	Extinction (Mm^{-1}) 20% worst days	% Contribution to total visibility impairment 20% worst days	Max extinction during 20% worst days
1	TOLK STATION	0.302	0.65	1.004
2	BIG BROWN	0.235	0.50	0.809
3	BIG SPRING CARB	0.226	0.48	0.775
4	SOMMERS DEELY S	0.208	0.44	0.688
5	HARRINGTON STAT	0.184	0.39	0.606
6	MONTICELLO STM	0.114	0.24	0.391
7	WAHA PLANT	0.113	0.24	0.387
8	RELIANT ENERGY*	0.111	0.24	0.372
9	MARTIN LAKE ELE	0.104	0.22	0.351
10	COLETO CREEK PL	0.066	0.14	0.227

*This is the Limestone facility.

[207] As discussed later in this TSD, this study also looked at impacts from Texas sources on Class I areas in other States.

[208] We occasionally present visibility in extinction, rather than deciviews (dv). Light extinction, in units of inverse megameters (Mm^{-1}), is the amount of light lost as it travels over one million meters. The haze index, in units of deciviews (dv), is calculated directly from the total light extinction, bext, as follows: HI = 10 ln(bext/10). Extinction is an appropriate measure for the visibility impairment contribution from individual sources because it avoids the sensitivity of the logarithmic transformation for calculating deciviews to the overall level of visibility impairment including the impacts of other sources.

[209] See Appendix 4–1: Summary of Consultation Calls.

c. The TCEQ's Cost of Compliance Analysis Assumed Future CAIR Reductions as a Baseline

We based our determination that CAIR was better than BART in part on a finding that CAIR resulted in an overall improvement in visibility determined by comparing the average differences over all affected Class I areas. We noted at the time that BART is one component of a long-term strategy to make reasonable progress, but it is not the only component. [210] Thus, when assessing reasonable progress, a state should look beyond BART for additional reductions when determining what long-term strategy will achieve reasonable progress at its Class I areas. A critical decision point in performing cost analysis for potential controls is the determination of an emission baseline. As we state above, the TCEQ projected that Texas EGUs would purchase approximately 125,000 tpy of emissions allowances from out of state. The TCEQ relied on the IPM predictions as discussed above to estimate 2018 emission levels for EGUs. The TCEQ also notes that there is uncertainty in the size and distribution in emissions in the future projections. Nevertheless, the TCEQ utilized this future projection of 2018 emissions as the starting point for its estimation of emission reductions and the associated costs of additional controls.

For example, Big Brown Unit 1's SO_2 emissions in 2002 were 34,448 tpy. The IPM predictions that were incorporated into the 2018 emission level assume that a roughly 1/3 reduction in these emissions will occur in response to CAIR by switching to a coal with a lower sulfur content, resulting in a 2018 SO_2 emission level of 23,142 tpy. The TCEQ's cost-effectiveness calculation for post-combustion controls on Big Brown Unit 1 was based on reducing that projected 2018 SO_2 emission level of 23,142 tpy by 90%, resulting in a reduction of 20,828 tpy. This results in a cost of $32,766,310/yr, or a cost-effectiveness calculation of $1,573/ton. However, the installation of a scrubber would allow Big Brown flexibility in fuel choice thus allowing the unit to continue to burn the higher average sulfur fuel it currently burns, instead of moving to the low sulfur coal predicted by IPM.

Big Brown Unit 1 SO_2 emissions in 2012 were 32,100 tons. The issue of scrubber efficiency aside, a reduction of 90% from these actual emission levels would result in an SO_2 reduction in the range of 29,000 to 31,000 tpy. While the numerator ($) in the cost-effectiveness metric of $/ton will increase slightly beyond what was estimated by Alpine Geophysics due to an increased sulfur loading to the scrubber, the denominator (tons) would increase by roughly 50%, thus improving (lowering) the overall cost-effectiveness of controlling Big Brown Unit 1 significantly.[211] Estimates for scrubbers at Monticello are similarly impacted by the cost-methodology used by Texas in estimating cost-effectiveness on a cost-per-ton basis.

We believe that in performing its control analysis, the TCEQ should have given greater consideration to the flexibility in the CAIR trading program and the resulting uncertainty in the projected emissions. In other words, the TCEQ could have recognized that implementation of reasonable controls under the Regional Haze Rule would likely not be in addition to anticipated reductions due to CAIR predicted by IPM, but would replace or complement any controls predicted by IPM.

d. The TCEQ's Assumptions of SO_2 Control Efficiency of Scrubbers

We note that the control efficiency of scrubbers evaluated by CENRAP and Texas, based on the data from AirControlNET, was assumed to be 90%. As we discuss in detail in our FIP TSD, we establish that SO_2 scrubbers are capable of achieving emission reductions of at least 95% for dry scrubbers and 98% for wet scrubbers. These additional reductions would further reduce the price on a $/ton basis and increase the visibility benefit anticipated due to controls.

e. The TCEQ's Evaluation of Potential Visibility Improvements

In considering whether compliance costs for sources were reasonable, the TCEQ compared those costs to the emission reductions and visibility improvement those sources would achieve. While visibility is not an explicitly listed factor to consider when determining whether additional controls are reasonable, the purpose of the four-factor analysis is to determine what degree of progress toward natural visibility conditions is reasonable. Therefore, we consider it appropriate to consider the projected visibility benefit of the controls when determining if the controls are needed to make reasonable progress. We discuss this in more detail in our FIP TSD.

In evaluating and dismissing the estimated visibility benefit from the control set identified by the TCEQ, the TCEQ states that the estimated benefit is not perceptible (less than 1 dv) and that it is less than 0.5 dv, the threshold used under BART requirements used to determine if a facility contributes to visibility impairment. The 0.5 dv BART threshold referred to applies to the maximum anticipated visibility impact on a single day due to the short-term maximum actual baseline emissions from a single facility, compared to clean background conditions. The reasonable progress analysis presented by the TCEQ contemplates the visibility benefit anticipated for an average tpy emission reduction (as opposed to the impact from the total short-term maximum emissions from the sources) averaged across the 20% worst days, which would be anticipated to be significantly lower. See our FIP TSD for a detailed discussion of the different metrics and modeling typically used for BART and reasonable progress analyses. Furthermore, in a situation where the installation of BART may not result in a perceptible improvement in visibility, the visibility benefit may still be significant, as explained by the Regional Haze Rule: [212]

> Even though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I area. Thus, we disagree that the degree of improvement should be contingent upon perceptibility.

As we stated in our Oklahoma final decision: [213]

> Given that sources are subject to BART based on a contribution threshold of no greater than 0.5 deciviews, it would be inconsistent to automatically rule out additional controls where the improvement in visibility may be less than 1.0 deciview or even 0.5 deciviews. A perceptible visibility improvement is not a requirement of the BART determination because visibility improvements that are not perceptible may still be determined to be significant.

f. The TCEQ's ''Order of Magnitude Estimate'' for Visibility Improvement

The TCEQ produced an ''order of-magnitude estimate'' of the visibility improvements resulting from the level of aggregate emission reductions that would result from its point source control strategy using PSAT results and effectiveness ratios. This methodology assumes that all emission reductions within a PSAT region have the same

[210] 70 FR 39137 (July 6, 2005).

[211] See our cost-effectiveness calculations for retrofitting Big Brown and other Texas EGU with scrubbers in section VII.F.

[212] 70 FR 39130 (July 6, 2005)

[213] 76 FR 81739 (Dec. 28, 2011).

effectiveness in reducing visibility impairment. The estimated effectiveness factor applied equally to all emission reductions located in the East Texas source region, including Sommers Deely Spruce (440 km from Big Bend and 680 km from Guadalupe Mountains) and Monticello (850 km from Big Bend and 920 km from Guadalupe Mountains). Given the large difference in distances between these two facilities and the Class I areas, it is reasonable to expect that the effectiveness of emission reductions could vary greatly between the two. We propose to find that the TCEQ's analysis is insufficient to determine the visibility benefit of controlling the source or subset of sources with the most effective controls for improving visibility conditions at a Class I area or a number of Class I areas and that the potential visibility benefits from controlling these sources may be significant. Our own source apportionment modeling has confirmed that individual sources within the CENRAP modeling PSAT regions had significantly different impacts, leading us to believe that TCEQ's reliance on an aggregate analysis materially affected its conclusion that existing and scheduled controls would achieve reasonable progress.[214]

g. Upgrades to Existing Controls

The CENRAP analysis and the additional analysis performed by the TCEQ did not consider the reasonableness of control upgrades or increased utilization of existing controls. We note that the AirControlNET database does not include general information for the cost and effectiveness of scrubber upgrades as the cost and reductions from these potential upgrades are typically very specific to the existing equipment and site-specific conditions. Many Texas EGU's are equipped with older vintage scrubbers and/or have scrubber bypasses that divert a portion of the exhaust gas around the control equipment. In some cases, excess scrubbing capacity is simply not being utilized. Texas includes many of these sources with controls in the maps showing area of influence and ''high priority'' sources for other state's Class I areas, as well as in the table of sources within the Class I areas AOI, in their correspondence with other states (see Appendix 4.3 of the TX regional haze SIP). However, Texas did not provide any analysis of the four factors on these partially controlled sources or include these sources in a Q/D analysis to identify those sources with the largest potential to impact visibility due to emissions and distance. There are a number of EGUs with existing controls with 2018 projected emissions large enough to have a Q/D many times greater than threshold (Q/D > 5) used by Texas. Furthermore, even with these existing controls, some of these EGUs are among the largest SO_2 sources in the state. For example, the Martin Lake facility has a Q/D for Guadalupe Mountains (958 km away) greater than 37 using the projected 2018 SO_2 emissions.[215] The 2018 projected emissions includes predicted emission reductions due to CAIR at many of these controlled facilities, suggesting some increase in control efficiency and/or burning fuels with a lower average sulfur content is already included in the 2018 projections. Absent any additional analysis, however, it is not possible to determine whether additional reductions beyond those included in the 2018 emission inventory for these facilities are cost-effective, result in visibility benefits at the Class I areas and are reasonable. For example, emissions at Martin Lake unit 1 in the CENRAP emission inventory are projected to decrease from 24,832 tpy in 2002 to 11,351 tpy in 2018. As we discuss in our FIP TSD, based on coal data submitted to the U.S. Energy Information Administration, upgrading the existing scrubber to 95% control efficiency would result in an approximate emission reduction of an additional 7,000 tpy beyond those reductions projected to occur due to CAIR. Scrubber upgrades across all three Martin Lake units could result in emission reductions of approximately 21,000 tpy beyond the level of control assumed in the 2018 projections. Given the size of these sources, the size of the impact from Texas emissions, and the source apportionment data indicating the large impact from SO_2 emissions from EGUs, we believe it was unreasonable for Texas to not perform any analysis on these sources or request additional information from the facilities concerning potential upgrades. As documented in our FIP TSD, scrubber upgrades are often very cost-effective on a cost per ton basis. Our analysis in the FIP TSD demonstrates that many of these older SO_2 scrubbers can be cost-effectively upgraded. The importance of this omission becomes clear from our analysis that shows that for a cost-effectiveness of approximately $600/ton or less, over 100,000 tpy of SO_2 emission reductions can be achieved from a small number of scrubber upgrades, resulting in cost-effective visibility benefits at Texas Class I areas and Class I areas in other states. Thus, we propose to find that this omission by TCEQ materially affected the outcome of its four-factor analysis. See our FIP TSD for a detailed discussion of the visibility benefits anticipated from scrubber upgrades.

h. Our Conclusion Regarding the TCEQ's Analysis of the Four Reasonable Progress Factors

For the reasons described above, we propose to disapprove Texas' analysis of the reasonable progress factors under Section 51.308(d)(1)(i)(A).

4. Texas' Assertion That its Progress Goals Are Reasonable

Section 51.308(d)(1)(ii) provides that for the period of the SIP, if Texas establishes a RPG that provides for a slower rate of improvement in visibility than the rate that would be needed to attain natural conditions by 2064, it must demonstrate based on the factors in Section 51.308(d)(1)(i)(A) that the rate of progress for the SIP to attain natural conditions by 2064 is not reasonable; and that the progress goal it adopted is reasonable. As part of its SIP assessment, Texas must provide to the public for review the number of years it would take to attain natural conditions if visibility improvement continues at the rate of progress it selected as reasonable. In determining whether the Texas' goals for visibility improvement provide for reasonable progress towards natural visibility conditions, the Administrator will evaluate the demonstrations developed by it pursuant to Section 51.308(d)(1)(i) and (d)(1)(ii).

a. The TCEQ's Evaluation

Texas' RPGs for the 20% worst days establish a slower rate of progress than the URP for Big Bend and the Guadalupe Mountains. The TCEQ calculated that under the rate of progress selected as reasonable, natural visibility conditions (as calculated by Texas) would not be attained at Big Bend until 2155 and at the Guadalupe Mountains until 2081. In Appendix 10–3 of its regional haze SIP, the TCEQ includes calculations based on our default natural conditions, estimating attainment of natural visibility conditions at the Big Bend in 2215 and Guadalupe Mountains in 2167.

The TCEQ believes the RPGs it established for Big Bend and the Guadalupe Mountains on the 20% worst

[214] See the FIP TSD.

[215] We note that recent actual emissions at the facility are roughly twice as large as the 2018 projected value. Based on 2002 emissions, the Q/D for Guadalupe Mountains for SO_2 emissions is approximately 69.

days are reasonable, and that it is not reasonable to achieve the glide path in 2018. In support of this conclusion, it included a discussion of the pollutant contributions and the sources of visibility impairment at these Class I areas (see Section 10.6. and Chapter 11 of the Texas Regional Haze SIP and Table 14 below). In considering the four reasonable progress factors under 40 CFR 51.308(d)(i)(A), as discussed in Section V.C.2, above, the TCEQ also took other factors into consideration in determining that it is not reasonable to achieve the glide paths in 2018 and that the RPGs adopted by the state are reasonable. The TCEQ indicated that the ability to meet the URP or make additional progress towards reaching natural visibility conditions is impeded primarily by the following: the significant contribution of emissions from Mexico and other international sources; the uncertainty in the effect of CAIR; and the poor cost-effectiveness of additional reasonable point source controls.

The TCEQ noted that the CENRAP PSAT analysis indicates that 52% of the impairment at Big Bend and 25% of the impairment at Guadalupe Mountains is from Mexico and further south. Substantial reductions in emissions from outside the United States are needed to meet the goal of natural visibility at the Texas Class I areas. As discussed elsewhere in this notice, the TCEQ considered the URP and the emission reductions necessary to meet the URP in establishing the RPG.

TABLE 14—CENRAP'S PSAT CONTRIBUTION TO VISIBILITY IN THE TEXAS CLASS I AREAS ON THE WORST 20% DAYS

Contribution by area	Big Bend (%)	Guadalupe Mountains (%)
Texas	24.8	34.8
Mexico	26.7	16.5
Boundary Conditions	25.7	8.7
Other U.S.	11.9	18.9
Miscellaneous	5.8	9.6
Neighboring States	5.1	11.5

In addition, with respect to reductions at Texas sources, the TCEQ noted a wide range of measures and programs in place in Texas that result in emission reductions that often go beyond federal requirements. Chapter 11 and Appendices 11–2 (Federal and Texas Programs Related to On-Road and Non-Road Mobile Sources) and 11–3 (Major Point Source NO_X Rules and Reductions Promulgated in Texas Since 2000) detail additional rules and programs that minimize emissions that can cause or contribute to local and regional visibility impairment. In Section 10.2 of the Texas regional haze SIP, the TCEQ identifies the following programs:

- Opacity limits on grandfathered facilities;
- Best Available Control Technology (BACT) requirements that typically go beyond EPA's New Source Performance Standards (NSPS) for new and modified sources;
- Extensive NO_X emission limits on existing and new sources including major, minor and area sources including some on a statewide basis;
- Texas Emission Reduction Program (TERP), which provides financial incentives to accelerate the implementation of new, cleaner diesel engine technologies in on-road and non-road applications; and
- Air Check Texas Repair and Replacement Assistance Program, which provides financial incentives for scrapping older gasoline-powered on-road vehicles.

The TCEQ noted that the established RPGs reflect emission reduction programs already in place, including CAIR, additional refinery SO_2 reductions as a result of refinery consent decrees, Texas ozone SIP revisions, and the Texas Clean Air Act. It noted that the majority of the emission reductions underlying the predicted visibility improvements are from the CAIR program or its eventual replacement. The TCEQ assumes that any replacement for CAIR will include interstate trading of emissions allowances and therefore there is uncertainty regarding how visibility will be improved at individual Class I areas. The TCEQ states that because emission allowances can be purchased by EGUs relatively close to the Texas Class I areas from EGUs far from the Texas Class I areas, the visibility improvement, may not be as great as predicted by the CENRAP's modeling. Conversely, nearby EGUs may elect to control beyond their emission caps and sell emission allowances out of state, resulting in reduced emissions closer to the Texas Class I areas.

The TCEQ concluded that ''given the significant impact from international emissions, the uncertainty in the impact of CAIR, and the poor cost-effectiveness of additional, reasonable point source controls, the TCEQ has determined that additional controls for regional haze are not appropriate at this time.'' [216]

b. Our Evaluation

We agree that there is uncertainty regarding the size and location of reductions at Texas EGUs due to implementation of CAIR/CSAPR. While reductions at certain facilities within Texas would result in improvements in visibility conditions at the Texas Class I areas or Class I areas in other states, similar reductions at other facilities may have no impact on visibility conditions at the Class I area. Furthermore, reductions that are seasonal in nature due to decreased operation during the fall and/or winter reduce annual emissions, contribute towards CAIR/CSAPR compliance, but will not lead to improved visibility during the 20% worst days, which typically occur during the summer months. For example, in recent years the Monticello units have been shut down for several non-summer months, which has resulted in reduced annual emissions, while having no impact on summer time emissions or visibility impacts during the summer months. The CENRAP source apportionment results include the projected reductions due to CAIR compliance and show that even after these reductions, impacts from Texas points sources remain the most significant portion of the total visibility impairment with available controls at Big Bend and Guadalupe. Analysis of recent emissions from Texas EGUs shows that in many cases current emission levels are above those predicted in the 2018 CENRAP modeling. In fact, in the case of Martin Lake, current annual emissions are roughly twice those included in the 2018 modeling, and we are not aware of

[216] Section 10.7 of the Texas Regional Haze SIP.

any upcoming controls or changes in operation to suggest that future actual emissions will decrease to those predicted levels.

We also agree with the TCEQ's conclusion that it is not reasonable to meet the URP for the Texas Class I areas for this planning period. We agree with the TCEQ that emissions and transport from Mexico and other international sources will limit the rate of progress achievable on the 20% worst days and that efforts to meet the goal of natural visibility by 2064 would require further emission reductions not only within Texas, but also large emission reductions from international sources.

We also note the more recent IMPROVE monitored data at the Big Bend and Guadalupe Mountains indicate that more progress than anticipated by the CENRAP modeling has occurred.[217] The most recent five-year (2009–2013) average conditions for the 20% worst days is 16.3 dv at Big Bend and 15.3 dv at Guadalupe Mountains. This is below the level anticipated in the CENRAP projection for 2018 of 16.6 dv for Big Bend and 16.3 dv for Guadalupe Mountains. We believe that this observed improvement from the baseline conditions is the result of meteorological conditions, reduction in the impacts from SO_2 emissions, and a reduction in the impacts from coarse material. More recent emission inventory data shows reductions in emissions in most states beyond what was projected in the 2018 modeling, including large reductions in emissions from the Eastern United States. Emissions from non-EGU Texas point sources are lower than have been projected in the modeling. We note that additional reductions are still needed to meet or exceed the URP goals for 2018 as calculated by us in Section VII.M below. As discussed above, emission reductions at some of the sources that impact visibility the most are still above the emission level projected in the model and we believe that cost-effective controls are likely available at these sources.

However, for the reasons we have discussed above, although we agree with the TCEQ that a rate of improvement necessary to attain natural visibility conditions by 2064 is not reasonable, we do not believe that the rate of improvement the TECQ has selected is reasonable, because we disagree with its four factor analysis and the analysis of emission measures needed to meet the URP. Therefore we propose to disapprove the TCEQ's RPGs for Big Bend and the Guadalupe Mountains under Section 51.308(d)(1)(ii). In so doing, we rely on the specific directive in Section 51.308(d)(1)(iii): ''In determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will evaluate the demonstrations developed by the State pursuant to paragraphs (d)(1)(i) and (d)(1)(ii) of this section.'' We also propose to disapprove the Texas' RPGs for the 20% best days. We propose to find that visibility on these days will be better than Texas projects, given additional controls in our proposed FIP.

5. Reasonable Progress Consultation

Pursuant to Section 51.308(d)(1)(iv), Texas consulted with other states which may reasonably be anticipated to cause or contribute to visibility impairment at its two Class I areas. In any situation in which Texas cannot agree with another such state or group of states that a goal provides for reasonable progress, Texas must describe in its submittal the actions taken to resolve the disagreement. In reviewing Texas' SIP submittal, the Administrator will take this information into account in determining whether Texas' goal for visibility improvement provides for reasonable progress towards natural visibility conditions.

The TCEQ held three conference calls in July, 2007 to which Arkansas, Kansas, Louisiana, New Mexico, and Oklahoma were invited. The TCEQ used CENRAP generated products, such as regional photochemical modeling results and visibility projections, and source apportionment modeling to assist in identifying neighboring states' contributions to the visibility impairment at its Class I areas. Specifically, the TCEQ used the results from the CENRAP particulate matter source apportionment technology (PSAT) modeling to determine that New Mexico, Oklahoma, Kansas, and Louisiana contribute to visibility impairment at the Texas Class I areas. The TCEQ invited those states with a > 0.5 inverse megameter impact on one of its Class I areas to its consultations. Other participants that attended one or more of the calls included CENRAP, us, and the federal land managers. The TCEQ invited tribes in all of the CENRAP states to the consultation calls, but no tribes participated in the consultation on Big Bend and Guadalupe Mountains. These calls are summarized in Appendix 4–1 of the Texas regional haze SIP.

The first consultation call primarily addressed technical papers that discussed the natural conditions, the impacts of dust storms in Big Bend and the Guadalupe Mountains, our IPM emission projections, and the URP and RPGs for the Texas Class I areas. The second and third consultation calls consisted of discussions between the states and federal land managers regarding the dust storm technical papers. The TCEQ presented the URPs for its Class I areas, discussed controls that are in place in Texas, and its decision that no additional controls would be included in its regional haze SIP. The federal land managers suggested that the TCEQ revise the Prevention of Significant Deterioration (PSD) permit process to include FLM notification provisions. Texas committed to further consultations with the federal land managers to address their concerns about the Texas PSD program.

The TCEQ discussed the CENRAP PSAT modeling results with the attendees. It noted that the BRAVO study indicated that for SO_4, which has the largest visibility impact of all pollutants at Big Bend, approximately ⅓ comes from Mexico, ⅓ from Texas, and ⅓ from the Midwest and South beyond Texas. It noted that these results are somewhat inconsistent with CENRAP PSAT modeling results, which indicate that slightly more than half of the visibility impairment at Big Bend comes from Mexico and other areas outside the U.S.

New Mexico and the federal land managers discussed that despite the Guadalupe Mountains in Texas and Carlsbad Caverns in New Mexico sharing the same monitor, these Class I areas appeared to have significantly different calculated natural visibility values, individually prepared by the two states.[218] The federal land managers and we both expressed a desire to review the TCEQ's natural visibility calculation.

The TCEQ concluded its consultations by noting that other states' visibility impacts on Big Bend and the Guadalupe Mountains are relatively small. Texas sources are responsible for 25% and 35% of the visibility impairment at Big Bend and the Guadalupe Mountains, respectively. Neighboring states combined contribute only 5% of the visibility impairment at Big Bend and 11.5% at the Guadalupe Mountains. As a result of these

[217] Available at: *http://vista.cira.colostate.edu/tss/*

[218] Note that we discuss the difference between the natural visibility value calculated by New Mexico for Carlsbad Caverns and that calculated by Texas for the Guadalupe Mountains elsewhere in our proposal.

consultations, the TCEQ did not request any additional reductions from other states.

Citing the source apportionment results and results of the BRAVO study, in Section 11.3 of the Texas regional haze SIP, Texas requests in its SIP that we initiate and pursue federal efforts to reduce impacts from international transport. Due to large contributions from international sources, the TCEQ concludes it will be impossible to reach natural conditions without significant reductions in Mexico and other countries, in parallel with reductions within Texas and the rest of the United States. The TCEQ notes that Class I areas in other states will also benefit from reductions in emissions from international sources. We acknowledge that emissions from Mexico significantly impact the visibility at Big Bend and the Guadalupe Mountains. As we state in the Regional Haze Rule,[219] ''the EPA does not expect States to restrict emissions from domestic sources to offset the impacts of international transport of pollution. We believe that States should evaluate the impacts of current and projected emissions from international sources in their regional haze programs, particularly in cases where it has already been well documented that such sources are important.''

We reviewed the CENRAP PSAT data for the Texas Class I areas referred to during the consultation calls, as well as the technical papers discussed during those calls and the summary of the calls in Appendix 4–1 of Texas' SIP submittal. Approximately half of the 2002 visibility impairment at Big Bend is due to Mexico and other international sources captured in the modeled boundary conditions, one quarter of the impairment is due to Texas sources and the remaining quarter is due to all the remaining sources combined, with the largest contributions in this group from the Eastern United States (2.5%) and Louisiana (2.8%). Examining only contributions due to point sources in 2002, Texas point sources contribute 10% of the total visibility impairment at Big Bend and Mexico point sources contribute 16.9%. The largest impact from a nearby state is Louisiana at a little more than 2% contribution. All other nearby states contribute less than 1% to the total visibility impairment at Big Bend. The source apportionment results for 2018 projections at Big Bend show similar levels of contribution with a slight decrease in Texas and Eastern United States contributions. Mexico and other international sources contribute approximately one quarter of the visibility impairment and Texas contributes about one third of the visibility impairment at the Guadalupe Mountains in 2002. The next largest contributing source regions are New Mexico (7.3%, 4.7% from natural sources), Kansas (3.3%), the Eastern United States (3.2%), Western United States (3.0%), and Oklahoma (2.5%). Examining only contributions due to point sources in 2002, Texas point sources contribute 8.7% of the total visibility impairment and Mexico point sources contribute 6.8%. The largest impact from a nearby state is New Mexico at a little more than 1% contribution. All other nearby states contribute less than 1% to the total visibility impairment at Guadalupe Mountains. The source apportionment results for 2018 projections at Guadalupe Mountains show similar levels of contribution with a slight decrease in eastern United States contributions. PSAT results show an overwhelming contribution from international sources and Texas sources and the technical papers shared by Texas suggest that dust storms significantly impact a number of the worst 20% days at these Class I areas.

We find that the TCEQ appropriately identified those states with the largest impacts on Texas Class I areas and invited them for consultation. We agree with Texas' determination that was not reasonable to request additional controls from other states at this time. Given the small contributions from individual nearby states, especially when only considering anthropogenic sources that can be easily controlled in comparison with the size of impacts from Texas sources and international sources, we find that it was reasonable for the TCEQ to have focused the analysis of additional controls on sources within Texas. We propose to find that Texas has satisfied the requirement under Section 51.308(d)(1)(iv) to consult with other states which may reasonably be anticipated to cause or contribute to visibility impairment at its two Class I areas.

D. Evaluation of Texas' BART Determinations

As part of its strategy to address BART, the TCEQ adopted a BART rule on January 10, 2007, as 30 TAC Chapter 116, Subchapter M.[220] This rule identifies potentially affected sources as those belonging to one of 26 BART source industry categories; having a Potential to Emit (PTE) of 250 tpy or more of any visibility impairing pollutant; and not operating prior to August 7, 1962, and being in existence on August 7, 1977. It uses a value of 0.5 dv as the visibility contribution threshold. It also incorporates the BART model plant and de minimis exemption criteria discussed below, and exempts EGUs that participate in CAIR from undergoing a BART review for NO_X and SO_2. It specifies that all non-exempt sources must undergo a BART review, according to the BART Guidelines. Lastly, it provides that BART controls must be installed and operational within 5 years following our approval of this SIP. We have reviewed the Texas BART rule and propose to approve it, with the exception of Texas' reliance on CAIR to meet BART, as discussed in more detail in Section V.D.3.

Texas exercised its option under Section 51.308(e)(4) (as it read at that time) that participation in CAIR is equivalent to BART. This exempted EGUs impacted by CAIR from a BART analysis for SO_2 and NO_X. As a result, the TCEQ did not evaluate BART-eligible EGUs that are included in CAIR for SO_2 and NO_X. This EGU BART exemption does not extend to particulate matter. As explained further in Section V.D.3, we earlier issued a limited disapproval of Texas' regional haze SIP based on its reliance on CAIR. We are now proposing a FIP to replace reliance on CAIR with reliance on the trading programs of CSAPR as an alternative to BART for SO_2 and NO_X emissions from EGUs in the regional haze plan for Texas.

As discussed in more detail in our BART Rule,[221] the BART evaluation process consists of three components: (1) An identification of all the BART-eligible sources, (2) an assessment of whether those BART-eligible sources are in fact subject to BART and (3) a determination of any BART controls. The TCEQ addressed these steps as follows:

1. Identification of BART-Eligible Sources

The first step of a BART evaluation is to identify all the BART-eligible sources within the state's boundaries. The TCEQ identified the BART-eligible sources in Texas by utilizing the three eligibility criteria in the BART Guidelines [222] and our regulations (Section 51.301): (1) One or more emission units at the facility fit within one of the 26 categories listed in the BART Guidelines; (2) the emission unit(s) began operation on or after August 6, 1962, and was in existence on

[219] 64 FR 35736 (July 1, 1999).

[220] The Texas BART Rule is present in Appendix 9–2 of the Texas regional haze SIP.

[221] 70 FR 39104 (July 6, 2005).

[222] 70 FR 39158–39161 (July 6, 2005).

August 6, 1977; and (3) potential emissions of any visibility-impairing pollutant from subject units are 250 tons or more per year.

The TCEQ did not have a comprehensive database of potential emissions from facilities, so it used annual emissions reporting with some adjustments. The TCEQ's State of Texas Air Reporting System (STARS) database was used to determine which sources were potentially BART-eligible. In addition to NO_X and SO_2, the TCEQ also screened its database for sources of Volatile Organics (VOC) and coarse particulate matter (PM_{10}) greater than 200 tpy. The TCEQ used PM_{10} as a conservative value for direct $PM_{2.5}$. However, because this database does not contain all information necessary to determine BART eligibility, the TCEQ also surveyed companies regarding their potential to emit and construction dates in order to complete the BART eligibility determination. In order to reduce the number of companies requiring clarification, the TCEQ chose to adopt a model plant analysis approach based on our model plants [223] in order to eliminate smaller sources of NO_X and SO_2 sources from being surveyed and potentially subject to BART. Regarding the use of the model plant approach, the BART Guidelines state:[224]

> Based on our analyses, we believe that a State that has established 0.5 deciviews as a contribution threshold could reasonably exempt from the BART review process sources that emit less than 500 tons per year of NO_X or SO_2 (or combined NO_X and SO_2), as long as these sources are located more than 50 kilometers from any Class I area; and sources that emit less than 1000 tons per year of NO_X or SO_2 (or combined NO_X and SO_2) that are located more than 100 kilometers from any Class I area.

Since the STARS database includes reported actual emissions instead of potential to emit, the TCEQ added some conservatism to the inclusion of sources. The TCEQ modified its model plant approach and reduced the emission threshold to 375 tpy for sources greater than 50 km and 750 tpy for sources greater than 100 km to capture sources that might not have been above the BART Guideline's emissions threshold, based only on their 2002 emissions levels.

As a result of the BART eligibility screening analysis, 254 sites/facilities (approximately 12% of the 2,165 facilities in the Texas 2002 emissions inventory) were identified as being potentially BART-eligible based on their county's minimum distance to Class I areas and their actual emissions. The TCEQ then sent surveys to these sites to request additional information in identifying construction or reconstruction dates and whether the potential to emit of potential BART eligible equipment exceeded the BART eligibility threshold of 250 tpy. As a result of the BART eligibility survey, the TCEQ determined that the following sites [225] numbered 1 through 120 were BART-eligible. During TCEQ's review of BART eligible sources another 6 facilities were identified as potentially BART eligible (numbered 121–126):

TABLE 15—POTENTIAL BART-ELIGIBLE SOURCES BASED ON RESULTS OF TCEQ SURVEY

No.	Account	Source	Regulated entity	SIC
1	AC0017B	Abitibi Consolidated Corp	RN100220110	2621
2	TG0044C	AEP Texas	RN101531226	4911
3	CD0013K	AEP Texas Central Company	RN102560687	4911
4	NE0024E	AEP Texas Central Company	RN100642040	4911
5	NE0026A	AEP Texas Central Company	RN100552181	4911
6	JI0030K	AEP Texas North Company	RN100215557	4911
7	CB0003M	Alcoa Alumina & Chemicals	RN100242577	2819
8	MM0001T	Alcoa Inc	RN100221472	3334
9	HT0011Q	Alon USA Lp	RN100250869	2911
10	ED0034O	Ash Grove (Formerly North Texas Cement)	RN100225978	3241
11	HG0558G	Atofina Chemicals Inc	RN100209444	2869
12	BL0021O	BASF Corporation	RN100218049	2869
13	GB0001R	BP Amoco Chemical Company	RN102536307	2869
14	GB0004L	BP Products North America In Texas	RN102535077	2911
15	GH0003Q	Cabot Corporation	RN100221761	2895
16	BG0045E	Capitol Cement Div Capitol	RN100211507	3241
17	GH0004O	Celanese Chemical	RN101996395	2869
18	MH0009H	Celanese Limited	RN100258060	2869
19	ED0011D	Chaparral Steel Midlothian	RN100216472	3312
20	BJ0001T	Chemical Lime Ltd	RN100219856	3274
21	HG0310V	Chevron Phillips Chemical	RN103919817	2869
22	BL0758C	Chevron Phillips Chemical	RN100825249	2869
23	HW0013C	Chevron Phillips Chemical Co	RN102320850	2869
24	NE0027V	Citgo Refining & Chemicals	RN102555166	2911
25	BG0057U	City Public Service	RN100217975	4911
26	BG0186I	City Public Service	RN100217835	4911
27	HW0018P	Conoco Phillips (Formerly Phillips 66)	RN102495884	2911
28	CR0020C	Copano Processing LP	RN101271419	1321
29	AB0012W	DCP (Formerly Duke Energy Field Services)	RN100218684	1321
30	HW0008S	Degussa Engineered Carbons	RN100209659	2895
31	HGA005E	DOW	RN104150123	2869
32	HG0126Q	DOW	RN100227016	2869
33	CI0022A	Dynegy Midstream Services	RN100222900	1321
34	HH0042M	Eastman Chemical Company	RN100219815	2869
35	HG0218K	E.I. Dupont de Nemours & Co	RN100225085	2869
36	OC0007J	E.I. Dupont de Nemours & Co	RN100542711	2869
37	EE0029T	El Paso Electric Co	RN100211309	4911

[223] 70 FR 39162 (July 6, 2005).

[224] 70 FR 39163 (July 6, 2005).

[225] Reproduced from Table 9–2 of the Texas regional haze SIP with additional sources later identified added.

TABLE 15—POTENTIAL BART-ELIGIBLE SOURCES BASED ON RESULTS OF TCEQ SURVEY—Continued

No.	Account	Source	Regulated entity	SIC
38	TH0004D	Electric Utility Dept	RN100219872	4911
39	CG0012C	Enbridge Pipelines	RN102166964	1321
40	MQ0009F	Entergy Gulf States Inc	RN100226877	4911
41	OC0013O	Entergy Gulf States Inc	RN102513041	4911
42	BL0113I	Equistar	RN100218601	2869
43	BL0268B	Equistar Chemicals LP	RN100237668	2821
44	HG0033B	Equistar Chemicals LP	RN100542281	2869
45	HG0228H	Exxon Chemical Co	RN102212925	2869
46	JE0065M	Exxon Mobil Chemical Co	RN100211903	2821
47	HG0229F	ExxonMobil Chemical Co	RN102574803	2869
48	HG0232Q	ExxonMobil Corp	RN102579307	2911
49	JE0067I	ExxonMobil Oil Corp	RN102450756	2911
50	NE0120H	Flint Hills Resources	RN102534138	2911
51	NE0122D	Flint Hills Resources LP	RN100235266	2911
52	JE0052V	Huntsman Corporation	RN100219252	2869
53	JE0135Q	Huntsman Petrochemical Corp	RN100217389	2869
54	EB0057B	Huntsman Polymers	RN101867554	2869
55	BL0002S	INEOS Olefins & Polymers	RN100238708	2869
56	CG0010G	International Paper Co	RN100543115	2621
57	OCA002B	Invista	RN104392626	2869
58	VC0008Q	Invista (Formerly Du Pont De Nemours)	RN102663671	2869
59	WE0005G	Laredo Power	RN100213909	4911
60	MB0123F	Lehigh Cement Company	RN100218254	3241
61	NE0025C	Lon C Hill Power	RN100215979	4911
62	BC0015L	Lower Colorado River Authority	RN102038486	4911
63	FC0018G	Lower Colorado River Authority	RN100226844	4911
64	HG1575W	Lyondell Chemical	RN100633650	2869
65	HG0048L	Lyondell Citgo Refining	RN100218130	2911
66	GB0055R	Marathon Ashland Petroleum	RN100210608	2911
67	HH0019H	NORIT Americas Inc	RN102609724	2819
68	GB0037T	NRG Texas (Formerly Texas Genco LP)	RN101062826	4911
69	ED0051O	Owens Corning	RN100223585	3296
70	HG1451S	Oxyvinyls LP	RN102518065	2821
71	HG0175D	Pasadena Refining	RN100716661	2911
72	JE0042B	Premcor Refining Group	RN102584026	2911
73	MC0002H	Regency Tilden Gas (Formerly Enbridge)	RN100216621	2819
74	HG0697O	Rhodia Inc	RN100220581	2819
75	HG0632T	Rohm & Haas Texas	RN100223205	2869
76	HG0659W	Shell Oil Co	RN100211879	2911
77	HW0017R	Sid Richardson Carbon	RN100222413	2895
78	HT0027B	Sid Richardson Carbon Co	RN100226026	2895
79	BL0038U	Solutia Inc	RN100238682	2869
80	TF0012D	Southwestern Electric Power	RN100213370	4911
81	GJ0043K	Southwestern Electric Power	RN102156916	4911
82	ME0006A	Southwestern Electric Power	RN100542596	4911
83	PG0040T	Southwestern Public Service	RN100224641	4911
84	PG0041R	Southwestern Public Service	RN100224849	4911
85	LN0081B	Southwestern Public Service	RN100224765	4911
86	JE0091L	Sun Marine Terminal	RN100214626	4226
87	WN0042V	Targa	RN102552387	1311
88	CY0019H	Targa (Formerly Dynegy Midstream)	RN102551785	1311
89	OC0019C	Temple-Inland	RN100214428	2621
90	CI0012D	Texas Genco LP	RN100825371	4911
91	FG0020V	Texas Genco LP	RN100888312	4911
92	HK0014M	Texas Lehigh Cement Co	RN102597846	3241
93	HG0562P	Texas Petrochemicals LP	RN100219526	2869
94	BL0082R	The Dow Chemical Co	RN100225945	2869
95	JE0039N	The Goodyear Tire And Rubber Co	RN102561925	2822
96	NE0022I	Ticona Polymers Inc	RN101625721	2869
97	JE0005H	Total Petrochemicals	RN102457520	2911
98	ED0066B	TXI Operations LP	RN100217199	3241
99	FI0020W	TXU Big Brown Company LP	RN101198059	4911
100	DB0251U	TXU Electric Company	RN101559854	4911
101	FB0025U	TXU Generation Company LP	RN102285855	4911
102	HQ0012T	TXU Generation Company LP	RN100664812	4911
103	MB0116C	TXU Generation Company LP	RN102566494	4911
104	MM0023J	TXU Generation Company LP	RN102147881	4911
105	MO0014L	TXU Generation Company LP	RN102285848	4911
106	RL0020K	TXU Generation Company LP	RN102583093	4911
107	TA0352I	TXU Generation Company LP	RN100693308	4911
108	WC0028Q	TXU Generation Company LP	RN102183969	4911
109	YB0017V	TXU Generation Company LP	RN102563426	4911

TABLE 15—POTENTIAL BART-ELIGIBLE SOURCES BASED ON RESULTS OF TCEQ SURVEY—Continued

No.	Account	Source	Regulated entity	SIC
110	TF0013B	TXU Generation Company LP	RN102285921	4911
111	GB0076J	Union Carbide Corp	RN100219351	2869
112	CB0028T	Union Carbide Corporation	RN102181526	2869
113	HR0018T	Valence Midstream Ltd	RN100213685	1321
114	GB0073P	Valero Refining Co Texas	RN100238385	2911
115	NE0043A	Valero Refining Company	RN100211663	2911
116	MR0008T	Valero McKee	RN100210517	2911
117	WH0014S	Vetrotex Wichita Falls Plant	RN100218601	3229
118	VC0003D	Victoria Power	RN100214980	4911
119	JB0016M	Vintage Petroleum Inc	RN100214592	1311
120	JC0003K	Westvaco	RN102157609	2631
121[226]	JE0343H	BMC Holdings Inc		
122	AG0024G	Pueblo Midstream Gas Corp		
123	GBA007G	INEOS		
124	HG0130C	Valero Refining Texas LP		
125	JH0025O	Johns Manville International		
126	PE0024Q	Regency Gas Services		

We have reviewed the TCEQ's development of their list of BART-eligible facilities (ultimately 126 sources) and we propose to conclude that the TCEQ has adequately identified all sources that are BART eligible in the state.

2. Identification of Sources Subject to BART

The second step 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. Sources that are not exempted by the state are required to conduct a full BART analysis and the state then makes a determination of what is BART for each of these subject to BART sources.

a. Modeling Methodology

Consistent with the BART Guidelines, the TCEQ chose to evaluate sources and determine if they were exempt from being subject to BART. When exempting sources from BART because they do not cause or contribute to visibility impairment in a Class I area, the BART Guidelines suggest three sub-options for determining that certain sources are not subject to BART: [227]

- The use of model plants to exempt sources with common characteristics.
- A cumulative modeling analysis to show that groups of sources are not subject to BART.
- An individual source attribution approach.

The TCEQ utilized all of these options to determine which sources were subject to BART. These BART exemption exercises are explained below. The BART Guidelines direct states to address SO_2, NO_X and direct PM (including both PM_{10} and $PM_{2.5}$) emissions as visibility-impairing pollutants, and states must exercise their ''best judgment to determine whether VOC or ammonia emissions from a source are likely to have an impact on visibility in an area.'' [228] Ammonia (NH_3) emissions in Texas are primarily due to area sources, such as livestock and fertilizer application.[229] Because these are not point sources, they are not subject to BART. CENRAP modeling demonstrated that VOCs from anthropogenic sources are not significant visibility-impairing pollutants at the Guadalupe Mountains and Big Bend. The TCEQ further investigated VOC and direct PM impacts with the photochemical modeling as discussed below. We have reviewed this information and propose to agree with the TCEQ's decision to address only SO_2, NO_X and PM as visibility impairing pollutants because VOC emissions from anthropogenic sources are not significant visibility-impairing pollutants at Class I areas in Texas and surrounding states and NH_3 emissions in Texas are primarily due to area sources.

The BART Guidelines provide that states may choose to use the CALPUFF [230] modeling system, 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 we believe CALPUFF is the best regulatory modeling application currently available for predicting a single source's contribution to visibility impairment.[231] The TCEQ consulted with us and FLM representatives and used both the Comprehensive Air Quality Model with extensions (CAMx) [232] and CALPUFF modeling systems to determine whether individual sources in Texas 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 choose to consult with us and their regional planning organization to address any

[226] Numbers 121–130 were not included in TCEQ's initial list of 120 sources potentially subject to BART but were added during their review and development of the SIP.

[227] 70 FR 39162–3 (July 6, 2005).

[228] 70 FR 39162 (July 6, 2005).

[229] See Tables 7–1 and 7–3 of the Texas regional haze SIP. Area sources comprise approximately 94% of the total 2002 ammonia emissions, and approximately 93% of the total projected 2018 ammonia emissions.

[230] 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 at *http://www.src.com/verio/download/download.htm.*

[231] 70 FR 39162 (July 6, 2005).

[232] CAMx model code and user's guide can be found at *http://www.camx.com/download/default.aspx.Model* code used in our analysis is available with the modeling files.

issues prior to modeling. The CENRAP states, including Texas, developed the ''CENRAP BART Modeling Guidelines.'' [233] Stakeholders, including EPA, FLM representatives, industrial sources, trade groups, and other interested parties, actively participated in the development and review of the CENRAP protocol. CENRAP provided readily available modeling data bases for use by states to conduct their analyses. We note that the original CALPUFF meteorological databases generated by CENRAP did not include observations as our guidance recommends,[234] therefore sources were evaluated using the 1st High values instead of the 8th High values. The use of the 1st High modeling values was agreed to by us, representatives of the Federal Land Managers, and CENRAP stakeholders. We propose to find the chosen model and the general modeling methodology for the initial CALPUFF based screening modeling with CENRAP meteorological data acceptable. We further discuss both refined analyses using CALPUFF and CAMx modeling systems below.

b. 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 dv change or more should be considered to 'cause' visibility impairment.'' [235] 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 dv.'' Further, in setting a contribution threshold, states should ''consider the number of emissions sources affecting the Class I areas at issue and the magnitude of the individual sources' impacts. 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. Texas adopted a contribution threshold of 0.5 dv for determining which sources are subject to BART. For BART eligible EGUs that were originally covered by CAIR for NO_2 and SO_2, TCEQ used this threshold for PM impacts. For CALPUFF modeling that used the non-guideline CENRAP meteorological data and CAMx modeling we agreed to use the 1st High or maximum impact for evaluation with the threshold value. For the refined CALPUFF modeling that used meteorological data that did meet our guidelines we agreed with the use of the 98th percentile value. We agree with Texas' selection of this threshold value.

The TCEQ first performed cumulative modeling analyses using the CAMx model. TCEQ's CAMx modeling utilized the existing CENRAP photochemical modeling databases and CAMx modeling tools of Particulate Source Apportionment Tagging (PSAT) with Plume-in-Grid (PiG) treatment to assess contribution of groups of sources initially and later individual sources. As a result of this modeling, several BART-eligible sources were eliminated from further consideration due to their insignificant impacts on visibility at Class I areas. The remaining sources were required to perform source-specific screening modeling analyses using either the CALPUFF or the CAMx model setup developed by the TCEQ. TCEQ also utilized model plant approaches to screen out some sources. BART-eligible sources that were not eliminated due to any of the modeling analyses were then given the option of either reducing their emissions from their BART-eligible units using an enforceable mechanism, such as a permit, or performing a BART analysis. The following sections describe this process.

c. Cumulative Modeling Using CAMx PSAT

Due to the large number of sources the TCEQ initially conducted a cumulative modeling analysis to eliminate groups of sources from being subject to BART, as described in its CAMx modeling protocol and its CAMx modeling report.[236] In addition to the cumulative CAMx modeling, the TCEQ developed its model plants based on the CAMx modeling results.[237] CAMx also gave a more sophisticated way to evaluate VOC emissions from BART sources and determine if they needed to be evaluated further. The TCEQ also used the CAMx modeling and source grouping to assess the BART sources' direct PM emissions impacts. It relied on CAIR coverage for NO_X and SO_2 emissions from EGUs subject to CAIR, so it only assessed impacts of VOCs and direct PM from these sources.

The TCEQ's CAMx modeling determined that visibility impacts at Class I areas due to all VOC emissions from BART eligible sources was well below the 0.5 dv threshold. The TCEQ CAMx modeling screened direct PM emissions from 37 EGUs using groupings and some individual source analyses. Of these, 35 of the 37 sources screened out from BART for direct PM emissions with the two remaining sources being from Account TF0012D—SWEPCO Welsh and Account TF0013B—TXU Monticello. The TCEQ also evaluated VOC emissions from non-EGU sources and screened out all but one non-EGU facility, the exception being Account CG0010G—International Paper facility. We have reviewed the TCEQ's analysis as further discussed in our BART TSD, and we propose to concur with the TCEQ's screening out of all BART sources from further screening or BART evaluation for VOC and direct PM emissions except for the International Paper, Monticello and Welsh accounts that were further evaluated for screening to be discussed later.

The TCEQ also developed a Texas model plant for PM based on the previously discussed PM modeling for evaluation of two additional sources that were not in the original CAMx grouping modeling for PM. As further discussed in our BART TSD and the TCEQ's regional haze SIP, two accounts were screened out from being subject to BART. They were Account CI0012D—Texas Genco LP and Account HW004D—Agrium. We have reviewed this analysis and propose to concur with TCEQ's analysis and conclusion to screen out these two facilities from being subject to BART for their potential PM impacts.

For SO_2 and NO_X BART screening, the TCEQ screened out many sources that were BART eligible and determined that they were eliminated from being subject to BART using either the cumulative CAMx modeling analyses or the Texas model plants approach based on sources in the CAMx groupings that screened out or using our model plants.

[233] CENRAP BART Modeling Guidelines, T. W. Tesche, D. E. McNally, and G. J. Schewe (Alpine Geophysics LLC), December 15, 2005, available at *http://www.deq.state.ok.us/aqdnew/RulesAndPlanning/Regional_Haze/SIP/Appendices/index.htm*.

[234] 40 CFR part 51, Appendix W: Guideline on Air Quality Models Parts 8.3(d) and 8.3.1.2(d).

[235] 70 FR 39104, 39161 (July 6, 2005).

[236] Screening Analysis of Potentially BART-Eligible Sources in Texas, and Final Report, Screening Analysis of Potential BART-Eligible Sources in Texas, located in Appendices 9–4 and 9–5 of the Texas Regional Haze SIP, respectively.

[237] See the CAMx modeling report, Addendum I, BART Exemption Screening Analysis, and Addendum II, BART Exemption Screening Analysis, located in Appendices 9–5 and 9–6 of the Texas Regional Haze SIP.

The 94 non-EGU sources were broken into groups of sources (initially 5–10 sources per group approximately). Further analysis used the same sources and broke them into smaller groups for further evaluation and screening. From this second round of CAMx source grouping, the TCEQ developed model plants from the sources in the groups that screened out. The TCEQ's model plant analyses is further discussed in our BART TSD and the Texas regional haze SIP submittal.

If the technical analysis indicated a source was screened out, the TCEQ requested each source to certify that they agreed with the modeling analyses and data inputs (emissions, stack parameters, etc.). BART-eligible sources that were not eliminated from being subject to BART using these methods were required to conduct their own screening modeling analysis using either CALPUFF or CAMx modeling on an individual basis, using protocols developed by the TCEQ. As part of this analysis, the TCEQ also utilized our model plants and more facility specific information to screen out some facilities. Using these three techniques (CAMx grouping modeling, Texas model plants, and our model plants), the TCEQ screened out 72 facilities that were BART eligible based on their NO_X and/or SO_2 emissions from being determined as subject to BART and a full five factor analysis. Table 17 below summarizes all the BART-eligible sources that were eliminated and how each source was eliminated. For sources eliminated from being subject to BART using the cumulative CAMx modeling analyses, CAMx based model plants and our model plants it is indicated in the column titled ''Cum. Model CAMx''. For full details see our BART TSD. We have reviewed the evaluation of facilities in TCEQ's cumulative/grouping CAMx modeling analyses, the TCEQ's Texas Model Plants analyses, and the TCEQ's analyses using our Model Plants; and we propose to concur with the screening out from a full BART analysis of the 72 facilities indicated in Table 17 under the column titled ''Cum. Model CAMx'' based on estimated/modeled impacts from NO_X and SO_2 from each facility.

Many of the facilities not screened out by the TCEQ were further evaluated with individual facility impact modeling using either CALPUFF or CAMx. We discuss the TCEQ's individual facility analysis in the following sections.

d. Individual Source Apportionment Modeling Using CALPUFF

As previously discussed CENRAP developed a CALPUFF modeling protocol and the meteorological modeling files (CALMET files) for conducting individual facility impact analysis from NO_X and SO_2 emissions. The CENRAP CALMET data set did not include observations, so CALPUFF modeling that used the CENRAP CALMET data had to use the 1st High value from the modeling instead of the 8th High. TCEQ contacted the sources that did not previously screen out and gave them the option to do additional analysis with CALPUFF and/or CAMx. Facilities submitted individual source modeling protocols for their facilities and submitted them to TCEQ, us, and FLM representatives for review and comment. For the CALPUFF modeling, some sources used the CENRAP CALMET data and the 1st High metric for evaluation against the screening level of 0.5 del-dv (delta, or change in deciviews) and other sources developed CALMET with inclusion of meteorological observations data and used the 8th High modeling value instead. The TCEQ received and reviewed the additional individual source attribution modeling using the CALPUFF model.[238] The 29 BART-eligible sources that were eliminated from being subject to BART based on CALPUFF modeling results are listed in the column labeled ''CALPUFF'' in Table 17, below.

We have reviewed the modeling reports and files provided for these 29 modeling efforts. Seventeen facilities screened out using the CENRAP No-Observation data set and followed the approved CENRAP protocol, including model setup/flags, post processing procedures, and accepted versions of the CALPUFF modeling suite at the time. Twelve facilities screened out using the refined CALMET data set using the CENSARA MM5 data and incorporating land and upper air meteorological data. From the discussion on PM screening above, there were three facilities that did not screen out (International Paper, TXU—Monticello, and AEP Welsh) which were evaluated in these model runs and these facilities were 3 of the 29 screened out here. We have reviewed the TCEQ's individual source apportionment CALPUFF modeling analysis, and we propose to concur with TCEQ's conclusion to screen these 29 sources from being subject to BART.

e. Individual Source Apportionment Modeling Using CAMx

Some facilities desired to do a single source analysis with CAMx. To standardize the modeling and evaluation, TCEQ developed ''The CAMx modeling guideline, Guidance for the Application of the CAMx Hybrid Photochemical Hybrid Photochemical Grid Model to Assess Visibility Impacts of Texas BART Sources at Class I Areas,'' as a standard protocol for refined single facility assessment with CAMx using the platform used for earlier screening modeling. The modeling emission inventory files were updated to the latest available at the time and the individual sources used their short-term allowable emission rate instead of the doubling of annual emissions to approximate short-term actuals. Six facilities conducted CAMx single facility screening analysis and all were less than 0.5 del-dv impacts based on the 1st High modeling value as agreed to in the Modeling Protocols at the time. The TCEQ included the modeling reports and the modeling protocol for this CAMx modeling of individual facility attribution.[239] In Table 17 below, the column labeled ''Single Source CAMx'' indicates the BART-eligible sources that were eliminated from being subject to BART based on individual facility attribution CAMx modeling results.

These analyses used the maximum impact value on any day to compare against the 0.5 del-dv threshold. We have reviewed the modeling reports for these six facilities, and we propose to concur that the CAMx modeling and the evaluation was conducted in accordance with the modeling protocol approved by us at that time. When we approved the protocols, we did not consider the difference between CAMx and CALPUFF modeling and the natural conditions (''clean'') versus 2018 dirty background. In hindsight, we could have recommended using the ''Clean'' background approach in addition to the 2018 based analysis as we are using in our FIP action discussed below. We note that all six of these facilities were included in the sources that we evaluated in our initial Q/D screening for our FIP analysis (which included all Texas sources in TCEQ's emission database) as discussed below and all had a Q/D ratio to any Class I area that

[238] The TCEQ CALPUFF modeling protocol, Best Available Retrofit Technology (BART) Modeling Protocol to Determine Sources Subject to BART in the State of Texas, and a summary report for each modeling demonstration are included in Appendix 9–8 of the Texas regional haze SIP.

[239] TCEQ's CAMx modeling guideline, Guidance for the Application of the CAMx Hybrid Photochemical Grid Model to Assess Visibility Impacts of Texas BART Sources at Class I Areas is included in Appendix 9–8 of the Texas regional haze SIP. Both it and modeling summary reports for each modeling demonstration are included in the docket for this action.

was less than 10 and were not further evaluated. Sources that had a ratio of less than 10 have a lower potential impact level in general. In light of our concurrence of the protocol and metrics to be used at the time of the Texas Regional Haze SIP development (2006–2007), we are not proposing to disapprove this aspect of TCEQ's analysis.

f. TCEQ-Granted BART Exemptions

In addition to all the BART exemption modeling discussed above, the TCEQ also eliminated sources from being subject to BART based on further model plant analysis, using the BART Guideline approach.[240] Sources that emitted less than 500 tons per year of NO_X or SO_2 (or combined NO_X and SO_2), located more than 50 kilometers from any Class I area; and sources that emitted less than 1,000 tons per year of NO_X or SO_2 (or combined NO_X and SO_2) located more than 100 kilometers from any Class I area were eliminated from being subject to BART, consistent with the BART Guidelines.[241] The TCEQ also exempted a number of other sources for other reasons, including for having a PTE of less than 250 tons per year of any visibility impairing pollutant,[242] not having any emitting units in any of the 26 BART categories, unit shut downs, and de minimis levels of emissions.[243] The results of the TCEQ's granted exemptions are listed in column titled ''Exemption Requested'' in Table 17 below. We have reviewed the screening analysis for these 22 facilities and concur with the TCEQ screening them out from being subject to BART.

Subsequent to the 2002 base year inventory, some BART-eligible sources reduced their permitted emissions and requested exemptions from the TCEQ. These nine sources did screen out/obtain exemptions based on the limits and model plant approaches or reducing PTE below BART thresholds. See Table 17 and the BART TSD for details. Documentation of the emission reductions is in the Texas regional haze SIP, Appendix 9–11: Documentation of Emission Reductions. The sources and the estimated reductions were also presented in our BART TSD and Table 16 below. Reduction estimates are conservative because they are from the 2002 actual emissions level to a new potential to emit level below the 2002 actuals. Since facilities typically operate at less than their allowable emission rate on an annual basis we concur that the estimates of actual emission reductions for most of the sources is conservative. Capitol Cement shut down their BART units.

TABLE 16—POST 2002 EMISSION REDUCTIONS AT TEXAS BART SOURCES

No.	Regulated entity	Source	Account	NO_X Reduced from baseline 2002 (tpy)	SO_2 Reduced from baseline 2002 (tpy)	PM Reduced from baseline 2002 (tpy)
1	RN100211507	CAPITOL CEMENT DIV	BG0045E	1,328	1,193	100
2	RN100227016	DOW	HG0126Q	694	0	0
3	RN102450756	EXXONMOBIL OIL	JE0067I	2.7	290	0
4	RN102609724	NORIT AMERICAS INC	HH0019H	16.6	+5.4	0
5	RN100216621	REGENCY TILDEN GAS (FORMERLY ENBRIDGE PIPELINE).	MC0002H	2	2,276	0.2
6	RN102551785	TARGA (FORMERLY DYNEGY MIDSTREAM SERVICES).	CY0019H	336	0.3	0.5
7	RN102561925	THE GOODYEAR TIRE AND RUBBER CO.	JE0039N	89.1	+11.3	2.9
8	RN100213685	VALENCE MIDSTREAM LTD	HR0018T	247.1	2,743.5	5.6
9	RN100218601	VETROTEX AMERICA ST. GOBAIN	WH0014S	62.6	16.4	59.0
Total estimated reductions in PTE of haze emissions = 9,485.2 tpy.				2,778.1	6,535.9	168.2

Following the conclusion of the BART exemption modeling, model plant analysis, and granted exemptions, all 126 BART-eligible sources were found to be exempted from BART.

g. Summary of Our Review of Texas' BART Screening Analyses and Determinations

The TCEQ analyzed 126 facilities that were potentially BART eligible or needed additional information to rule out their BART eligibility. We have reviewed the different modeling techniques that the TCEQ utilized in evaluating and screening out these sources and we propose to concur with the analysis. The TCEQ's analysis was done in accordance with our 2005 BART Guidelines, our modeling Guidelines on Air Quality Models (40 CFR part 51 App. W), our and Interagency Work Group on Air Quality Monitoring's (IWAQM) modeling guidance for CALPUFF and visibility analysis (several documents) and other pertinent modeling guidance. CALPUFF modeling was conducted pursuant to modeling protocols that were shared and reviewed by us and Federal Land Manager representatives and included the initial CENRAP modeling protocol, the TCEQ's refined modeling protocol, and source specific modeling protocols. The TCEQ and six sources also performed modeling analyses with CAMx based on the TCEQ's modeling protocols (initial TCEQ group/source modeling and refined single source protocols for six facilities). We initially had some concern in early 2007 that some sources may have screened out in the initial CAMx group modeling and model plant source screening in late 2006 based on using the 98th percentile threshold rather than the threshold that was later agreed to in February 2007 of using the maximum (high 1st high instead of the. 8th high). As discussed and analyzed at the time (February 2007) and detailed in our BART TSD, we think that the sources that screened out were analyzed in groups, and it is reasonable to conclude that no one source would have been above either threshold if refined modeling had been conducted. Subsequent screening using

[240] 70 FR 39162 (July 6, 2005).

[241] 70 FR 39119 (July 6, 2005)

[242] 70 FR 39157 (July 6, 2005).

[243] 70 FR 39161 (July 6, 2005). ''Any de minimis values that you adopt may not be higher than the PSD applicability levels: 40 tons/yr for SO_2 and NO_X and 15 tons/yr for PM_{10}. These de minimis levels may only be applied on a plant-wide basis.

these sources and the model plant approach are also valid since each source would be below 0.5 del-dv based on the analysis as further discussed in our BART TSD. Therefore, we propose to concur with the sources that the TCEQ screened out using the model plant approaches.

We also reviewed the results of the CALPUFF and CAMx single-source modeling, and we propose to concur with the screening of those facilities. We propose to concur with the TCEQ's screening analysis overall and its conclusions as discussed above and in the BART TSD. The final list of all BART-eligible sources and the different screening techniques that provided the reason for not considering the source to be subject to BART for its VOC, direct PM, NO_X and SO_2 appears in the following table.

TABLE 17—SUMMARY OF SCREENING ANALYSIS FOR EACH BART-ELIGIBLE FACILITY THAT WAS EVALUATED FOR IMPACTS AT CLASS I AREAS AND REMOVED

[Screened out]

	Account	Company	BART-eligible	Reason for removal			
				Cum. model CAMx	CAL-PUFF	Single source CAMx	Exemption requested
1	TG0044C	AEP TEXAS	y	y			
2	CD0013K	AEP TEXAS CENTRAL COMPANY—La Palma.	y	y			
3	NE0024E	AEP TEXAS CENTRAL COMPANY—Barney M Davis.	y	y			
4	NE0026A	AEP TEXAS CENTRAL COMPANY—Nueces Bay.	y	y			
5	JI0030K	AEP TEXAS NORTH COMPANY—W.T.U.-FT. PHANTOM.	y	y			
6	CB0003M	ALCOA ALUMINA & CHEMICALS	y	y			
7	BL0002S	INEOS OLEFINS & POLYMERS	y	y			
8	HG0558G	ATOFINA CHEMICALS INC	y	y			
9	BL0021O	BASF CORPORATION	y	y			
10	GB0001R	BP AMOCO CHEMICAL COMPANY	y	y			
11	MH0009H	CELANESE LIMITED	y	y			
12	ED0011D	CHAPARRAL STEEL MIDLOTHIAN	y	y			
13	BJ0001T	CHEMICAL LIME LTD	y	y			
14	HG0310V	CHEVRON PHILLIPS CHEMICAL	y	y			
15	HW0013C	CHEVRON PHILLIPS CHEMICAL CO	y	y			
16	BG0057U	CITY PUBLIC SERVICE—Sommers Deely Spruce.	y	y			
17	BG0186I	CITY PUBLIC SERVICE—V.H Brauning	y	y			
18	CR0020C	COPANO PROCESSING LP	y	y			
19	CI0022A	DYNEGY MIDSTREAM SERVICES	y	y			
20	WN0042V	TARGA	y	y			
21	HG0218K	EI DUPONT	y	y			
22	EE0029T	EL PASO ELECTRIC CO	y	y			
23	TH0004D	ELECTRIC UTILITY DEPT	y	y			
24	MQ0009F	ENTERGY GULF STATES INC—Lewis Creek.	y	y			
25	OC0013O	ENTERGY GULF STATES INC—Sabine	y	y			
26	BL0113I	EQUISTAR	y	y			
27	BL0268B	EQUISTAR CHEMICALS LP	y	y			
28	HG0033B	EQUISTAR CHEMICALS LP	y		y	y	
29	HG0228H	EXXON CHEMICAL CO	y	y			
30	JE0065M	EXXON MOBIL CHEMICAL CO	y	y			
31	HG0229F	EXXONMOBIL CHEMICAL CO	y	y			
32	NE0122D	FLINT HILLS RESOURCES LP	y	y			
33	JE0052V	HUNTSMAN CORPORATION	y	y			
34	JE0135Q	HUNTSMAN PETROCHEMICAL CORP	y	y			
35	EB0057B	HUNTSMAN POLYMERS	y		y		
36	GBA007G	INEOS					y
37	NE0120H	FLINT HILLS RESOURCES LP	y	y			
38	WE0005G	LAREDO POWER	y	y			
39	MB0123F	LEHIGH CEMENT COMPANY	y	y			
40	NE0025C	LON C HILL POWER	y	y			
41	BC0015L	LOWER COLORADO RIVER Authority—Lower Colorado River.	y	y			
42	FC0018G	LOWER COLORADO RIVER AUTHORITY—Fayette.	y	y			
43	HG1575W	LYONDELL CITGO REFINING	y	y			y
44	HG1451S	OXYVINYLS LP	y	y			
45	JE0042B	PREMCOR REFINING GROUP	y	y			
46	HG0632T	ROHM & HAAS TEXAS	y	y			
47	BL0038U	SOLUTIA INC	y	y			
48	GJ0043K	SOUTHWESTERN ELECTRIC POWER	y	y			

TABLE 17—SUMMARY OF SCREENING ANALYSIS FOR EACH BART-ELIGIBLE FACILITY THAT WAS EVALUATED FOR IMPACTS AT CLASS I AREAS AND REMOVED—Continued

[Screened out]

	Account	Company	BART-eligible	Reason for removal			
				Cum. model CAMx	CAL-PUFF	Single source CAMx	Exemption requested
49	ME0006A	SOUTHWESTERN ELECTRIC POWER—Wilkes.	y	y			
50	PG0040T	SOUTHWESTERN PUBLIC SERVICE—Nichols.	y	y			
51	PG0041R	SOUTHWESTERN PUBLIC SERVICE—Harrington.	y	y			
52	TF0012D	SOUTHWESTERN ELECTRIC POWER—Welsh.	y			y	
53	JE0091L	SUN MARINE TERMINAL	y	y			
54	CI0012D	TEXAS GENCO LP—Cedar Bayou	y	y			
55	FG0020V	TEXAS GENCO LP—W A Parrish	y	y			
56	GB0037T	NRG Texas—PH Robinson	y		y		
57	HG0562P	TEXAS PETROCHEMICALS LP	y	y			
58	BL0082R	THE DOW CHEMICAL CO	y	y			
59	NE0022I	TICONA POLYMERS INC	y	y			
60	ED0066B	TXI OPERATIONS, L.P.	y		y		
61	FI0020W	TXU BIG BROWN COMPANY LP	y	y			
62	DB0251U	TXU ELECTRIC COMPANY—North Lake Steam.	y	y			
63	FB0025U	TXU GENERATION COMPANY LP—Valley Steam.	y	y			
64	HQ0012T	TXU GENERATION COMPANY LP—Decordova.	y	y			
65	MB0116C	TXU GENERATION COMPANY LP—Tradinghouse.	y	y			
66	MM0023J	TXU GENERATION COMPANY LP—Sandow	y	y			
67	MO0014L	TXU GENERATION COMPANY LP—Morgan Creek.	y	y			
68	RL0020K	TXU GENERATION COMPANY LP—Martin Lake.	y	y			
69	TA0352I	TXU GENERATION COMPANY LP—Eagle Mtn.	y	y			
70	WC0028Q	TXU GENERATION COMPANY LP—Permian Bsn.	y	y			
71	YB0017V	TXU GENERATION COMPANY LP—Graham	y	y			
72	TF0013B	TXU GENERATION COMPANY LP—Monticello.	y		y		
73	GB0076J	UNION CARBIDE CORP	y	y			
74	CB0028T	UNION CARBIDE CORPORATION	y	y			
75	GB0073P	VALERO REFINING CO TEXAS	y	y			
76	VC0003D	VICTORIA POWER	y	y			
77	JB0016M	VINTAGE PETROLEUM, INC.	y	y			
78	LN0081B	SOUTHWESTERN PUBLIC SERVICE	y	y			
79	AC0017B	ABITIBI CONSOLIDATED CORP	y				y
80	MM0001T	ALCOA INC	y		y		
81	HT0011Q	ALON USA LP	y		y		
82	ED0034O	ASH GROVE	y		y		
83	JE0343H	BMC HOLDINGS INC					y
84	GB0004L	BP PRODUCTS NORTH AMERICA IN TEXAS.	y			y	
85	GH0003Q	CABOT CORPORATION	y		y		
86	BG0045E	CAPITOL CEMENT DIV CAPITOL	y				y
87	GH0004O	CELANESE CHEMICAL	y			y	
88	BL0758C	CHEVRON PHILLIPS CHEMICAL	y				y
89	NE0027V	CITGO REFINING & CHEMICALS	y			y	
90	HW0018P	CONOCOPHILLIPS	y		y		
91	AB0012W	DCP	y		y		
92	HW0008S	DEGUSSA ENGINEERED CARBONS	y		y		
93	MR0008T	DIAMOND SHAMROCK REFINING	y				y
94	HGA005E	DOW	y			y	
95	HG0126Q	DOW	y				y
96	HH0042M	EASTMAN CHEMICAL COMPANY	y		y		
97	OC0007J	EI DUPONT DENEMOURS & CO	y				y
98	MC0002H	ENBRIDGE PIPELINE					y
99	CG0012C	ENBRIDGE PIPELINES	y				y
100	HG0232Q	EXXONMOBIL CORP—Baytown	y		y		

TABLE 17—SUMMARY OF SCREENING ANALYSIS FOR EACH BART-ELIGIBLE FACILITY THAT WAS EVALUATED FOR IMPACTS AT CLASS I AREAS AND REMOVED—Continued

[Screened out]

	Account	Company	BART-eligible	Reason for removal			
				Cum. model CAMx	CAL-PUFF	Single source CAMx	Exemption requested
101	JE0067I	EXXONMOBIL OIL CORP—Beaumont	y	.....	y	.....	.....
102	CG0010G	INTERNATIONAL PAPER CO	y	.....	y	.....	.....
103	OCA002B	INVISTA	y	.....	y	.....	.....
104	VC0008Q	INVISTA	y	.....	y	.....	.....
105	JH0025O	JOHNS MANVILLE INTERNATIONAL	.....	.....	.....	.....	y
106	HG0048L	LYONDELL CITGO REFINING	y	.....	.....	y	.....
107	GB0055R	MARATHON ASHLAND PETROLEUM	y	.....	.....	.....	y
108	HH0019H	NORIT AMERICAS INC	y	.....	y	.....	y
109	ED0051O	OWENS CORNING	y	.....	.....	.....	.....
110	HG0175D	PASADENA REFINING	y	.....	y	.....	.....
111	AG0024G	PUEBLO MIDSTREAM GAS CORP	.....	.....	.....	.....	y
112	PE0024Q	REGENCY GAS SERVICES	.....	.....	.....	.....	y
113	HG0697O	RHODIA, INC.	y	.....	y	.....	.....
114	HG0659W ...	SHELL OIL CO	y	.....	y	.....	.....
115	HW0017R	SID RICHARDSON CARBON	y	.....	y	.....	.....
116	HT0027B	SID RICHARDSON CARBON	y	.....	y	.....	.....
117	CY0019H	TARGA	y	.....	.....	.....	y
118	OC0019C	TEMPLE–INLAND	y	.....	y	.....	.....
119	HK0014M	TEXAS LEHIGH CEMENT CO	y	.....	y	.....	.....
120	JE0039N	THE GOODYEAR TIRE AND RUBBER CO ..	y	.....	y	.....	y
121	JE0005H	TOTAL PETROCHEMICALS	y	.....	y	.....	.....
122	HR0018T	VALENCE MIDSTREAM LTD	y	.....	y	y	y
123	NE0043A	VALERO REFINING COMPANY	y	.....	.....	.....	.....
124	HG0130C	VALERO REFINING TEXAS LP	.....	.....	.....	.....	y
125	WH0014S	VETROTEX WICHITA FALLS PLANT	y	.....	.....	.....	y
126	JC0003K	WESTVACO	y	.....	y	.....	.....

h. Subject to BART EGUs

As explained above in Section I.C, in an earlier action, we issued a limited disapproval of the Texas regional haze SIP based on deficiencies arising from its reliance on CAIR to meet certain regional haze requirements.[244] In the same rulemaking, we found that CSAPR, like CAIR, provides for greater reasonable progress towards the national goal than would BART. This finding applied only to EGUs in the states in the CSAPR region and only to the pollutants subject to the requirements of CSAPR.[245] The docket for this earlier limited disapproval of Texas' regional haze SIP may be found at Docket ID No. EPA–HQ–OAR–2011–0729. In that action, we did not disapprove the reasonable progress targets for 2018 that have been set by the states in their SIPs. The reasonable progress goals in the SIPs were set based on modeled projections of future conditions that were developed using the best available information at the time the analysis was done. Given the requirement in 40 CFR 51.308(d)(1)(vi) that states must take into account the visibility improvement that is expected to result from the implementation of other Clean Air Act requirements, states set their reasonable progress goals based, in part, on the emission reductions expected to be achieved by CAIR. As CAIR has now been remanded by the D.C. Circuit, the assumptions underlying the development of the reasonable progress targets have changed; however, because the overall EGU emission reductions from CSAPR are larger than the EGU emission reductions that would have been achieved by CAIR, we expect CSAPR to provide similar or greater benefits than CAIR. Given these considerations, we concluded not to disapprove the reasonable progress goals in any of the regional haze SIPs for their reliance on CAIR, including those for Texas. In this earlier action, we did not promulgate a FIP for Texas in order to allow more time for us to assess the Texas regional haze SIP submittal due to the variety and number of BART-eligible sources and the complexity of the SIP.[246] At this time, we propose a FIP to replace reliance on CAIR with reliance on the trading programs of CSAPR as an alternative to BART for SO_2 and NO_X emissions from EGUs in the regional haze plan for Texas.

Previously, CSAPR was stayed by the D.C. Circuit pending resolution of litigation. We moved to have that stay lifted in light of the Supreme Court decision. *EME Homer City Generation, L.P.* v. *EPA,* Case No. 11–1302, Document No. 1499505 (D.C. Cir. filed June 26, 2014). In our motion, we asked the Court to toll CSAPR's compliance deadlines by three years, so that the Phase 1 emissions budgets apply in 2015 and 2016 (instead of 2012 and 2013), and the Phase 2 emissions budgets apply in 2017 and beyond (instead of 2014 and beyond). Under the tolled compliance deadline schedule proposed by us in its motion to lift the CSAPR stay, CAIR would sunset at the end of 2014 and be replaced by CSAPR beginning January 1, 2015. On October 23, 2014, the D.C. Circuit granted our request to lift the legal stay on the implementation of CSAPR. Therefore, our proposed FIP to replace Texas' reliance on CAIR with reliance CSAPR is consistent with the Court's ruling.

3. Texas' BART Rule

Texas also promulgated and submitted rule sections that add

[244] 77 FR 33642 (June 7, 2012).

[245] Texas is subject to the requirements of the CSAPR trading program for both NO_X and SO_2. See 76 FR 48208 (August 8, 2011).

[246] 77 FR 33654 (June 7, 2012).

engineering and control requirements for BART on certain affected sources. The full SIP submittal is available in the docket for this proposal at *www.regulations.gov*. Texas' BART rules are codified at 30 TAC 116.1500–116.1540. The rules establish definitions, applicability, exemptions, BART, and exemption from BART. Our technical analysis of the provisions in Texas' BART rules can be found in the TX and BART TSDs in the docket for this rulemaking. On September 22, 2006, we provided substantive comments on Texas' proposed BART rules.[247] In its final adoption of the rules, the TCEQ adequately addressed all of our comments. However, at the time of our comments, CAIR had not yet been vacated by the D.C. Circuit. One provision in Texas' BART rule, 30 TAC 116.1510(d), provides an exemption from BART based on CAIR. Specifically, it states ''BART-eligible electric generating units participating in the Clean Air Interstate Rule Trading Program are not subject to the requirements of Section 116.1520 or Section116.1530 of this title for NO_X and SO_2.'' [248] As discussed in Section I.C, we have already issued a limited disapproval of the Texas regional haze SIP for its reliance on CAIR. However, we determined that CSAPR provides for greater reasonable progress towards the national goal than would BART and Texas is included in CSAPR for NO_X and SO_2. Therefore, our proposed FIP to replace reliance on CAIR with reliance on the trading programs of CSAPR as an alternative to BART includes a FIP to replace Texas' reliance on CAIR in 30 TAC 116.1510(d) with reliance on CSAPR. We propose to approve the remainder of the provisions in the Texas BART rules and Texas' application of the BART rules regarding the identification of all BART eligible sources within the state and the screening of BART sources from full BART analysis.

E. Long-Term Strategy

Section 51.308(d)(3) provides that Texas' long-term strategy include enforceable emissions limitations, compliance schedules, and other measures necessary to achieve the reasonable progress goals established by states having mandatory Class I areas. There are a number of requirements a state must meet when establishing its long-term strategy. These requirements include: (1) states must consult with downwind states to develop coordinated management strategies that address regional haze visibility impairment; [249] (2) where multiple states cause or contribute to visibility impairment in a Class I area, each state must demonstrate that it has put all measures necessary to obtain its share of emission reductions needed to meet the progress goal for the Class I area; [250] and (3) each state must provide and document the technical basis on which the state is relying to determine its share of emission reductions necessary to achieve reasonable progress for each Class I area it affects.[251]

1. Texas' Long-Term Strategy Consultation

Section 51.308(d)(3)(i) requires that where Texas has emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I area located in another state or states, it must consult with the other state(s) in order to develop coordinated emission management strategies. Texas must consult with any other state having emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I area within it.

Regarding this requirement, the TCEQ makes the following statement in its SIP: [252]

> The TCEQ reviewed CENRAP modeling to assess which Class I areas in other States might be impacted by Texas' emissions. Modeling indicated that Texas impacts Breton Wilderness Area in Louisiana, the Great Sand Dunes in Colorado, and several Class I sites in New Mexico. The TCEQ also consulted the adjacent States in which the modeling data indicated no significant impact by Texas, including Arkansas, Missouri, and Oklahoma.[253]

As we summarize below, CENRAP visibility modeling in fact demonstrates that Texas sources are responsible for a significant portion of the visibility impacts to Class I areas in a number of states on the worst 20% days for both 2002 and 2018, including Arkansas and Oklahoma.[254] Furthermore, as we discuss below, both Oklahoma and Texas mutually acknowledged that Texas sources significantly impact the visibility at the Wichita Mountains. Regardless, Texas participated in consultation calls with Arkansas, Missouri, and Oklahoma and through letters with Arkansas, Colorado, Louisiana, Missouri, and New Mexico. The TCEQ identified the significant point sources within each AOI and shared this information with nearby states during the consultation process (see Appendix 4–3 of the Texas regional haze SIP for consultation letters).

Pursuant to this review and in response to comments from us and the federal land managers in March 2008, Texas wrote consultation letters to Arkansas, Missouri, Oklahoma, New Mexico, Louisiana, and Colorado to ask whether emission reductions projected in Texas by 2018 are sufficient to meet Texas' apportionment of the impact reduction needed to meet the RPG for each Class I area in each state.

The TCEQ also requested recipients of the letters to confirm they were not expecting any additional emission reductions from Texas sources. These letters and associated documents are included in Appendix 4–3 of the Texas Regional Haze SIP. Texas stated in the record that it had completed its consultation with Louisiana, Arkansas, Missouri, Oklahoma, and Colorado, and none of these states has asked it for further emission reductions to help the it meet its reasonable progress goals for its Class I area(s). Appendix 4–3 to the Texas regional haze SIP contains the official communications from these states to Texas. The following is a summary of the state-by-state review of Texas' consultation under Section 51.308(d)(3)(i):

Colorado (Great Sand Dunes, Rocky Mountains) TCEQ sent Colorado a letter on March 25, 2008 with information of impacts of Texas sources on Colorado Class I areas. On June 19, 2008, Colorado responded in a letter in which it presented its own impact analyses and stated that Texas sources are below the criteria identified in the Colorado SIP (based on regional apportionment modeling used to develop the Colorado SIP, PSAT.). In a June 24, 2008, letter, Colorado's Department of Public Health and Environment responded that no further emission reductions were requested of Texas at this time.

Louisiana (Breton). On November 29, 2007, the Louisiana Department of Environmental Quality (LDEQ) sent an email that stated it determined that emissions from Texas do not contribute to visibility impairment at Breton Wilderness Class I Area in Louisiana. LDEQ stated that it will continue to monitor all state and federal rules and control measures and will include the necessary emission factors in future

[247] See Letter from Thomas Diggs, EPA, to Lola Brown, TCEQ (Sept. 22, 2006), attachment W–16 in the TCEQ's March 19, 2009, SIP submittal.

[248] 30 TAC 116.1510(d).

[249] Section 51.308(d)(3)(i).

[250] Section 51.308(d)(3)(ii).

[251] Section 51.308(d)(3)(iii)–(iv).

[252] Page 4–2 of the Texas Regional Haze SIP.

[253] We assume the statement that modeling data indicates ''no significant impact by Texas'' on Class I areas in Arkansas and Oklahoma is an oversight in the Texas regional haze SIP.

[254] See Table 1 of the TX TSD for a summary of CENRAP source apportionment modeling results for Class I areas in other States impacted by emissions from sources in Texas.

modeling. TCEQ sent LDEQ a letter on March 25, 2008, with information of impacts of Texas sources on Breton.

New Mexico: (Carlsbad Caverns, Salt Creek, White Mountain, Wheeler Peak). On August 8, 2008, TCEQ sent a letter to NMED. As of the date of the submission of the Texas regional haze SIP, New Mexico had not replied. New Mexico's regional haze SIP provides additional clarification on its consultations. New Mexico acknowledges that the long-term strategies adopted by Colorado, Arizona, and Texas in their SIPs and approved by us will include emission reductions from a variety of sources that will reduce visibility impairment in New Mexico's Class I areas.[255]

Missouri (Hercules-Glades, Mingo) and Arkansas (Caney Creek, Upper Buffalo). On August 26, 2007, Missouri and Arkansas invited states including Texas to a series of consultation calls concerning visibility at their four Class I areas. During these calls, a URP was developed for each Class I area in Arkansas and Missouri (Caney Creek and Upper Buffalo in Arkansas, and Hercules Glades and Mingo in Missouri). The participating states also determined that the projected 2018 CENRAP modeling and other findings based on existing and proposed controls arising from local, state, and federal requirements indicated that the two Class I areas in Arkansas and the two Class I areas in Missouri are on the glidepath and are projected to meet the URP goals for the first implementation period ending in 2018. Arkansas Department of Environmental Quality (ADEQ) and Missouri Department of Natural Resources (MDNR) both determined that additional emission reductions from other states were not necessary to address visibility impairment at Caney Creek, Upper Buffalo, Hercules-Glades, and Mingo for the first implementation period ending in 2018, and all states participating in its consultations agreed with this.[256] The TCEQ sent Missouri and Arkansas letters on March 25, 2008, with information of impacts of Texas sources on Missouri and Arkansas Class I areas. On April 21, 2008, Missouri responded with a letter that stated it had reviewed the TCEQ analysis and attachments and they provided results generally consistent with the CENRAP and Missouri modeling and data analysis used in developing its plan. Missouri indicated at this time, that emission reductions from Texas were adequate. In an April 21, 2008, letter, Missouri's Department of Natural Resources responded that no further emission reductions were requested of Texas. Arkansas responded on June 10, 2008. It concurred with the CENRAP PSAT modeling assessment, and those results were used to set Arkansas' RPGs for its 2 Class I areas. Arkansas stated it was not depending on additional reductions at this time to meet its RPGs. In a June 10, 2008, letter, the ADEQ responded that no further emission reductions were requested of Texas.

Oklahoma (Wichita Mountains). The TCEQ attended Oklahoma's three consultation calls held in August and September 2007. On August 3, 2007, ODEQ sent TCEQ a letter that noted the Wichita Mountains is not projected to be on its glide path and that, from ''the work done through the CENRAP process, it is clear that Wichita Mountains suffers from significant anthropogenic impacts from Texas.'' The letter requested that the ODEQ be able to comment on BACT determinations for Prevention of Significant Deterioration (PSD) sources that significantly impact the Wichita Mountains and requested that Class I impact reviews be required for all proposed PSD sources within 300 kilometers of a Class I area. The letter cited several CAA visibility provisions related to PSD visibility requirements and the visibility transport requirement under Section 110 of the CAA. The ODEQ asked that the TCEQ ''fully consider its comments'' about applicable CAA provisions. In a response letter dated October 15, 2007, the TCEQ agreed that the modeling shows Texas to be a ''significant source of visibility impairing pollution on the Wichita Mountains.'' The TCEQ agreed to notify the ODEQ, along with the relevant FLM, whenever modeling indicates that a proposed source significantly impacts Wichita Mountains. The TCEQ also responded to the ODEQ's PSD comments on potential impacts of new and modified sources. The TCEQ did not agree to the ODEQ's 300 kilometer PSD review request, and cited the need for us to adopt significant impact levels for Class I reviews so that there is a consistent approach to requiring Class I reviews. During the interim, the TCEQ committed to working with the federal land managers on mutually acceptable criteria for determining when a proposed PSD source should conduct a Class I review. The TCEQ also stated, in conjunction with work being done through CENRAP, that there will be significant reductions in the next few years and visibility at Wichita Mountains would improve as a result of those reductions.

The TCEQ sent Oklahoma another consultation letter, dated March 25, 2008. In that letter, the TCEQ provides a detailed assessment, based on CENRAP modeling, of the impact of Texas sources on the visibility at the Wichita Mountains. Specifically, the letter contained information related to the 2002 visibility impacts and the 2018 projected visibility impacts from all source areas on the one Class I area in Oklahoma and the impacts apportioned to be from Texas' sources. TCEQ indicated that CENRAP produced these results using particulate matter source apportionment technology (PSAT) modeling and relative response factors according to our regional haze modeling guidance. The data were from the August 27, 2007, version of the PSAT tool that Environ produced for CENRAP. The TCEQ also provided a table of sources of particular interest to Wichita Mountains, identified by the TCEQ due to their emissions and location within the AOI, developed as part of the CENRAP planning process. This table included 2002 and 2018 projected annual emissions from CENRAP, as well as the sources distance from Wichita Mountains. The TCEQ concluded by requesting ODEQ's concurrence on that assessment, and, ''that your State is not depending on any additional reductions from Texas sources in order to meet your reasonable progress goal(s).''

On May 12, 2008, the ODEQ responded to that letter and concurred with the ''information in that letter.'' The ODEQ stated that it developed its RPG through CENRAP deliberation. It also stated that it does not anticipate reductions beyond those that Texas already planned to implement and upon which the CENRAP studies relied. However, the ODEQ stated that its RPG falls short of the uniform rate of improvement necessary to reach the default natural visibility conditions in 2064. The ODEQ stated that reaching its progress goal requires constraints on emissions from new, modified, and existing sources. Referring back to its August 2007 letter, the ODEQ restated its request that the TCEQ perform an analysis of any new or modified PSD subject source within 300 km of the Wichita Mountains to conduct an analysis for its impact on the Wichita Mountains, following FLM guidance, as appropriate. It restated its request to review BACT determinations for proposed sources projected to

[255] New Mexico Regional Haze SIP, Page 4 at: *http://www.nmenv.state.nm.us/aqb/reghaz/documents/Proposed_RH_SIP_309g_03312011.pdf.*

[256] See Appendix 4_3d of the Texas regional haze SIP for July 23, 2007, letter from ADEQ and MDNR to participants in the Central Class I Areas Consultation Process summarizing this series of consultation calls.

significantly contribute to visibility impairment at the Wichita Mountains. The TCEQ committed to provide the ODEQ the opportunity to comment on control determinations for Texas facilities that having the potential to significantly impair visibility at the Wichita Mountains. The ODEQ asked to be informed of actual emission reductions achieved from CAIR. Please see our description of the Texas-Oklahoma consultations, based on the information in Oklahoma's record, in our OK TSD and as summarized in Section VI.B.2, for additional consultation details.

a. Our Review of Texas' Long-Term Strategy State Consultation

Section 51.308(d)(3)(i) requires that Texas consult with other states if its emissions are reasonably anticipated to contribute to visibility impairment at that state's Class I area(s), and that Texas consult with other states if those states' emissions are reasonably anticipated to contribute to visibility impairment at Big Bend and Guadalupe Mountains. The TCEQ's consultations with other states that impact Texas Class I areas are described in Section V.C.5 above.

During consultation, Colorado and Louisiana determined that Texas impacts on their Class I areas were not significant enough to warrant additional controls for this planning period. Based on the 2018 CENRAP projections, Missouri and Arkansas [257] established RPGs for their Class I areas that provide for a slightly greater rate of improvement in visibility than needed to attain the URP, and determined that the projected emission reductions included in the model were adequate, and that it was not reasonable to request additional controls from Texas at this time. We find these consultations acceptable.

The CENRAP source apportionment modeling indicates that Texas emissions, particularly SO_2 emissions from point sources, impact a number of Class I areas outside of Texas. Texas SO_2 emissions are projected in 2018 to have the largest visibility impacts, in terms of both absolute contribution to extinction and percent contribution to total extinction, at the Wichita Mountains in Oklahoma.[258] As we discuss above, both the ODEQ and the TCEQ agreed that sources in Texas significantly impact the visibility at the Wichita Mountains in Oklahoma, and that the impacts from point sources in Texas are several times greater than the impact from Oklahoma point sources. Furthermore, the ODEQ asserted in its consultations with the TCEQ, and elsewhere in its regional haze SIP, that it would not be able to reach natural visibility by 2064 without additional reductions from Texas sources. During consultations, the ODEQ specifically requested additional information on controls identified through the CENRAP process that were cost-effective and had the potential to result in visibility improvements due to their location and size. In addition, the ODEQ had information that other sources with existing controls still have a large potential to impact visibility and should be analyzed for control upgrades.

Ultimately, however, Texas determined that no additional controls at its sources were warranted during the first planning period to help achieve reasonable progress at the Wichita Mountains, and Oklahoma did not specifically request any additional reductions from Texas sources. As a result, Oklahoma set RPGs for the Wichita Mountains that do not reflect any reasonable emission reductions from Texas beyond those that will be achieved by compliance with other requirements of the CAA. During the notice-and-comment period on Oklahoma's proposed SIP, several commenters criticized Oklahoma for not requesting additional reductions from Texas. They argued that without such reductions, Oklahoma would not make reasonable progress toward the national goal at the Wichita Mountains. In responding to these comments, Oklahoma acknowledged that sources in Texas had significant impacts on visibility in the Wichita Mountains, but maintained that it did not have the regulatory authority to require emission reductions in other states. Oklahoma asserted that only Texas and we could require such reductions. We believe that the technical analysis developed by Texas did not provide the information necessary to identify reasonable reductions from its sources, and inform consultations in order to develop coordinated management strategies with Oklahoma. As a result, we believe that Texas did not incorporate those potential reasonable reductions into its long-term strategy and those reductions were not included in the reasonable progress goal established by Oklahoma for Wichita Mountains. Consequently, we propose to find that the TCEQ did not adequately address the requirement in Section 51.308(d)(3)(i) to ''consult with the other State(s) in order to develop coordinated emission management strategies.''

2. Texas' Share of Reductions in Other States' Progress Goals

Section 51.308(d)(3)(ii) requires that if Texas emissions cause or contribute to impairment in another state's Class I area, it must demonstrate that it has included in its regional haze SIP all measures necessary to obtain its share of the emission reductions needed to meet the progress goal for that Class I area. Section 51.308(d)(3)(ii) also requires that since Texas participated in a regional planning process, it must ensure it has included all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process. As we state in the Regional Haze Rule, Texas' commitment to participate in CENRAP bind it to secure emission reductions agreed to as a result of that process, unless it proposes a separate or supplemental process and performs its consultations on the basis of that process.

While the content of state SIPs cannot be dictated by a regional planning organization, the Regional Haze Rule contemplated that a coordinated regional effort would likely produce results the states would find beneficial in developing their regional haze SIPs. Any state choosing not to follow the recommendations of a regional body would have to provide a specific technical basis that its strategy nonetheless provides for reasonable progress based on the statutory factors and would be responsible for the content of that demonstration. The technical data prepared through the regional planning organization process is typically designed to inform the member states of their apportionment of the visibility impact at Class I areas, project future visibility conditions, and to provide high-level information on potential control strategies to inform consultations and the four-factor analysis necessary to establish RPGs. These analyses may require additional supplementation or refinement by the states in development of their regional haze SIPs to address impacts and potential controls of specific sources or source categories.

Participation in a regional planning organization does not automatically satisfy a state's obligation to ''demonstrate that it has included in its implementation plan all measures necessary to obtain its share of the emission reductions needed to meet the progress goal'' for a Class I area. As mentioned in section IV above, the

[257] We note, however, that we disapproved Arkansas' RPGs because it did not perform an adequate four-factor analysis of their own sources and because we disapproved BART determinations in the State. See 76 FR 64186 (October 17, 2011).

[258] See Tables 25 and 26 below and our TX TSD.

control measures in an upwind state's long term strategy should be sufficient to obtain its share of reductions needed to meet an approved, or approvable, progress goal in a downwind state's SIP. In this instance, the CENRAP technical analysis was sufficient to demonstrate that Texas as a whole, and particular source categories such as EGU point sources, had a significant impact on the visibility at the Wichita Mountains and other Class I areas. The analysis also estimated that large emission reductions could be achieved at some of these sources by implementing potentially cost-effective controls. The TCEQ recognized that some aspects of CENRAP's technical analysis were limited and therefore attempted to supplement that analysis, which it used as the technical basis for both its reasonable progress and long-term strategy demonstrations, as we describe in Section V.C. As it states with regard to the development of its long-term strategy on page 10–4 of its regional haze SIP, ''[t]he TCEQ used the control strategy analysis completed by the CENRAP as the starting point for the analysis of additional controls.'' In fact, the TCEQ went beyond the CENRAP analysis by contemplating additional controls, applying a lower cost-effectiveness threshold and estimating the visibility benefit from the identified control set. The TCEQ incorporated this supplemental analysis in the development of its RPG and its long-term strategy. It used this analysis to inform its decision not to control any additional sources, including those that impact the visibility at the Wichita Mountains and other Class I areas in other states.

However, we believe the technical analysis developed by CENRAP and supplemented by the TCEQ did not provide the information needed to evaluate the reasonableness of controls on those sources with the largest potential to impact visibility at the Wichita Mountains. See Sections V.C.2 and V.C.3, as well as the TX TSD for a detailed description and our review of the CENRAP and TCEQ analyses. We believe this information was critical for ODEQ to use in setting the RPG and critical for TCEQ when determining its fair share of reductions.

We propose to find that Texas did not develop an adequate technical basis to inform consultations with Oklahoma and to identify reasonable reductions from its sources. As a result, we find that Texas did not incorporate those reasonable reductions into its long-term strategy. Texas' ''share of the emission reductions needed to meet the progress goal'' for the Wichita Mountains was not properly established because of the inadequacies in its technical analyses, which compromised its consultations with Oklahoma. For these reasons we propose to find that TCEQ did not adequately meet the requirement in Section 51.308(d)(3)(ii).

3. Texas' Technical Basis for Its Long-Term Strategy

Section 51.308(d)(3)(iii) requires that Texas document the technical basis, including modeling, monitoring and emissions information, on which it is relying to determine its apportionment of emission reduction obligations necessary for achieving reasonable progress in each mandatory Class I area it affects. It may meet this requirement by relying on technical analyses developed by the regional planning organization and approved by all state participants. Texas must identify the baseline emissions inventory on which its strategies are based. The baseline emissions inventory year is presumed to be the most recent year of the consolidated periodic emissions inventory.

Section 51.308(d)(3)(iv) requires that Texas identify all anthropogenic sources of visibility impairment considered by it in developing its long-term strategy. Texas should consider major and minor stationary sources, mobile sources, and area sources.

The TCEQ addressed the requirements of Sections 51.308(d)(3)(iii)–(iv) mainly by relying on technical analyses developed by CENRAP and approved by all state participants, but it also performed an additional analysis building upon the work of the regional planning organization in order to evaluate additional controls, as described in Section V.C.2. The emissions inventory used in the regional haze technical analyses was developed by CENRAP with assistance from Texas. The 2018 emissions inventory was developed by projecting 2002 emissions and applying reductions expected from federal and state regulations affecting the emissions of the visibility-impairing pollutants NO_X, PM, SO_2, and VOCs. By analogy, with regard to development of the long-term strategy, the BART Guidelines direct states to exercise judgment in deciding whether VOCs and NH_3 impair visibility in their Class I area(s).[259] CENRAP performed modeling sensitivity analyses, which demonstrated that anthropogenic emissions of VOC and NH_3 do not significantly impair visibility in the CENRAP region. Therefore, Texas did not consider NH_3 among visibility-impairing pollutants and did not further evaluate NH_3 and VOC emissions sources for potential controls under BART or reasonable progress.

a. Texas' 2002 Emission Inventory

The TCEQ and CENRAP developed an emission inventory for five inventory source classifications: Point, area, non-road and on-road mobile sources, and biogenic sources for the baseline year of 2002. Texas' 2002 emissions inventory provides estimates of annual emissions for haze producing pollutants by source category, based on information in Section 7.0 of Texas' regional haze SIP.

Methodologies used in developing the 2002 emissions inventory are documented in Appendix 7–1 of the Texas regional haze SIP and the technical support document for the CENRAP emission inventory development.[260] See our TX TSD and our CENRAP Modeling TSD for a summary and our review of how the 2002 emissions inventory was constructed. The TCEQ noted concerns with the estimate of area source SO_2 emissions included in the CENRAP emission inventory for 2002 and 2018, and stated that the 2002 emissions reported by TCEQ were 15,633 tpy for SO_2 area sources. However, it states that the CENRAP's modeled emissions are not expected to significantly impact visibility estimates for 2018 because of the relatively small contribution for these Texas sources on Class I areas.[261] Texas' 2002 emissions inventory is summarized in Tables 18 and 19:

[259] 70 FR 39114 (July 6, 2005).

[260] Technical Support Document for CENRAP Emissions and Air Quality Modeling to Support Regional Haze SIP, included as Appendix 8–1 of the Texas regional haze SIP.

[261] See page 7–1 of the Texas Regional Haze SIP.

[262] TOG is total organic gas, which includes total hydrocarbons.

TABLE 18—TEXAS' 2002 EMISSIONS INVENTORY

[Tons/year]

	CO	NO_X	SO_2	TOG [262]	$PM_{2.5}$	PM_{10}	NH_3
Area	908,407	280,811	111,853	1,163,549	347,490	1,552,824	380,057
Point	498,467	600,725	821,961	207,695	46,789	80,947	2,609
Non-road mobile	1,210,158	242,551	21,828	148,952	15,089	15,556	56
On-road mobile	4,098,391	664,163	18,814	309,707	11,275	15,476	21,599
Total	6,715,423	1,788,250	974,457	1,829,902	420,642	1,664,803	404,321

TABLE 19—TEXAS' 2002 BIOGENIC EMISSIONS INVENTORY

[Tons/year]

	NO_X	CO	VOC
Biogenic	184,896	755,941	4,033,760

b. Texas' 2018 Emission Inventory

In general, the TCEQ used a combination of our Economic Growth Analysis System (EGAS 5), our mobile emissions factor model (MOBILE 6), our off-road emissions factor model (NONROAD), and the IPM for electric generating units.[263] All control strategies expected to take effect prior to 2018 are included in the projected emission inventory. See our TX TSD and our CENRAP Modeling TSD for a summary and our review of how the 2018 emissions inventory was constructed. Texas' 2018 emissions inventory is summarized in Table 20, based on information in Section 7.0 of the Texas regional haze SIP.

TABLE 20—TEXAS' 2018 EMISSIONS INVENTORY

	CO	NO_X	SO_2	TOG [264]	$PM_{2.5}$	PM_{10}	NH_3
Area	899,497	274,663	114,138	1,420,681	354,712	1,557,089	562,379
Point	542,128	525,174	625,068	283,290	80,577	121,733	6,790
Non-Road	1,921,674	167,451	6,988	119,855	10,588	11,498	239
On-Road	2,710,631	148,387	2,925	125,234	5,337	5,337	32,191
Total	6,073,930	1,115,676	749,119	1,949,060	451,214	1,695,657	601,598

Methodologies used in developing the 2018 emissions inventory are documented in Appendix 7–1 of the Texas regional haze SIP and the technical support document for the CENRAP emission inventory development. CENRAP and the TCEQ used this and other states' 2018 emission inventories to construct visibility projection modeling for 2018.

c. Visibility Projection Modeling

Chapter 8 of the Texas regional haze SIP discuss the modeling methods and protocol used by the TCEQ and CENRAP in developing the assessment. Chapter 7 describes the baseline and 2018 emission inventories used by the TCEQ. A detailed description and discussion of the model selection, modeling protocol, quality assurance, performance evaluation, emission inventory development and data used in the regional haze analysis can be found in our TX and CENRAP Modeling TSDs. A short summary is provided below:

- CENRAP performed modeling for the regional haze long-term strategy for its member states, including Texas. The modeling analysis is a complex technical evaluation that began with selection of the modeling system. CENRAP used the following modeling system:
- Meteorological Model: The Pennsylvania State University/National Center for Atmospheric Research (PSU/NCAR) Mesoscale Meteorological Model (MM5) is a non-hydrostatic, prognostic meteorological model routinely used for urban-and regional-scale photochemical, $PM_{2.5}$, and regional haze regulatory modeling studies.
- Emissions Model: The Sparse Matrix Operator Kernel Emissions (SMOKE) modeling system 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: Our 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 CENRAP with a module for Secondary Organics Aerosols (SOA) in an open and transparent manner that was also subjected to outside peer review. The Comprehensive Air Quality Model with extensions (CAMx) Version 4.40 model, applied using similar options as used by CMAQ, was used as a secondary corroborative model. CAMx was also utilized with its Particulate Source Apportionment Technology (PSAT) tool to provide source apportionment of predicted nitrate and sulfate aerosol concentrations.

d. Sources of Visibility Impairment in Big Bend National Park

Tables 21 and 22 summarize the modeled contributions to total extinction at Big Bend for each source category and species for 2002 and 2018,

[263] Appendix 7–2 of the Texas regional haze SIP: Integrated Planning Model Projections of Electric Generating Unit Emissions for the Regional Haze State Implementation Plan.

[264] TOG is total organic gas, which includes total hydrocarbons.

respectively.[265] Visibility impairment at Big Bend in 2002 on the worst 20% days is largely due to SO_4 from point sources that contributes 17.7 Mm^{-1} of the total extinction of 47.79 Mm^{-1}. The largest contributions of SO_4 come from Texas (5.50 Mm^{-1} from all source categories), boundary conditions outside the modeling domain (5.82 Mm^{-1}) and Mexico (8.28 Mm^{-1}). Overall, the largest source region contributions to visibility impairment in 2002 are from Mexico (12.75 Mm^{-1}), Texas (11.87 Mm^{-1}), and outside the modeling domain (12.27 Mm^{-1}).

In 2018, Texas, Mexico and sources outside the modeling domain are projected to continue to contribute the most to visibility impairment at Big Bend. The 2018 projection shows the total extinction at Big Bend for the worst 20% days is estimated to be 44.06 Mm^{-1}, a reduction of approximately 8% from 2002 levels. Anticipated reductions of SO_2 emissions primarily from point sources in Texas, the Eastern United States, Indiana, Illinois, Kansas, Alabama and Ohio will account for a decrease of 2.73 Mm^{-1} in total light extinction (1.55 Mm^{-1} decrease from Texas point sources). Even with these expected reductions in SO_2 emissions from point sources in 2018, extinction due to point sources will continue to be the highest contributor to visibility impairment on the worst 20% days, accounting for over one third of the total extinction. Visibility impairment from all Texas sources will decrease by 1.90 Mm^{-1}, primarily due to expected reductions from point sources.

TABLE 21—PROJECTED LIGHT EXTINCTION FOR 20% WORST DAYS AT BIG BEND WILDERNESS AREA IN 2002 (MM^{-1})

	Total [1]	Point	Natural	On-road	Non-road	Area
SO_4	26.10	17.70	0.02	0.28	0.45	1.82
NO_3	2.05	0.55	0.33	0.36	0.23	0.30
POA	5.81	0.10	0.08	0.04	0.09	0.83
EC	2.12	0.01	0.03	0.10	0.32	0.45
SOIL	2.54	0.28	1.14	0.01	0.00	1.00
CM	7.03	0.02	5.52	0.00	0.07	1.23
Sum	47.79	18.66	7.12	0.80	1.16	5.63

[1] Totals include contributions from boundary conditions and secondary organic matter but exclude contribution from Rayleigh scattering.

TABLE 22—PROJECTED LIGHT EXTINCTION FOR 20% WORST DAYS AT BIG BEND WILDERNESS AREA IN 2018 (MM^{-1})

	Total [1]	Point	Natural	On-road	Non-road	Area
SO_4	23.00	15.15	0.01	0.04	0.20	1.84
NO_3	1.99	0.63	0.38	0.12	0.16	0.35
POA	5.61	0.14	0.06	0.02	0.08	0.67
EC	1.81	0.02	0.02	0.02	0.23	0.29
SOIL	2.54	0.32	1.13	0.01	0.00	0.97
CM	7.03	0.02	5.42	0.00	0.07	1.33
Sum	44.06	16.27	7.03	0.20	0.74	5.46

[1]Totals include contributions from boundary conditions and secondary organic matter but exclude contribution from Rayleigh scattering.

e. Sources of Visibility Impairment in Guadalupe Mountains National Park

Tables 23 and 24 summarize the contributions to total extinction at Guadalupe Mountains for each source category and species for 2002 and 2018, respectively. Visibility impairment at Guadalupe Mountains in 2002 on the worst 20% days is largely due to SO_4 from point sources and course material from natural and area sources. The largest contributions of SO_4 come from Texas (4.28 Mm^{-1} from all source categories), boundary conditions outside the modeling domain (1.90 Mm^{-1}) and Mexico (3.21 Mm^{-1}). Overall, the largest source region contributions to visibility impairment in 2002 are from Texas (16.62 Mm^{-1}), New Mexico (3.49 Mm^{-1}), Mexico (7.90 Mm^{-1}), and source outside the modeling domain (4.16 Mm^{-1}).

In 2018, sulfate and course material from Texas, Mexico, New Mexico and sources outside the modeling domain are projected to continue to contribute the most to visibility impairment at the Guadalupe Mountains. The 2018 projection shows the total extinction at the Guadalupe Mountains for the worst 20% days is estimated to be 44.32 Mm^{-1}, a reduction of approximately 7% from 2002 levels. Anticipated reductions of SO_2 emissions primarily from point sources in Texas, the Eastern United States, Indiana, Alabama and Ohio will account for a decrease of 2.02 Mm^{-1} in total light extinction (0.68 Mm^{-1} decrease from Texas point sources). Even with these expected reductions in SO_2 emissions from point sources in 2018, extinction due to point sources will still be a significant contributor to visibility impairment on the worst 20% days, accounting for over one fourth of the total extinction. Visibility impairment from all Texas sources will decrease by 1.29 Mm^{-1}, primarily due to expected reductions from point sources.

[265] The species contributing to visibility extinction at Big Bend and Guadalupe Mountains, shown on Tables 21, 22, 23 and 24, are the following: Sulfate (SO_4), nitrate (NO_3), primary organic aerosols (POA), elemental carbon (EC), soil dust, and coarse mass (CM). These species' precursors are SO_2, NO_X, and in some cases, NH_3 and VOCs.

TABLE 23—PROJECTED LIGHT EXTINCTION FOR 20% WORST DAYS AT GUADALUPE MOUNTAINS IN 2002 (Mm^{-1})

	Total [1]	Point	Natural	On-road	Non-road	Area
SO_4	15.94	12.10	0.02	0.22	0.33	1.36
NO_3	3.67	1.09	0.40	0.79	0.55	0.52
POA	2.75	0.24	0.19	0.10	0.16	1.61
EC	1.19	0.01	0.04	0.15	0.34	0.51
SOIL	4.37	0.41	1.29	0.02	0.00	2.41
CM	16.04	0.19	7.75	0.02	0.39	6.60
Sum	*47.80*	*14.05*	*9.68*	*1.31*	*1.76*	*13.00*

[1] Totals include contributions from boundary conditions and secondary organic matter but exclude contribution from Rayleigh scattering.

TABLE 24—PROJECTED LIGHT EXTINCTION FOR 20% WORST DAYS AT UPPER GUADALUPE MOUNTAINS IN 2018 (Mm^{-1})

	Total [1]	Point	Natural	On-road	Non-road	Area
SO_4	13.65	10.11	0.02	0.03	0.10	1.40
NO_3	3.32	1.18	0.44	0.27	0.37	0.65
POA	2.38	0.29	0.15	0.05	0.13	1.30
EC	0.86	0.02	0.04	0.04	0.23	0.37
SOIL	4.37	0.51	1.29	0.02	0.00	2.31
CM	16.02	0.20	7.69	0.03	0.38	6.65
Sum	*44.32*	*12.31*	*9.62*	*0.43*	*1.22*	*12.68*

[1] Totals include contributions from boundary conditions and secondary organic matter but exclude contribution from Rayleigh scattering.

f. Texas' Contribution to Visibility Impairment in Class I Areas Outside the State

CAMx PSAT results were also utilized to evaluate the impact of Texas emission sources in 2002 and 2018 on visibility impairment at Class I areas outside of the state. Texas sources are modeled to have contributions to the Class I areas in a number of nearby states. Tables 25 and 26 summarize the contribution from Texas emissions of sulfate, nitrate and total visibility degradation at nearby states' Class I areas for the 20% worst days in 2002 and 2018, as modeled by CENRAP and shown in Section 11.2 of the Texas regional haze SIP.[266] The contributions from Texas sources on total visibility impairment decreases from 2002 to 2018 at all impacted Class I areas shown in the tables below. Texas' impacts on other Class I areas in these nearby states are less than the impacts for the areas that are shown in the tables below for each state.

TABLE 25—CONTRIBUTION FROM TEXAS EMISSIONS TO VISIBILITY IMPAIRMENT (Mm^{-1}) AT CLASS I AREAS ON 20% WORST DAYS IN 2002

Class I area	State	Sulfate		Nitrate		Total	
		Texas	Total, all source areas	Texas	Total, all source areas	Texas	Total, all source areas
Salt Creek	New Mexico	4.79	16.75	3.05	11.15	13.41	52.50
White Mountain	New Mexico	2.78	10.51	0.53	3.05	7.40	32.91
Wheeler Peak	New Mexico	0.76	5.27	0.22	1.64	1.85	21.96
Wichita Mountains	Oklahoma	13.98	49.12	7.89	23.72	28.15	100.03
Great Sand Dunes	Colorado	0.66	5.84	0.02	1.94	1.25	27.88
Rocky Mountains	Colorado	0.30	7.69	0.08	5.17	0.58	32.13
Caney Creek	Arkansas	11.55	87.05	1.49	13.78	14.89	133.93
Upper Buffalo	Arkansas	4.41	83.18	0.27	13.30	5.19	131.79
Hercules-Glades	Missouri	3.48	87.94	2.56	17.91	6.59	140.05
Mingo	Missouri	0.69	102.52	1.18	27.24	2.01	159.83
Breton	Louisiana	3.55	96.83	0.15	8.29	4.20	123.99

TABLE 26—CONTRIBUTION FROM TEXAS EMISSIONS (Mm^{-1}) TO VISIBILITY IMPAIRMENT AT CLASS I AREAS ON 20% WORST DAYS IN 2018

Class I area	State	Sulfate		Nitrate		Total	
		Texas	Total, all source areas	Texas	Total, all source areas	Texas	Total, all source areas
Salt Creek	New Mexico	3.50	13.75	2.43	9.81	10.24	46.67
White Mountain	New Mexico	2.37	8.92	0.47	2.68	6.22	29.80

[266] See Appendix E of the *Technical Support Document for CENRAP Emissions and Air Quality Modeling to Support Regional Haze SIP,* included as Appendix 8–1 of the Texas Regional Haze SIP for PSAT modeling results.

TABLE 26—CONTRIBUTION FROM TEXAS EMISSIONS (Mm^{-1}) TO VISIBILITY IMPAIRMENT AT CLASS I AREAS ON 20% WORST DAYS IN 2018—Continued

Class I area	State	Sulfate		Nitrate		Total	
		Texas	Total, all source areas	Texas	Total, all source areas	Texas	Total, all source areas
Wheeler Peak	New Mexico	0.79	5.00	0.19	1.48	1.59	20.80
Wichita Mountains	Oklahoma	9.68	33.33	6.08	18.10	20.79	75.56
Great Sand Dunes	Colorado	0.65	5.32	0.02	1.83	1.11	26.77
Rocky Mountains	Colorado	0.30	6.52	0.06	4.28	0.51	29.41
Caney Creek	Arkansas	7.24	48.95	0.83	7.57	9.74	85.84
Upper Buffalo	Arkansas	2.74	45.38	0.18	9.22	3.38	86.16
Hercules-Glades	Missouri	2.51	50.63	1.51	12.35	4.45	92.49
Mingo	Missouri	0.53	54.45	0.64	19.14	1.28	99.24
Breton	Louisiana	2.66	68.63	0.16	8.20	3.23	94.06

We propose to find that the TCEQ's 2002 and 2018 emission inventories are acceptable and that Texas has satisfied the requirement of Section 51.308(D)(3)(iv) regarding identifying all anthropogenic sources of visibility impairment considered by it in developing its long-term strategy, and that it considered major and minor stationary sources, mobile sources, and area sources.

However, as we discuss in Section IV.C., given the plain language of the CAA, we believe Section 51.308(d)(3)(iii) requires states to consider the four factors used in determining reasonable progress in developing the technical basis for both their own Class I areas and downwind Class I areas. This documentation is necessary so that the interstate consultation process can proceed on an informed basis, and so that downwind states can properly assess whether any additional upwind emission reductions are necessary to achieve reasonable progress at their Class I areas. Therefore, in determining its long-term strategy under Section 51.308(d)(3)(iii), we believe that Texas had an obligation to conduct an appropriate technical analysis, and demonstrate through that technical analysis (required under (d)(3)(ii)), that it provided its fair share of emission reductions to Oklahoma. In addition, we believe that Texas was required through consultation under Section 51.308(d)(3)(i) to provide a reasoned technical analysis, on which it based its long-term strategy, to Oklahoma. The regulations further provide that:

> The State must document the technical basis, including modeling, monitoring and emissions information, on which the State is relying to determine its apportionment of emission reduction obligations necessary for achieving reasonable progress in each mandatory Class I Federal area it affects. States may meet this requirement by relying on technical analyses developed by the regional planning organization and approved by all State participants.[267]

Thus, states may meet this requirement by relying on reasonable progress four-factor analyses and associated technical documentation prepared by a regional planning organization on behalf of its member states, to the extent that such analyses and documentation were conducted. If the technical analysis performed by the regional planning organization was missing, flawed, or incomplete, it could not be solely relied upon by a state when developing or documenting the technical basis of its long-term strategy. The technical data prepared through the regional planning organization process is typically designed to inform the member states of their apportionment of the visibility impact at Class I areas, project future visibility conditions, and to provide high-level information on potential control strategies to inform consultations and the four-factor analysis necessary to establish RPGs. These analyses may require additional refinements by the states in development of their regional haze SIPs to address impacts and potential controls of specific sources or source categories. As we discuss in Sections V.C., and V.E.2, the TCEQ recognized that some aspects of CENRAP's technical analyses were limited because it supplemented that analysis with its own. It used this analysis to inform its decision not to control any additional sources, including those that impact the visibility at the Wichita Mountains and other Class I areas in other states. For the reasons discussed at length in Section V.C.2, we believe this analysis was inadequate and did not provide the information necessary to determine the reasonableness of controls at those sources in Texas that significantly impact visibility at the Wichita Mountains or other Class I areas. Based on CENRAP data and information shared during consultations, included in the record, the ODEQ and the TCEQ had evidence of some potential controls at certain EGUs in Northeast Texas that were estimated to be cost-effective even according to the TCEQ's own cost threshold and would result in large emission reductions within the source type and region with the largest projected impacts at Wichita Mountains. The ODEQ and the TCEQ were also aware of additional large emission sources in Texas that should have been further evaluated for potential controls. Although both the ODEQ and the TCEQ had abundant evidence that Texas coal fired EGUs had a significant impact on the visibility at Oklahoma and Texas Class I areas, the development of this technical information by either party did not progress to the point where the impacts of individual sources could be determined or to the point where the information on cost-effective controls identified for some sources could be refined from a high level state.

Consequently, we propose to find that Texas did not adequately address the requirements in Section 51.308(d)(3)(iii) to ''document the technical basis, including modeling, monitoring and emissions information, on which the state is relying to determine its apportionment of emission reduction obligations necessary for achieving reasonable progress in each mandatory Class I Federal area it affects.''

To determine whether additional controls were reasonable in Texas, we believed it necessary to undertake a cost/control and visibility analysis which is presented in our FIP TSD. In the FIP TSD, we provide detailed information concerning which sources within Texas are the largest contributors to the visibility degradation at the Wichita Mountains and at other Class I areas, and which sources we believe have cost-effective controls. For more

[267] 40 CFR 51.308(d)(3)(iii).

information on our proposed FIP, please see section VII.

4. Texas' Consideration of the Long-Term Strategy Factors

As required by Section 51.308(d)(3)(v), Texas must consider, at a minimum, the following factors in developing its long-term strategy:

(A) Emission reductions due to ongoing air pollution control programs, including measures to address RAVI;

(B) Measures to mitigate the impacts of construction activities;

(C) Emissions limitations and schedules for compliance to achieve the reasonable progress goal;

(D) Source retirement and replacement schedules;

(E) Smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the state for these purposes;

(F) Enforceability of emissions limitations and control measures; and

(G) The anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy.

Texas' long-term strategy incorporates emission reductions due to a number of ongoing air pollution control programs. This includes enforceable emissions limitations, compliance schedules, administrative orders, the issuance and enforcement of permits limiting emissions from all known major sources in Texas, state rules which specifically limit targeted emissions sources and categories, and several other ongoing air pollution control programs. The TCEQ has promulgated rules in order to administer these programs. These rules govern the TCEQ's permitting process, including PSD and BACT requirements, and implementation of federal requirements. The TCEQ also has promulgated rules that limit emissions in order to comply with the NAAQS, which have ancillary benefits of visibility improvements. Other air pollution control programs, including federal mobile emissions programs, the Clean Air Interstate Rule, Maximum Achievable Control Technology, and Refinery Consent Decrees are implemented by TCEQ, have similar ancillary benefits of visibility improvements.

Below we assess how the TCEQ addressed the long-term strategy factors in 40 CFR 51.308(d)(3)(v)(A)-(G). Please see our TX TSD for more information on how the TCEQ has addressed these factors.

a. Reductions Due to Ongoing Air Pollution Programs

The Texas long-term strategy incorporates emission reductions due to a number of ongoing air pollution control programs, which are summarized below.

- The TCEQ implements CAIR.
- The TCEQ implements a number of federal and state rules related to mobile source emissions.
- The TCEQ implements some major point sources NO_X rules, including Texas Senate Bill 7, which required emission reductions at EGUs built before Texas BACT emission control requirements went into effect in 1972, and NO_X emission reductions related to ozone SIP revisions for the Houston-Galveston-Brazoria area, Beaumont-Port Arthur area, Austin, Northeast Texas, and East Texas.
- A number of miscellaneous programs including SO_2 reductions under our refinery consent decrees; the Texas Low Emissions Diesel Program; the Texas Emission Reduction Plan to reduce NO_X and PM emissions by encouraging older road and non-road engine replacement; rules to control opacity and sulfur emissions, such as 30 TAC Chapters 111 and 112; and BACT.

The TCEQ states that the federal land managers for Big Bend and the Guadalupe Mountains, or other Class I areas that are impacted by emissions from Texas sources, have not identified any RAVI caused by Texas sources. Consequently, Texas does not have any measures in place or a requirement to implement RAVI. We propose that Texas has satisfied this requirement.

b. Measures To Mitigate the Impacts of Construction Activities

Section 51.308(d)(3)(v)(B) requires that Texas consider measures to mitigate the impacts of construction activities in developing its long-term strategy. The TCEQ notes that state Rule 30 TAC 111.145, Construction and Demolition, requires precautions to control dust emissions from construction operations and other activities.[268] It also notes that water pollution control requirements to prevent pollution from storm runoff and mud and dirt tracked from construction sites reduces the amount of fine soil material suspended in the air from traffic in these areas. The TCEQ determined that no additional measures were needed to mitigate the impacts of construction activities for purposes of visibility improvement, and we agree with this determination. We propose that Texas has satisfied this requirement.

c. Emissions Limitations and Schedules for Compliance

Section 51.308(d)(3)(v)(C) requires that in developing its long-term strategy, Texas consider emissions limitations and schedules of compliance to achieve the RPGs. No newly adopted source specific measures were identified to achieve the RPGs established by Texas. The TCEQ determined that implementation of existing and ongoing control measures are adequate to achieve the RPGs established by it and other CENRAP states. We propose to find that Texas has not satisfied this requirement, regarding emissions limitations and schedules for compliance to achieve the RPGs for Big Bend and the Guadalupe Mountains. Please see the technical discussion we present in Section V.C regarding the development of the Texas RPGs, as the TCEQ applied the same technical basis to the development of its long-term strategy. As with its RPGs, we propose to find this analysis is inadequate as it does not provide the information necessary to determine the reasonableness of controls at those sources in Texas that significantly impact visibility at the Wichita Mountains.

d. Source Retirement and Replacement Schedules

Section 51.308(d)(3)(v)(D) requires that Texas consider source retirement and replacement schedules in developing its long-term strategy. Retirement and replacement schedules were taken into account, to the extent possible, when developing inputs for the IPM that was used in the CENRAP modeling analysis. Units that the TCEQ knew were going to be shut down under enforceable actions at the time the modeling was performed were removed from the future year emission inventory. We propose that Texas has satisfied this requirement.

e. Smoke Management Techniques

Section 51.308(d)(3)(v)(E) requires that Texas consider smoke management techniques for agricultural and forestry management purposes in developing its long-term strategy. The TCEQ examined the data and modeling for the worst 20% days at Big Bend and the Guadalupe Mountains and determined that smoke from agricultural burning and wildfires in Texas are not a large contributor to visibility impairment at these Class I areas. The TCEQ also determined that agricultural burning and wildfires in Texas are not

[268] Approved into the SIP on January 18, 1994, at 59 FR 02532.

significant contributors to visibility impairment at Class I areas in nearby states. Because of the relatively low contribution of smoke from Texas to visibility impairment, Texas decided that certifying a smoke management plan as part of this SIP revision was unnecessary. The Texas Forest Service (TFS) coordinates fire and smoke management issues in Texas and has developed a voluntary plan under which all land managers in Texas, including the National Park Service, inform the TFS prior to performing prescribed burns. Texas also has an outdoor burning rule (30 TAC Chapter 111, subchapter B) [269] that includes requirements for allowable prescribed burning. Texas counties also have the authority to prohibit open burning in times of drought. The TCEQ found that the current rules, policies, and plans (including smoke management plans of the NPS and other federal agencies) are adequate to meet the long-term strategy. We agree and propose that Texas has satisfied this requirement.

f. Enforceability of emissions Limitations and Control Measures

Section 51.308(d)(3)(v)(F) requires that Texas ensure the enforceability of emission limitations and control measures used to meet RPGs. The TCEQ has rules in place to ensure the enforceability of its emission limitations. This includes rules that govern TCEQ's permitting process for major and minor sources, Prevention of Significant Deterioration (PSD) provisions, and BACT. The TCEQ has the authority to issue permits to all major and minor point sources in Texas, as they are currently defined at 30 TAC Ch. 116. Each permit must contain enforceable limitations on emissions of various defined pollutants, including those which cause or contribute to regional haze at the Texas Class I areas and Class I areas in other states. The TCEQ included information describing their legal authority and applicable laws in the submitted Texas regional haze SIP following the executive summary. We propose that Texas has satisfied this requirement.

g. The Anticipated Net Effect on Visibility Due to Projected Changes in Emissions

Section 51.308(d)(3)(v)(G) requires that in developing its long-term strategy, Texas consider the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy. In developing its regional haze SIP, the TCEQ relied on the CENRAP's 2018 modeling projections. As described above, CENRAP used its 2002 emissions inventory as the starting point for its 2018 emissions inventory. The 2018 emissions inventory was designed to capture the anticipated changes in point, area, and mobile sources emissions over the period addressed by the long-term strategy. As we discuss in Section V.G, we propose to approve the TCEQ's obligation to develop a statewide inventory of emissions, including future projected emissions. We believe that these projected changes in emissions were adequately implemented in CENRAP's 2018 modeling, and therefore propose to approve Texas' submission under Section 51.308(d)(3)(v)(G).

F. Coordination of RAVI and Regional Haze Requirements

Under Section 51.308(d)(4), states are required to coordinate their RAVI long-term strategy and monitoring provisions with those for RH. Under our RAVI regulations, the RAVI portion of a state SIP must address any integral vistas identified by the federal land managers pursuant to 40 CFR 51.304. *See* 40 CFR 51.302. 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 area includes any integral vista associated with that area. The federal land managers for Big Bend and the Guadalupe Mountains have not identified any RAVI from Texas or other state sources. Also, the federal land managers for the Class I areas that Texas' emissions impact in other states have not identified any RAVI caused by Texas sources. For these reasons, the TCEQ does not have any measures in place or a requirement to address RAVI. Thus, we propose to find that the Texas regional haze SIP has satisfied Section 51.308(d)(4). We discuss the relevant monitoring provisions in the section that follows.

G. Monitoring Strategy and Other SIP Requirements

Section 51.308(d)(4) requires the SIP contain a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I areas within the state. This monitoring strategy must be coordinated with the monitoring strategy required in Section 51.305 for RAVI. As Section 51.308(d)(4) notes, compliance with this requirement may be met through participation in the IMPROVE network. Since the monitors used for the Guadalupe Mountains and Big Bend are IMPROVE monitors, we propose that the TCEQ has satisfied this requirement.

Section 51.308(d)(4)(i) requires the establishment of any additional monitoring sites or equipment needed to assess whether RPGs to address regional haze for all mandatory Class I areas within the state are being achieved. We do not believe that additional monitoring, beyond the IMPROVE network monitors that are already in place, is necessary in order to assess Texas' RPGs, and are therefore proposing to find that Texas has satisfied this requirement.

Section 51.308(d)(4)(ii) requires that the TCEQ establish procedures by which monitoring data and other information are used in determining the contribution of emissions from within Texas to regional haze visibility impairment at mandatory Class I areas both within and outside the state. The monitors at Big Bend and the Guadalupe Mountains are operated through the IMPROVE monitoring program, which is national in scope, and other states have similar monitoring and data reporting procedures, ensuring a consistent and robust monitoring data collection system. As Section 51.308(d)(4) indicates, participation in the IMPROVE program constitutes compliance with this requirement. We are therefore proposing that the TCEQ has satisfied this requirement.

Section 51.308(d)(4)(iv) requires that the SIP must provide for the reporting of all visibility monitoring data to the Administrator at least annually for each mandatory Class I area in the state. To the extent possible, Texas should report visibility monitoring data electronically. Section 51.308(d)(4)(vi) also requires that the TCEQ provide for other elements, including reporting, recordkeeping, and other measures, necessary to assess and report on visibility. We believe that Texas' participation in the IMPROVE network ensures the monitoring data is reported at least annually and is easily accessible, and therefore we are therefore proposing to find that the TCEQ has satisfied this requirement.

Section 51.308(d)(4)(v) requires that the TCEQ maintain a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I area. The inventory must include emissions for a baseline year, emissions for the most recent year for which data are available,

[269] Approved into the SIP on April 28, 2009, at 74 FR 19144.

and estimates of future projected emissions. Texas must also include a commitment to update the inventory periodically. TCEQ provides a summary of the 2005 emission inventory in Appendix 7–1 of the Texas Regional Haze SIP. We discuss our review of the TCEQ's 2002 and 2018 emission inventories above in Section V.E.3. The TCEQ has stated that it intends to update the Texas statewide emissions inventories periodically. We propose that this satisfies the requirement in Section 51.308(d)(4)(v).

H. Federal Land Manager Consultation

Both Big Bend and the Guadalupe Mountains are federally protected national parks for which the United States Department of the Interior, National Park Service is the FLM. Although the federal land managers are very active in participating in the regional planning organizations, the Regional Haze Rule grants the federal land managers a special role in the review of the regional haze SIPs. We view both the federal land managers and the state environmental agencies as our partners in the regional haze process.

Section 51.308(i)(1) requires that by November 29, 1999, Texas must have identified in writing to the federal land managers the title of the official to which the federal land managers of Big Bend and the Guadalupe Mountains can submit any recommendations on the implementation of Section 51.308. We acknowledge that this section has been satisfied by all states via their communications with the federal land managers prior to this SIP action.

Under Section 51.308(i)(2), Texas was obligated to provide the Park Service with an opportunity for consultation, in person and at least 60 days prior to holding a public hearing on its regional haze SIP. In practice, state environmental agencies have usually provided all federal land managers—the Forest Service, the Park Service, and the Fish and Wildlife Service, copies of their regional haze SIP, as the federal land managers collectively have reviewed these regional haze SIPs. The TCEQ followed this practice and sent its draft of this implementation plan revision to the federal land manager staff. The federal land managers were provided a comment period of from November 16, 2007, through January 16, 2008. Their comments were provided to the public 30 days prior to the public hearing, which the federal land managers were notified of, and which occurred on February 19, 2008.

Section 51.308(i)(3) requires that the TCEQ provide in its regional haze SIP a description of how it addressed any comments provided by the federal land managers. The TCEQ has provided that information in Appendix 2–2 of its regional haze SIP.

Lastly, Section 51.308(i)(4) specifies the regional haze SIP must provide procedures for continuing consultation between the state and federal land managers on the implementation of the visibility protection program required by Section 51.308, including development and review of implementation plan revisions and 5-year progress reports, and on the implementation of other programs having the potential to contribute to impairment of visibility in the mandatory Class I areas. The TCEQ has acknowledged this requirement in its regional haze SIP. We are therefore proposing to find that the TCEQ has satisfied Section 51.308(i).

I. Periodic SIP Revisions and Five-Year Progress Reports

The TCEQ affirmed its commitment to complete certain items required in the future under our Regional Haze Rule. It acknowledged its requirement under Section 51.308(f), to revise and submit its regional haze SIP revision to us by July 31, 2018 and every ten years thereafter. It also acknowledged its requirement under Section 51.308(g), to submit a progress report in the form of a SIP revision every five years following this initial submittal of the Texas regional haze SIP. The TCEQ submitted the first five-year report in March 2014. We are not including our analysis of this SIP revision within this proposed action.

J. Future Determination of the Adequacy of the Existing Implementation Plan

Section 51.308(h) requires that Texas take one of the listed actions, as appropriate, at the same time it is required to submit any 5-year progress report to us in accordance with Section 51.308(g). The TCEQ has committed in its SIP to take one of the actions listed under 51.308(h), depending on the findings of the five-year progress report.

VI. Our Analysis of and Proposed Action on the Remaining Parts of the Oklahoma Regional Haze SIP

A. Previous Rulemakings on the Oklahoma Regional Haze SIP

In a previous rulemaking, we partially approved and partially disapproved portions of the Oklahoma regional haze SIP.[270] We approved certain elements of the Oklahoma regional haze SIP, as follows: Identification of sources that are BART eligible and subject to BART; its determination of baseline and natural visibility conditions; its coordination of regional haze and RAVI; monitoring strategy and other implementation requirements; its coordination with states and federal land managers; and a number of the state's NO_X, SO_2, and PM BART determinations. We disapproved Oklahoma's submitted SO_2 BART determinations for Units 4 and 5 of the OG&E Muskogee plant; Units 1 and 2 of the OG&E Sooner plant; and, Units 3 and 4 of the AEP/PSO Northeastern plant. We also disapproved the long-term strategy in Oklahoma's regional haze SIP because it did not include appropriate controls for these six sources. To remedy these deficiencies in the Oklahoma regional haze SIP, we concurrently promulgated a FIP that established SO_2 BART emission limits for these six sources at three facilities in Oklahoma. We have subsequently withdrawn our FIP for two of the sources, following approval of Oklahoma's SIP revision BART determinations for those two sources.[271] We did not take action on whether Oklahoma satisfied the reasonable progress requirements of Section 51.308(d)(1) in our earlier action. In that proposed action, we stated that to properly assess whether Oklahoma had satisfied these requirements, we must first evaluate and act upon the regional haze SIP revision submitted by the State of Texas.[272] Our proposed action here, insomuch as it concerns Oklahoma's obligations, is limited to our review of Oklahoma's submission under Section 51.308(d)(1).

B. Evaluation of Oklahoma's Reasonable Progress Goals

As required by Section 51.308(d)(1) of the Regional Haze Rule, the ODEQ has established RPGs for its Class I area, the Wichita Mountains. These RPGs must provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period.

1. Establishment of the Reasonable Progress Goals

The RPGs established by ODEQ for the Wichita Mountains are derived from the CENRAP modeling of visibility conditions in 2018.[273] The CENRAP

[270] Final action: 76 FR 81728 (December 28, 2011). Proposal: 76 FR 16188 (March 22, 2011).

[271] Approval of OK's partial replacement for FIP: 79 FR 12944 (March 7, 2014). Partial FIP withdrawal: 79 FR 12954 (March 7, 2014).

[272] 76 FR 16177 (Mar. 22, 2011).

[273] The TSD for CENRAP Emissions and Air Quality Modeling to Support Regional Haze State

modeling reflects emission reductions programs already in place from the implementation of the federal CAA and Oklahoma CAA, estimated reductions from the Oklahoma BART rule, and the estimated emission reductions identified in the long-term strategies of Oklahoma, Texas and other nearby states. The ODEQ adopted the results of the CENRAP modeling as the RPGs for the Oklahoma Class I area based on the results of its reasonable progress analysis and additional information developed by CENRAP or obtained through direct consultations with those states anticipated to impact visibility at Wichita Mountains.

The ODEQ established a RPG of 21.47 dv for the Wichita Mountains for 2018 for the 20% worst days. This represents a 2.3 dv improvement in visibility over a baseline of 23.81 dv of visibility impairment. Based on the rate of progress represented by this RPG for the first planning period, the ODEQ calculated that the Wichita Mountains would attain natural visibility conditions in 2102. The ODEQ's RPG for the 20% worst days is shown below, which is adapted from Tables IX–3 and IX–4 and Figure IX–1 of the Oklahoma Regional Haze SIP.

TABLE 27—OKLAHOMA'S REASONABLE PROGRESS GOAL FOR THE 20% WORST DAYS

Class I area	Baseline conditions (dv)	Projected 2018 visibility (RPG) (dv)	Improvement projected by 2018 using RPG (dv)	Improvement by 2018 at URP (dv)	Date natural visibility attained at RPG rate
Wichita Mountains	23.81	21.47	2.33	3.80	2102

ODEQ's RPG for the 20% best days is shown below, which is adapted from Table IX–2 of the Oklahoma regional haze SIP.

TABLE 28—OKLAHOMA'S REASONABLE PROGRESS GOAL FOR THE 20% BEST DAYS

Class I area	Baseline conditions (dv)	Projected 2018 visibility (RPG) (dv)	Improvement by 2018 (dv)
Wichita Mountains	9.78	9.23	0.55

ODEQ's RPGs for the Wichita Mountains are consistent with the minimum requirement of Section 51.308(d)(1) that the RPGs provide for an improvement in visibility for the most impaired days over the period of the SIP and ensure no degradation in visibility for the least impaired days over the same period. For the reasons discussed below in more detail, however, we propose to disapprove Oklahoma's RPGs for the Wichita Mountains. First, in our earlier action on the Oklahoma regional haze SIP, we disapproved the SO_2 BART determinations for six EGUs at three power plants in Oklahoma and promulgated a FIP setting more stringent SO_2 emission limits for these EGUs.[274] Although we subsequently approved a SIP revision from Oklahoma addressing the BART requirements for two EGUs at one power plant,[275] and removed the FIP requirements for this facility,[276] our FIP and the revised Oklahoma SIP require greater reductions overall in emissions of SO_2 than was assumed in setting the RPGs for the Wichita Mountains. Second, we are proposing to disapprove Oklahoma's RPGs for the Wichita Mountains because they were based on an incomplete consultation with Texas under 51.308(d) (1)(iv) that resulted in inadequate reasonable progress towards the national visibility goal.

2. Reasonable Progress Consultation

In developing the RPGs for its Class I area, Oklahoma was required to consult with those states which may reasonably be anticipated to cause or contribute to visibility impairment at the Wichita Mountains.[277] In any situation in which Oklahoma could not agree with another such state or group of states that a goal provides for reasonable progress, Oklahoma was required to describe in its submittal the actions taken to resolve the disagreement. In reviewing Oklahoma's SIP submittal, the Administrator takes this information into account in determining whether Oklahoma's goal for visibility improvement provides for reasonable progress towards natural visibility conditions.

The ODEQ identified several states that were projected through visibility modeling to contribute more than 1 Mm^{-1} of light extinction at the Wichita Mountains in 2018 and invited these states to consult. It conducted four consultations.[278] It directed its first consultation to the tribal leaders in Oklahoma and their environmental managers, on August 14, 2007. The ODEQ held the next three consultations as conference calls with representatives from CENRAP, EPA, the U.S. Fish and Wildlife Service, Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, and Texas.[279] The ODEQ received written responses from the Arkansas Department of Environmental Quality, the TCEQ, and the Missouri Department of Natural Resources.[280] The ODEQ sent a letter to the Iowa Department of Natural Resources as a follow up to the consultation calls for the Wichita Mountains. Below is a summary of Oklahoma's consultations.

Implementation is found in Appendix 4–2 of the Oklahoma Regional Haze SIP.

[274] 76 FR 81728 (Dec. 28, 2011).

[275] 79 FR 12944 (March 7, 2014).

[276] 79 FR 12954 (March 7, 2014).

[277] Section 51.308(d)(1)(iv).

[278] Copies of agendas and presentation materials are available in the docket for this action and at *http://www.deq.state.ok.us/AQDnew/rulesandplanning/Regional_Haze/SIP/Consultation/index.htm.*

[279] These calls were recorded, referenced in OK's regional haze SIP, and placed on ODEQ's Web site.

[280] Copies of these letters can be found in Appendix 10–1 of the Oklahoma regional haze SIP.

For additional detail on Oklahoma's consultation, see the OK TSD.

For the first call with the states, held on August 16, 2007, the ODEQ discussed the current modeling results, comparing the projected visibility conditions in 2018 to the 2018 URP goal.[281] The ODEQ identified that the Wichita Mountains is projected in the 2108 CENRAP modeling to be 1.5 dv short of its 3.8 dv reduction needed to meet the URP. It also discussed the primary anticipated causes of regional haze for the Wichita Mountains in 2018, based on modeling and monitored data. According to the ODEQ, high SO_2 concentrations at the Wichita Mountains reflect long range transport from Texas and the eastern two-thirds of United States. The ODEQ identified that point sources are the most significant contributors to haze at the Wichita Mountains based on the source apportionment results from the CENRAP modeling, with the largest contributing point sources being Texas EGUs.

The ODEQ used the AOI data developed for the Alpine Geophysics report and considered the PSAT modeling results to identify areas, pollutants and source types that contribute to visibility impairment at the Wichita Mountains. The ODEQ identified that SO_2 emissions that impact visibility conditions at the Wichita Mountains generally originate from the south and east. The ODEQ identified sources within the Area of Influence of the Wichita Mountains with a ratio of annual emissions of NO_X or SO_2 to distance (Q/D) greater than 5 based on 2018 projected emissions. The ODEQ then used the Alpine Geophysics report developed for CENRAP (as described in more detail in Section V.C.2 above) to identify estimates of the costs of installing retrofit controls for these sources. The ODEQ applied a maximum cost threshold of $5,000/ton to the list of potential controls to eliminate controls that it considered too costly from additional analysis. The remaining sources were listed in the charts provided to the participants in the consultation process.[282] For these sources, the ODEQ requested that the participating states provide any available information or comments relative to which listed sources are BART sources, planned expansions or installation of controls, feasibility of controls, cost of controls, and any modeling conducted that would indicate the sources' levels of impact on the Wichita Mountains. It stated that it was not yet requesting reductions, but was merely soliciting additional information.

For the August 30, 2007 meeting, the ODEQ focused on the method used to calculate natural conditions at the Wichita Mountains. The ODEQ also reviewed and discussed information it had received following its request for information regarding the sources of interest that it had identified. ODEQ also noted that it had received information from Arkansas, Iowa, Kansas, Louisiana, and Nebraska after the first call but that it still needed information from Texas, Missouri, and Minnesota. Texas indicated that although it had contacted its EGUs, none had provided information as to how they intended to comply with CAIR. Texas stated that it had not received any enforceable commitments for controls from any of its EGUs. For other listed Texas sources, TCEQ said it was seeing significant decreases in emissions from controls or programs that were already in place. According to Texas, in general, growth assumptions for non-EGU Texas sources were wrong. Total emissions for Texas point sources, it claimed, were steadily declining in spite of great economic growth. Louisiana stated that one of its sources, Rhodia, was under a Consent Decree and reducing its emissions. Minnesota and Missouri also offered to provide some additional information to Oklahoma regarding their sources.

For the third and final consultation meeting on September 25, 2007, the ODEQ again followed up on the information request regarding the sources of interest that it had identified. Texas stated that there were no changes to its EGUs projections since very few of its EGUs had committed to controls in order to meet CAIR. Texas again stated that Texas point source 2018 projections were unrealistic and that Texas point source emissions have historically been dropping even when the state has been growing substantially economically. The ODEQ stated that SO_2 is 60% of the particulate issue with most of it coming from Texas, Louisiana, and other states all the way out to the east coast. The ODEQ finished the consultation call with a statement that it was considering the information provided from consultation and was using it in drafting its regional haze SIP.

During the consultation process, Arkansas notified the ODEQ that it disagreed that its sources contribute significantly to visibility impairment at the Wichita Mountains. Missouri similarly informed the ODEQ that it considered current controls on Missouri sources to be sufficient. Later, the ODEQ also concluded based on modeled projections that Iowa would not contribute to visibility impairment at the Wichita Mountains in 2018 and informed Iowa that additional reductions were no longer requested.

During the consultation process, Oklahoma and Texas exchanged letters regarding the Wichita Mountains. On August 3, 2007, the ODEQ sent a letter to the TCEQ in which it noted that despite significant planned reductions in SO_2 and NO_X emissions from sources in Oklahoma and Texas, the Wichita Mountains was not projected to meet the URP. The ODEQ further noted that the analyses by CENRAP had made clear that the Wichita Mountains suffer from significant anthropogenic impacts from Texas. The ODEQ requested that the TCEQ require new and modified PSD sources to conduct analyses of their impacts on visibility at the Wichita Mountains and that the ODEQ be given an opportunity to review and comment on BACT determinations for proposed projects likely to have a certain impact on visibility at the Wichita Mountains. In addition, the ODEQ requested that the evaluations of visibility impacts be extended from within 100 km of the Wichita Mountains to within 300 km of the Wichita Mountains in deference to FLM guidance. On October 15, 2007, the TCEQ sent a response to the ODEQ, agreeing that modeling showed emissions from Texas to be a significant source of visibility impairment at the Wichita Mountains. The TCEQ also noted, however, that significant reductions from Texas will be realized in the next several years. In response to the ODEQ's specific request for the opportunity to comment on BACT for new and modified major sources, the TCEQ stated that it welcomed comment during the public review and comment period and would notify federal land managers and the ODEQ if modeling were to indicate that a proposed source might significantly impact the Wichita Mountains. In response to the ODEQ's request that impact evaluations be extended to 300 km, the TCEQ stated that it was working with federal land managers on mutually acceptable criteria for determining when a proposed PSD source should conduct a Class I area review and would inform ODEQ on the outcome of these

[281] A copy of the presentation containing the information discussed by ODEQ is available in the docket for this action and at: *http://www.deq.state.ok.us/AQDnew/rulesandplanning/Regional_Haze/RegionalHazeStatesConsultation1_081607.ppt.*

[282] A spreadsheet with the list of potential controls shared with the States is available in the docket for this action and at: *http://www.deq.state.ok.us/AQDnew/rulesandplanning/Regional_Haze/RegionalHazeStatesConsultation1_081607_ControlAssumptions.xls.*

discussions. In addition, the TCEQ attached its draft RPG analysis for its two Class I areas, which included analyses the TCEQ used to determine that there are no reasonable costs of installing additional controls beyond CAIR to address Texas impacts at Big Bend National Park and the Guadalupe Mountains.

Several months after this initial exchange of letter, the two states again exchanged letters. On March 25, 2008, following comments made by us and the federal land managers on Texas' draft regional haze SIP, the TCEQ sent a letter to the ODEQ regarding emissions that affect the Wichita Mountains. The TCEQ provided a copy of the PSAT modeling results developed by CENRAP indicating the contribution for each source area to visibility impairment at the Wichita Mountains. The TCEQ stated in the letter that PSAT modeling indicated that the probable impacts of Texas sources at the Wichita Mountains will be reduced by 2018 due to expected emission reductions from current and planned controls. A list of sources that are within the area of interest and have an emissions over distance ratio equal to or greater than five (Q/D ≥5) was included with the letter, along with information on projected emissions and distance to Wichita Mountains for those sources. The TCEQ then requested concurrence from Oklahoma on this assessment and a verification that Oklahoma was not depending on any additional reductions from Texas sources in order to meet RPG for the Wichita Mountains. On May 12, 2008, the ODEQ sent a response to the TCEQ in which it noted that it concurred with the information the TCEQ had provided. The ODEQ stated that it had developed its RPG for the worst 20% days for the Wichita Mountains through the CENRAP deliberations and that its RPG did not anticipate emission reductions beyond those that Texas already planned to implement and upon which CENRAP modeling studies have relied. The letter also states that reaching the Wichita Mountains' RPG requires constraints on emissions from new, modified, and existing sources. The letter then recaps the ODEQ's initial request made in its August 3, 2007 consultation letter that all sources within 300 km conduct an analyses of the impacts to the Wichita Mountains and that it be given the opportunity to comment on BACT for proposed sources projected to significantly contribute to visibility impairment at the Wichita Mountains.

We reviewed the information developed by ODEQ and the participating states during the consultation process, as well as the CENRAP source apportionment modeling results and additional data developed by CENRAP and Alpine Geophysics. We propose to agree with the following conclusions made by the ODEQ in its consultations:

- With all the reductions anticipated to occur in the contributing states, the CENRAP modeling projects that the Wichita Mountains will fall short of meeting the URP goal for this planning period.
- NO_X and SO_2 are the primary causes of haze at the Wichita Mountains, with SO_2 as the predominant cause of visibility impairment at the Wichita Mountains in 2002 and 2018.
- For this planning period, it is reasonable to not require additional controls for NO_X sources, as NO_X is not the predominant cause of visibility impairment at the Wichita Mountains in 2002 or 2018.
- Texas is a significant contributor to the visibility impairment at the Wichita Mountains.
- Point sources are the most significant contributors to haze at the Wichita Mountains, and the largest contributing point sources are Texas EGUs.
- Texas point sources identified during consultation by Oklahoma and other large sources within the AOI of Wichita Mountains are excellent candidates for additional analysis for potential controls.
- Control cost data developed by Alpine Geophysics, and shared by Oklahoma during consultations, indicated potential SO_2 controls were available for those Texas sources discussed during consultations at an average cost of less than $2,000/ton, and that for all but two of those identified Texas sources, potential controls are below the $2,700/ton threshold established by Texas in its analysis and development of its LTS. More specifically, for the largest of the identified sources, Alpine Geophysics estimated the cost of SO_2 controls at the two units at Big Brown to be approximately $1,500/ton. They also projected that these controls would achieve greater than 40,000 tpy in SO_2 emission reductions. Alpine Geophysics estimated the cost of SO_2 controls at two units at Monticello to be approximately $1,850/ton. They also projected that these controls would achieve greater than 35,000 tpy in SO_2 emission reductions.

For this planning period, we propose to find that Oklahoma reasonably determined that additional SO_2 reductions from Arkansas, Louisiana, Missouri, and Iowa were not necessary for reasonable progress. This proposed determination is based, in part, on our review of the CENRAP modelling showing the projected impact from sources in these states and the relative contributions from SO_2 point sources in these states. See our OK TSD for additional discussion and presentation of CENRAP source apportionment results for impacts on Wichita Mountains.

We agree with the ODEQ's approach for identifying those states with sources that may impact visibility at the Wichita Mountains and its decision to invite those states to consult. Through the consultation process, the ODEQ was able to gain additional information regarding the potential impacts from nearby states. We do not agree, however, with the ODEQ's approach to consultation to address impacts from emissions from Texas. At the time that Oklahoma was developing its SIP, it had (1) abundant information showing the impact of Texas sources on visibility at the Wichita Mountains, particularly from EGU sources in northeast Texas, and (2) evidence that cost-effective controls on these sources were likely available. Despite this information, the ODEQ neither requested that the TCEQ further investigate controls at these sources nor did it request additional reductions from Texas sources to address the impacts of emissions from these sources at the Wichita Mountains. The Regional Haze Rule requires states to use the consultation process under Sections 51.308(d)(1)(iv) in the development of RPGs to ensure that all states, including downwind states, take a hard look at what measures are necessary for ensuring reasonable progress towards improving and maintaining visibility at Class I areas. Lacking development of critical information during its consultations with Texas, we believe that Oklahoma did not have adequate information to reasonably establish its RPG for the Wichita Mountains, and, as explained below, should have requested that the TCEQ further investigate these sources or requested additional reductions from Texas sources to ensure that all reasonable measures to improve visibility were included in Texas' LTS and incorporated into Oklahoma's RPG for the Wichita Mountains.

3. The Oklahoma's Reasonable Progress ''Four Factor'' Analysis

In establishing RPGs for a Class I area, Oklahoma is required by CAA Section 169A(g)(1) and Section 51.308(d)(1)(i)(A) to ''[c]onsider the costs of compliance, the time necessary

for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources, and include a demonstration showing how these factors were taken into consideration in selecting the goal.''

The ODEQ analyzed the largest sources of visibility impairing pollutants within Oklahoma, including sources of sulfur, nitrates, NH_3, VOCs, and directly emitted coarse and fine particles. The ODEQ calculated that sulfurous pollutants contribute approximately 44% and nitrate bearing pollutants contribute approximately 21% of the total light extinction (or visibility impairment) to the Wichita Mountains. The ODEQ also calculated that sources from all source categories combined within Oklahoma contribute only approximately 13% of the total pollutants that contribute to light extinction at the Wichita Mountains in the 2002 modeled base year.

To evaluate any additional control measures necessary to demonstrate reasonable progress, the ODEQ initially relied on the same CENRAP analysis, including the Alpine Geophysics report commissioned by CENRAP, that the TCEQ relied upon, that we describe above in Section V.C.

The CENRAP control case sensitivity evaluation projected that visibility at the Wichita Mountains would be improved by an additional 0.75 dv on the worst 20% days over what the ODEQ projects as its RPG of 21.47 dv for 2018, if controls were implemented at the sources that met the combination of baseline emissions, potential for cost-effective add-on controls, and location selected by CENRAP for the sensitivity analysis. The ODEQ pointed out that even if all controls contemplated in the CENRAP sensitivity evaluation were implemented, the Wichita Mountains would still fall significantly short of meeting the URP glide path for the 20% worst days in 2018, and ODEQ noted that most of the sources were located in Texas or other states outside of ODEQ's jurisdiction. The ODEQ also stated that the control scenario presented in the Alpine Geophysics evaluation includes some already implemented, prohibitively costly, technically infeasible, or otherwise unreasonable controls. Following this analysis, the ODEQ examined additional controls for sources within Oklahoma, the full list of which we present in our OK TSD.

In its analysis, the ODEQ considered the four statutory factors under Section 51.308(d)(1)(i)(A) in its evaluation of the potential for additional controls. In summary, the ODEQ analyzed the cost of compliance by reviewing the cost information previously developed by CENRAP and made changes to the cost information based on its knowledge of the particular facilities and experience with implementing ozone reduction strategies. The ODEQ's analysis focused on moderate cost controls for sources likely to contribute to visibility impairment at the Wichita Mountains. In considering the time necessary for compliance, the ODEQ determined that any such controls would have to be installed and in operation by 2018. It did not identify any detrimental non-air quality environmental impacts associated with any controls considered, and any energy impacts were factored into the cost of controls. In considering the remaining useful life of any potentially affected sources, the ODEQ stated that none of the sources considered for additional emission reductions had indicated plans to shut down.

The ODEQ also evaluated the major sources of each visibility impairing pollutant within the state. In its analyses of additional SO_2 control, it noted that the three largest sources of sulfur emissions in the state, OG&E Muskogee, OG&E Sooner, and AEP/PSO Northeastern, were subject to BART.[283] The ODEQ also stated that sulfur controls at the Grand River Dam Authority (GRDA) would be costly and result in little visibility benefit given the location of the facility. Furthermore, the GRDA already utilized flue gas desulfurization. It noted that additional sulfur emission reductions were already required due to consent decrees on refineries.

For NO_X emissions, the ODEQ identified that three of the four largest NO_X point sources and a number of smaller sources close to Wichita Mountains would be controlled under BART. Similar to its analysis for SO_2, the ODEQ also stated that NO_X controls at the GRDA would be costly and result in little visibility benefit given the location of the facility. The ODEQ determined that controls for other point and area sources, especially those associated with oil and gas activities, would be expensive and that violations would entail large costs to detect and enforce. The ODEQ stated that improved emission inventories in the future could help in developing state rules for area sources. In addition, the ODEQ stated that new oil and gas sources are covered by new source performance standards.

Based on the above analysis of the four factors, the ODEQ concluded that retrofitting these identified point sources of NO_X and SO_2 would impose unreasonable costs for negligible visibility improvement. The ODEQ reasoned that most of the largest sources of SO_2 and NO_X were already being controlled through BART, consent decrees or other regulatory mechanisms; already had adequate controls in place; or are located too far from the Wichita Mountains, and therefore have too little visibility impact to justify the cost of additional controls. The ODEQ concluded that further emission reductions from such sources were unreasonable. It also stated that it would be unreasonable to require severe or over-control of Oklahoma sources to compensate for the contribution from Texas, other states, and foreign countries, especially considering that the vast majority of the visibility impairment at the Wichita Mountains originates from sources beyond the borders of Oklahoma.

The ODEQ determined that the majority of VOC emissions are from biogenic sources. Anthropogenic sources of VOC are largely covered under federal mandates and have a small contribution to visibility impairment. Fine and coarse particulate emissions are also primarily due to natural sources such as dust storms and fires. The ODEQ noted that despite the prominence of agricultural burning and wildfires in the Oklahoma emissions inventory, it does not believe that these sources contribute significantly to regional haze at the Wichita Mountains or at any other Class I area. It pointed out that there are state regulations already in place (see the Oklahoma Administrative Code 252:100–13–7(4)) to address the burning of forestland, cropland, and rangeland. In addition, pursuant to the regional haze requirements at Section 51.308(d)(3)(v)(E), the ODEQ considered smoke management techniques for purposes of agricultural and forestry management. The ODEQ stated that it believes that most emissions of fine and coarse PM originate from natural sources, and that even those originating in Oklahoma are beyond the regulatory purview of ODEQ.

In establishing its RPGs for 2018 for the 20% worst days, the ODEQ relied on the improvements in visibility that were anticipated to result from federal and state control programs that were either currently in effect or with mandated future-year emission reduction schedules that predate 2018, including the long-term strategies of Oklahoma, Texas, and other states, and

[283] In our FIP (76 FR 81728), we disagreed with the ODEQ's BART determinations for these three facilities (two units at each facility) and required a more stringent level of control.

presumptive emission reductions expected to result from the submitted Oklahoma BART rule. Based on the emission reductions from these measures, CENRAP modeled the projected visibility conditions anticipated at each Class I area in the region in 2018, and the ODEQ used these results to establish its RPGs.

We agree with the ODEQ's decision to focus the analysis of the four statutory factors on point sources, as the CENRAP modeling results and ODEQ's analysis in Section V.F of the Oklahoma regional haze SIP indicate that sulfate is the predominant pollutant that affects the state's ability to meet the URP goals in 2002 on the worst 20% days at the Wichita Mountains, and comes primarily from point sources. CENRAP modeling results also indicate that Oklahoma point sources contribute only 3.25 Mm^{-1} of the total 111.03 Mm^{-1} visibility extinction at the Wichita Mountains in 2002 and only 2.95 $MmSO^{-1}$ of the total 86.56 Mm^{-1} projected for 2018. This modeling projection does not include the level of controls required under BART by the FIP and the revised SIP for the three largest sources of SO_2 in the state. The ODEQ also considered sources of VOC emissions, coarse and fine PM emissions, mobile source emissions and area source emissions in its discussion and analysis of the four factors.

There are large EGU sources of SO_2 for which the ODEQ did not propose control, including the GRDA Units 1 and 2,[284] Muskogee Unit 6, and Hugo Unit 1. Oklahoma considered these sources for additional control under reasonable progress but ultimately for the reasons described above, declined to further control them. However, the total contribution from those sources not identified for control is only a fraction of the 1.23 Mm^{-1} projected from all SO_2 point sources, and none of the those sources are located such that we would anticipate significant visibility benefits at the Wichita Mountains on the 20% worst days should they be controlled. The 20% worst days at the Wichita Mountains are dominated by days impacted by emissions from sources in Texas. The largest impacts from sources in Oklahoma rarely occur on the 20% worst days as identified by the IMPROVE monitor data during the baseline period. For these reasons and others that we more fully explore in our OK TSD, we believe that Oklahoma has adequately controlled its own sources for reasonable progress to the extent necessary for this planning period.

As the ODEQ notes in several places in its SIP, point sources in Texas account for a much greater portion of the visibility impact at the Wichita Mountains than Oklahoma point sources. Compared to the 1.23 Mm^{-1} due to point source emissions of SO_2 in Oklahoma discussed above, Texas point source emissions of SO_2 are projected to contribute 7.83 Mm^{-1} to the total extinction in 2018. We agree with the ODEQ's statement regarding this situation: ''The vast majority of visibility impairment at the Wichita Mountains comes from sources beyond the borders of the State of Oklahoma. The federal Regional Haze Rule in 40 CFR 51.308(d)(3)(ii) does not require DEQ to compensate for the lack of control of emissions in Texas, other states, and foreign countries.'' The Regional Haze Rule does not require a state to over control its own sources in order to compensate for under controlled sources from another state. However, the Regional Haze Rule does require, under Section 51.308(d)(1)(iv), that in developing its RPGs, Oklahoma consult with those states which may reasonably be anticipated to cause or contribute to visibility impairment at the Wichita Mountains to identify reasonable measures for improving visibility at its Class I area.

4. Uniform Rate of Progress

Section 51.308(d)(1)(i)(B) requires Oklahoma to analyze and determine the URP needed to attain natural visibility conditions by 2064. To calculate the URP, Oklahoma must compare baseline visibility conditions to natural visibility conditions at the Wichita Mountains and determine the uniform rate of visibility improvement (measured in deciviews) that would need to be maintained during each implementation period in order to attain natural visibility conditions by 2064. In establishing the RPG, Oklahoma must consider the URP and the emission reduction measures needed to achieve it for the period covered by the implementation plan. In a previous final rulemaking,[285] we found that ODEQ appropriately calculated the URP for the Wichita Mountains. Therefore, the only portion of 40 CFR 51.308(d)(1)(i)(B) that we address is Oklahoma's requirement to consider the emission reduction measures needed to achieve the URP when establishing the RPG for the Wichita Mountains.

In establishing the RPGs for the Wichita Mountains, the ODEQ compared the baseline visibility conditions to the natural visibility conditions and determined the URP needed in order to attain natural visibility conditions by 2064. It calculated that the URP results as a visibility improvement of 3.80 dv for the period covered by this SIP revision submittal (up to and including 2018). The ODEQ noted that the CENRAP modeling results indicated that complete elimination of all anthropogenic emissions in Oklahoma are likely to be insufficient to meet the URP at the Wichita Mountains and that a majority of the visibility impairment at the Wichita Mountains comes from sources beyond Oklahoma's borders.

After considering the URP, the results of the CENRAP modeling and the four reasonable progress factors, the ODEQ determined that meeting the URP goal for 2018 was not reasonable. It then adopted the 2018 projected visibility conditions from the CENRAP photochemical modeling as the RPGs for the 20% best days and 20% worst days for the Wichita Mountains.

TABLE 29—COMPARISON OF URP TO THE REASONABLE PROGRESS GOAL ON MOST IMPAIRED DAYS FOR THE WICHITA MOUNTAINS

	Extinction	Deciview
Natural Visibility Conditions	21.23 Mm^{-1}	7.53 dv.
Baseline Visibility Conditions (2002–2004)	108.15 Mm^{-1}	23.81 dv.
Improvement Needed to Reach Natural Conditions	86.91 Mm^{-1}	16.28 dv.
Improvement by 2018 at Uniform Rate of Progress	34.18 Mm^{-1}	3.80 dv.
Improvement by 2018 under Oklahoma's RPG	22.52 Mm^{-1}	2.33 dv.
Rate of Improvement from 2004–2018 under Oklahoma's RPG (dv/year)		0.166 dv/year.

[284] Both GRDA Units 1 and 2 plan to install low NO_X burners and overfire air in order to reduce NO_X by construction permit No. 2009–179–C (M–2)(PSD). Unit 2 of the GRDA is fitted with a dry scrubber. We have recently became aware that Unit 1 (which is not scrubbed) is scheduled to be retired or converted to natural gas and a third natural gas powered unit may be added under a draft permit evaluation.

[285] 76 FR 81728 (Dec. 28, 2011).

TABLE 29—COMPARISON OF URP TO THE REASONABLE PROGRESS GOAL ON MOST IMPAIRED DAYS FOR THE WICHITA MOUNTAINS—Continued

	Extinction	Deciview
Shortfall between Oklahoma's RPG and the URP (for this implementation period)	.....	−1.47 dv.
Improvement by 2064 Extrapolated from Oklahoma's RPG	68.38 Mm^{-1}	10.01 dv.
Visibility in 2064 from Oklahoma's RPG (extrapolated)	39.76 Mm^{-1}	13.80 dv.
Visibility in 2102 Extrapolated from Oklahoma's RPG (natural visibility conditions achieved)	21.23 Mm^{-1}	7.53 dv.

The ODEQ believes the RPGs it established for the Wichita Mountains are reasonable, and that it is not reasonable to achieve the URP in 2018. In support of this conclusion it included a discussion of the pollutant contributions and the sources of visibility impairment at the Wichita Mountains (see Sections IX.D and E of the Oklahoma regional haze SIP). The ODEQ also took several other factors into consideration in determining that it was not reasonable to achieve the glide path in 2018 and that the RPG adopted by it is reasonable. See our OK TSD for a summary of these factors and the CENRAP visibility modeling source apportionment results.

We evaluated the analysis provided by the ODEQ along with the CENRAP modeling results, CENRAP emission inventories and other information in examining the RPGs established by ODEQ. Our review of the CENRAP emission inventory, modeling protocol and model results can be found in our CENRAP Modeling TSD. Below we present a summary of that evaluation:

- The ODEQ demonstrated through the CENRAP control sensitivity modeling scenario discussed in Section V.C.2, above, that application of a wide suite of controls across CENRAP states determined to meet a cost-effective threshold of $5,000/ton and emissions in relation to location criteria, would also not be sufficient to meet the URP goal, falling approximately 0.71 dv deciview short of the goal. However, we note that this control sensitivity modeling also demonstrated that an additional improvement of 0.75 dv was achievable through implementation of the identified controls. Based on source apportionment data, a large portion of that improvement would likely result from implementation of identified controls in Texas. A 0.75 dv improvement represents nearly 33% additional improvement over the 2.3 dv improvement projected to occur between the baseline period and 2018 due to all of the reductions included in the model from on the book controls, implementation of CAIR and assumptions of reductions due to BART.
- Evidence in the record demonstrated that additional reductions at sources in Texas were likely feasible, result in visibility improvement, and be cost-effective, but the ODEQ did not pursue this with Texas. Consequently, we believe the ODEQ did not have sufficient information to adequately consider emission reductions for sources in Texas in establishing its RPGs and demonstrating that it is reasonable.
- We believe the current approach to estimate natural conditions used by ODEQ follows our default methods and is acceptable to establish the 2064 goal, calculate the URP, and evaluate the RPGs established by Oklahoma.
- We note the more recent IMPROVE monitored data at the Wichita Mountains indicates that more progress than anticipated by the CENRAP modeling has occurred.[286] The most recent five-year (2009–2013) average conditions for the 20% worst days is 21.2 dv. This is below the level anticipated in the CENRAP projection for 2018 of 21.5 dv. We believe that this observed improvement is the result of meteorological conditions, reduction in the impact from fires, and reduction in the impacts from SO_2 emissions. More recent emission inventory data shows reductions in emissions in most states beyond what was projected in the 2018 modeling, including large reductions in emissions from the Eastern United States. Emissions from non-EGU Texas point sources are lower than have been projected in the modeling. We note that additional reductions are still needed to meet or exceed the URP goal for 2018 of 20.01 dv. As discussed above, emissions at some of the sources that impact visibility the most are still above the emission levels projected in the model and cost-effective controls are likely available at these sources. Based on information provided by the TCEQ, we do not expect large additional emission reductions of SO_2 in Texas between 2013 and 2018 under federal programs and the SIP as submitted.[287]

Based on the above considerations, we propose to agree with the ODEQ's demonstration that it is not reasonable to meet the URP for the Wichita Mountains for this planning period. We also agree with the ODEQ that emissions and transport from outside of Oklahoma will severely limit the rate of progress achievable at the Wichita Mountains on the 20% worst days. As the ODEQ itself (and we through our analysis detailed in the FIP TSD) have demonstrated, there are large visibility impacts at the Wichita Mountains from outside Oklahoma, the largest percentage coming from point sources in Texas. In addition, we believe the ODEQ has also demonstrated there is the likelihood of a sizeable visibility improvement from controlling a subset of these sources, with likely cost-effective controls.

5. Reasonable Progress Goal Minimum

Under Section 51.308(d)(1)(vi), Oklahoma may not adopt a RPG that represents less visibility improvement than is expected to result from implementation of other requirements of the CAA during the applicable planning period.

The RPGs established by Oklahoma are based on CENRAP 2018 modeling projections. The modeling projections conducted by CENRAP contain projections of the visibility conditions that are anticipated to be realized at each Class I area between the 2002 base year and the 2018 future year. These projections are based on the emission reductions resulting from federal and state control programs that are either currently in effect or with mandated future-year emission reduction schedules that predate 2018, including the long-term strategies of Oklahoma, Texas, and other states, and presumptive emission reductions expected to result from the submitted Oklahoma BART rule. Since CENRAP's 2018 modeling projections are based on local, state, and federal control programs that are either currently in effect or with mandated future-year emission reduction schedules, we believe that the ODEQ's RPGs represent at least as much visibility improvement as is expected to result from implementation of other requirements of the CAA (*i.e.,* requirements other than regional haze) during the applicable

[286] Available at: *http://vista.cira.colostate.edu/tss/.*

[287] TCEQ comment letter to EPA on draft modeling platform dated June 24, 2014. '2018 EMP signed.pdf'.

planning period. We therefore propose to approve Oklahoma's submission under Section 51.308(d)(1)(vi) that its RPG for the Wichita Mountains does not represent less visibility improvement than is expected to result from the implementation of other requirements of the CAA during this planning period.

6. Oklahoma's Assertion That Its Progress Goals Are Reasonable

Section 51.308(d)(1)(ii) provides that for the period of the SIP, if Oklahoma establishes a RPG that provides for a slower rate of improvement in visibility than the rate that would be needed to attain natural conditions by 2064, it must demonstrate based on the factors in Section 51.308(d)(1)(i)(A) that the rate of progress for the SIP to attain natural conditions by 2064 is not reasonable; and that the progress goal it adopted is reasonable. As part of its SIP assessment, Oklahoma must provide to the public for review the number of years it would take to attain natural conditions if visibility improvement continues at the rate of progress it selected as reasonable.

The ODEQ's RPG for the 20% worst days establishes a slower rate of progress than the URP for the Wichita Mountains. As shown in Table IX–1 of the Oklahoma regional haze SIP, under the RPG adopted by ODEQ, it projected that natural visibility conditions will not be attained at the Wichita Mountains by 2064. ODEQ calculated that under the rate of progress selected by it as reasonable, it would attain natural visibility conditions at the Wichita Mountains in 2102. See Table 29 above.

In the Oklahoma Regional Haze SIP, the ODEQ states that the RPGs it established for the Wichita Mountains are reasonable and that it is not reasonable to achieve the URP in 2018. In support of this conclusion, it included a discussion of the pollutant contributions and the sources of visibility impairment at the Wichita Mountains (see Sections IX.D and E of the Oklahoma regional haze SIP). The ODEQ also took several other factors into consideration in determining that it was not reasonable to achieve the glide path in 2018 and that the RPG adopted by it is reasonable. See our OK TSD for a summary of these factors and the CENRAP visibility modeling source apportionment results.

The ODEQ indicated that Oklahoma's ability to meet the URP is impeded primarily by the following: the significant contribution of emissions from Texas and other areas outside the ODEQ's jurisdiction; the uncertainty in the effect of CAIR; the economic and energy cost of additional controls on Oklahoma point sources; the lack of a quality-assured enhanced Oklahoma emissions inventory and ODEQ's reluctance to target area sources for emissions controls until such an emissions inventory is developed; the ODEQ's lack of jurisdiction over non-road and on-road mobile sources; and, the limitations involved with utilizing the default EPA method to determine natural visibility conditions. See our OK TSD for a more complete summary of these factors.

We evaluated the analysis provided by the ODEQ along with the CENRAP modeling results, CENRAP emission inventories and other information in examining the RPGs established by ODEQ. Our review of the CENRAP emission inventory, modeling protocol and model results can be found in our CENRAP Modeling TSD.

7. Our Evaluation of Oklahoma's Reasonable Progress Goals for the Wichita Mountains.

In the sections above, we discuss how Oklahoma constructed its RPGs for the Wichita Mountains, how in doing so it consulted with Texas and other states, applied the four reasonable progress factors in evaluating sources within Oklahoma for additional controls in the development of that RPG, and calculated the URP for the Wichita Mountains. In this section we consider those efforts and present our evaluation of Oklahoma's RPGs for the Wichita Mountains.

We believe that with the exception of certain BART sources, Oklahoma appropriately concluded that no additional reasonable progress measures for Oklahoma sources were necessary during this first planning period. However, BART is a component of reasonable progress, and the RPGs selected by the ODEQ for the Wichita Mountains do not include the level of reductions necessary to meet the requirements under Section 51.308(e) for BART. In our December 28, 2011 rulemaking, we disapproved the SO_2 BART determinations for certain units and promulgated a BART FIP to impose controls for these units.[288] Therefore, implementation of our SO_2 BART FIP and the revised BART SIP for the AEP units is expected to result in greater reasonable progress than is anticipated in Oklahoma's February 19, 2010, regional haze SIP submit.[289]

In addition, as required by Section 51.308(d)(1)(iv), Oklahoma's development of its RPGs must be informed by its consultations with other states. Oklahoma demonstrated that the unrealistic scenario of eliminating all Oklahoma sources would not be sufficient to meet the URP for 2018. It realized that efforts to meet the goal of natural visibility by 2064 would require further emission reductions from other states in the region. The CENRAP modeling, monitoring data and other technical analyses that informed consultations demonstrated that NO_X and SO_2 are the primary causes of haze at the Wichita Mountains with SO_2 from point sources being the predominant driver. It also showed that SO_2 point sources in Texas were a significant contributor to the haze at the Wichita Mountains. Furthermore, the control and cost information developed by CENRAP and Alpine Geophysics showed that cost-effective controls on Texas sources were likely available, some with a cost-effectiveness on a $/ton basis within TCEQ's own benchmark. The Regional Haze Rule envisioned that a state would use the consultation processes under Sections 51.308(d)(1)(iv) in the development of its RPGs, and 51.308(d)(3)(i) regarding the development of its long-term strategy, in identifying visibility impairing emissions that cross state boundaries, and in the coordination of strategies to reduce those emissions. However, despite this information in the record about the impact of Texas sources on the Wichita Mountains, the ODEQ did not request that the TCEQ further investigate these sources, nor did it request additional reductions from Texas sources to address this impact. As we discuss in Section V.E, we believe that the technical analysis developed by Texas did not provide the information necessary to identify reasonable reductions from its sources, and inform consultations in order to develop coordinated management strategies with Oklahoma. Therefore, due to this absence of the development of this critical information during consultations, we believe that Oklahoma did not have adequate information to establish its RPG for the Wichita Mountains, and should have requested that the TCEQ further investigate these sources or requested additional reductions from Texas sources to ensure that all reasonable measures to improve

[288] 76 FR 81728 (Dec. 28, 2011).

[289] In our August 21, 2013, proposed approval of Oklahoma's June 20, 2013, regional haze SIP revision we proposed to find that the SO_2 emission reductions associated with Oklahoma's revised BART determination for Northeastern Units 3 and 4, when combined with enforceable commitments from ODEQ, will be consistent with the levels of control assumed in the CENRAP modeling and relied on by other States as part of their reasonable progress demonstrations (78 FR 51586).

visibility were included in Texas' LTS and incorporated into Oklahoma's RPG for the Wichita Mountains. Thus, the basic intent of our consultation requirements was not realized.

In addition to the explicit statutory requirement under Section 51.308(d)(1)(ii) to consider the four reasonable progress factors, the Regional Haze Rule also establishes an analytical requirement to ensure that each state considers the emission reduction measures necessary to attain the URP. The Regional Haze Rule provides that we will evaluate Oklahoma's consideration of the four factors in Section 51.308(d)(1)(i)(A), its analysis of the URP required under Section 51.308(d)(1)(i)(B) and the demonstration developed pursuant to Section 51.308(d)(1)(ii), ''[i]n determining whether the State's goal for visibility improvement provides for reasonable progress.'' As explained in the preamble to the Regional Haze Rule, the URP analysis was adopted to ensure that states use a common analytical framework and to ensure an informed, equitable, and transparent decision making process that would, among other things, ensure that the public would be provided with the information necessary to understand the emission reductions needed, the costs of such measures, and other factors associated with improvements in visibility. We note that this analytical requirement is met only through consultation and is not restricted to the consideration of only those sources within the state with the impacted Class I area. As we stated in the Regional Haze Rule regarding this requirement: [290]

> In doing this analysis, the State must consult with other States which are anticipated to contribute to visibility impairment in the Class I area under consideration. Because haze is a regional problem, States are encouraged to work together to develop acceptable approaches for addressing visibility problems to which they jointly contribute. If a contributing State cannot agree with the State establishing the reasonable progress goal, the State setting the goal must describe the actions taken to resolve the disagreement.

However, Oklahoma's consultation was incomplete. While the analyses developed by CENRAP provide a great deal of information on contributions to visibility impairment and a set of potential available add-on controls and cost associated with those controls, the data was insufficient to fully assess the impacts and available emission reduction measures for Texas sources. Given the large contributions from sources in Texas and EGU point sources in particular, Oklahoma could not reasonably consider all the emission reductions needed to meet or approach the URP without considering emission reduction measures available for those sources in Texas that contribute the most to visibility impairment at Wichita Mountains. In summary, we propose to find the following:

- Oklahoma has demonstrated that it is not reasonable to require additional emission reductions for its sources for this planning period.
- BART is a component of developing the RPGs, and the RPGs are inadequate because BART controls were not adequately considered. We note this deficiency is addressed by our BART FIP and the revised Oklahoma SIP.
- Oklahoma's consultations with Texas were flawed, which prevented it from adequately developing its RPGs for the Wichita Mountains.
- Also because Oklahoma's consultations with Texas were flawed, Oklahoma did not consider the emission reduction measures necessary to achieve the URP for the Wichita Mountains and did not adequately demonstrate that the RPGs it established were reasonable based on the four statutory factors under 51.308(d)(1)(ii).

In consideration of these flaws, we propose to disapprove Oklahoma's submission under Section 51.308(d)(1), except for those portions addressing Section 51.308(d)(1)(vi), which we propose to approve.

VII. Our Proposed Oklahoma and Texas Regional Haze FIPs

Below, we list all of the portions of Section 51.308 that we propose to find that Texas and Oklahoma did not meet, which we have discussed above, and more fully in our TX TSD and OK TSD documents.

We propose to disapprove the parts of the Texas regional haze SIP addressing the following requirements:

- Section 51.308(d)(1)(i)(A), regarding Texas' reasonable progress four factor analysis.
- Section 51.308(d)(1)(i)(B), regarding Texas' calculation of the emission reductions needed to achieve the URPs for the Guadalupe Mountains and Big Bend.
- Section 51.308(d)(1)(ii), regarding Texas' RPGs for the Guadalupe Mountains and Big Bend.
- Section 51.308(d)(2)(iii), regarding Texas' calculation of the natural visibility conditions for the Guadalupe Mountains and Big Bend.
- Section 51.308(d)(2)(iv)(A) regarding Texas' calculation of natural visibility impairment.
- Section 51.308(d)(3)(i) regarding Texas' long-term strategy consultation.
- Section 51.308(d)(3)(ii) regarding Texas securing its share of reductions in other states' RPGs.
- Section 51.308(d)(3)(iii) regarding Texas' technical basis for its long-term strategy.
- Section 51.308(d)(3)(v)(C), regarding Texas' emissions limitations and schedules for compliance to achieve the RPGs for Big Bend and the Guadalupe Mountains.

We propose to disapprove the RPGs for the Wichita Mountains set by Oklahoma in its regional haze SIP. In setting its RPG, we propose to find that Oklahoma generally did not meet the requirements of Section 51.308(d)(1) of the Oklahoma regional haze SIP, except for Section 51.308(d)(1)(vi).

Below we present a summary of our proposed Texas and Oklahoma FIPs and why we believe these FIPs would cure the SIP deficiencies in those portions of the Texas and Oklahoma SIPs that we propose to disapprove, thereby satisfying our FIP obligation. Please see our FIP TSD and our Cost TSD for a full development of the technical basis of our FIPs.

A. Summary of Our Proposed Texas FIP

We believe our proposed FIP and its rationale as presented here provide the technical analysis that was lacking in Texas' development of its RPGs for the Guadalupe Mountains and Big Bend, and in its consultations with Oklahoma for the development of the RPGs for the Wichita Mountains, as well as addressing its long-term strategy. As Texas did in the development of its SIP, we have also used the same analysis to address both tasks. We began our review of Texas' conclusions with an initial analysis of all point sources in Texas and an assessment of the visibility impact from those sources with the greatest potential to contribute to visibility impairment. A refinement of this analysis resulted in our focus on a much smaller group of sources that essentially reduced down to an analysis of whether, in light of the balance between the cost of control and visibility benefits of control at each source, additional SO_2 controls should be installed on each of certain large coal fired EGUs in Texas in order to improve the visibility at these Class I areas. We conducted our analysis using the four reasonable progress factors listed in Section 51.308(d)(1)(i)(A). We propose to find that this portion of our proposed Texas FIP would make whole our disapproval of those portions of the Texas SIP intended to meet:

- Section 51.308(d)(1)(i)(A).

[290] 64 FR 35732 (July 1, 1999).

- Section 51.308(d)(3)(i).
- Section 51.308(d)(3)(ii).
- Section 51.308(d)(3)(iii).
- Section 51.308(d)(3)(v)(C).

We also establish the natural visibility conditions for the Guadalupe Mountains and Big Bend. We then use those values and the analysis we have developed above to consider the emission reductions needed to achieve the URPs for the Guadalupe Mountains and Big Bend and establish their RPGs. We propose that these portions of our Texas FIP, developed below, make whole our disapproval of those portions of the Texas SIP intended to meet:

- Section 51.308(d)(2)(iii).
- Section 51.308(d)(2)(iv)(A).
- Section 51.308(d)(1)(i)(B).
- Section 51.308(d)(1)(ii).

B. Summary of Our Proposed Oklahoma FIP

We believe some of the same portions of our proposed Texas FIP would also largely address the portions of the Oklahoma regional haze SIP we are proposing to disapprove. We believe that Oklahoma's incomplete consultation with Texas denied it the knowledge it needed—the visibility impacts of individual sources in Texas with the largest potential to impact the visibility at the Wichita Mountains and the extent to which cost-effective controls were available—in order to properly construct its RPG for the Wichita Mountains. As indicated in the record, both the ODEQ and the TCEQ acknowledged during the development of their respective regional haze SIPs that Texas point sources have a significant visibility impact at the Wichita Mountains and that cost-effective controls were likely available for these sources. However, the ODEQ did not pursue the point in its consultations with the TCEQ under Section 51.308(d)(1)(iv). Our proposed Oklahoma FIP will address these deficiencies in the Oklahoma's consultations by establishing new RPGs for the Wichita Mountains. These RPGs are based on our analysis of the proposed controls for Texas sources in our proposed Texas FIP. We do not believe that any further control measures for sources within Oklahoma are necessary to resolve the issues identified above in its SIP.

C. Technical Overview of Our Proposed Oklahoma and Texas FIPs

As discussed in our FIP TSD, we have determined that based on their visibility impacts, a smaller subset of the facilities that we have initially analyzed should be further evaluated to determine (1) if cost-effective controls are available and (2) considering their projected visibility benefits, which, if any controls should be proposed. With one exception, the PPG Flat Glass plant in Wichita Falls, all of the facilities in the smaller subset of Texas sources are coal fired power plants. While some of these coal fired power plants have scrubbers, all but one are partially bypassed. Also as discussed in that section, we are limiting our analyses to the consideration of SO_2 controls for these EGU sources, as our modeling indicates that the impacts from these sources on the 20% worst days are primarily due to sulfate emissions. In our Cost TSD, we conduct a SO_2 cost analyses for the following facilities and units:

TABLE 30—SOURCES UNDERGOING REASONABLE PROGRESS AND LONG-TERM STRATEGY ANALYSES

Facility	Units	Currently scrubbed?	Currently bypassed?
Big Brown	1, 2	No.	
Sandow 4	1	Yes	Yes.
Monticello	1, 2	No.	
Monticello	3	Yes	Yes.
Martin Lake	1, 2, 3	Yes	Yes.
Coleto Creek	1	No.	
Limestone	1, 2	Yes	Yes.
San Miguel	1	Yes	No.
Tolk	1, 2	No.	
Welsh	1, 2, 3	No.	
W. A. Parish	5, 6, 7	No.	
W. A. Parish	8	Yes	Yes.

In addition to these sources, we have examined the PPG Flat Glass Plant in Wichita Falls, Texas. This is the only non-EGU and the only source for which NO_X controls are considered. For all of the sources we examined, visibility impacts were dominated by the impacts from SO_2 emissions with the exception of the PPG Flat Glass Plant. Because of the proximity of this facility to Wichita Mountains, NO_X and SO_2 emissions from the facility were both responsible for the visibility impacts at Wichita Mountains. As discussed in more detail below, we evaluated these impacts and considered recent emissions and permit data in considering the potential need for additional controls for this facility.

D. Approach to Reasonable Progress and Long-Term Strategy

We are simultaneously conducting reasonable progress and long-term strategy analyses. These analyses address both (1) the requirements to consider the four reasonable progress factors for the Texas Class I areas, and (2) the technical basis required to develop the long-term strategy for the Texas Class I areas and the Wichita Mountains in Oklahoma. We use the ''four factor analysis'' method outlined in 40 CFR 51.308(d)(1)(A) that states are directed to use in establishing a RPG:

(1) Reasonable progress goals. For each mandatory Class I Federal area located within the State, the State must establish goals (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility conditions. The reasonable progress goals must provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period.

(i) In establishing a reasonable progress goal for any mandatory Class I Federal area within the State, the State must:

(A) Consider the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources, and include a demonstration showing how these factors were taken into consideration in selecting the goal.

To assist in interpreting these reasonable progress factors, we will rely

on our reasonable progress Guidance.[291] Our Reasonable Progress Guidance notes the similarity between some of the reasonable progress factors and the BART factors contained in Section 51.308(e)(1)((ii)(A), and suggests that the BART Guidelines be consulted regarding cost, energy and non-air quality environmental impacts, and remaining useful life. We are therefore relying on our BART Guidelines for assistance in interpreting those reasonable progress factors, as applicable.

We note that, with one exception,[292] the issues relating to the evaluation of three of these factors: (1) Time necessary for compliance, (2) energy and non-air quality environmental impacts of compliance, and (3) remaining useful life, are common to all the units we are analyzing. Thus, we are analyzing these factors for all the units simultaneously.

In analyzing the remaining factor, cost of compliance, we are including in our evaluation a consideration of any control technology that may already be installed at the facility. Also, similar to a BART analysis, we are also considering the projected visibility benefit in our analysis. As we state in our Arizona proposal: [293]

> While visibility is not an explicitly listed factor to consider when determining whether additional controls are reasonable, the purpose of the four-factor analysis is to determine what degree of progress toward natural visibility conditions is reasonable. Therefore, it is appropriate to consider the projected visibility benefit of the controls when determining if the controls are needed to make reasonable progress.

For each unit, we are weighing the cost of compliance against the projected visibility benefit.

1. Time Necessary for Compliance, and the Oklahoma and Texas RPGs

We discuss the time necessary for compliance reasonable progress factor in our Reasonable Progress Guidance: [294]

> It may be appropriate for you to use this factor to adjust the RPG to reflect the degree of improvement in visibility achievable within the period of the first SIP if the time needed for full implementation of a control measure (or measures) will extend beyond 2018. For example, if you anticipate that constraints on the availability of construction labor will preclude the installation of controls at all sources of a particular category by 2018, the visibility improvement anticipated from installation of controls at the percentage of sources that could be controlled within the strategy period should be considered in setting the RPG and in establishing the SIP requirements to meet the RPG.

Due to delays in processing the Texas regional haze SIP and the remaining portion of the Oklahoma regional haze SIP, we cannot assume that the SO_2 controls we are proposing will be installed and operational within this planning period, which ends in 2018. For instance, typical SO_2 scrubber installations can take up to five years to plan, construct and bring to operational readiness. This would mean that any such controls that we may require in our final action may not be operational until after 2018. Therefore, although we are proposing revised RPGs for Oklahoma and Texas, we are proposing RPGs that only account for the scrubber upgrades included in this FIP anticipated to be completed by 2018.

We request that Oklahoma and Texas consider the additional visibility improvements anticipated from any proposed FIP controls implemented after 2018 with the submission of their next regional haze SIPs due July 13, 2018.

2. Energy and Non-Air Quality Environmental Impacts of Compliance

Regarding the analysis of energy impacts, the BART Guidelines advise, ''You should examine the energy requirements of the control technology and determine whether the use of that technology results in energy penalties or benefits.'' [295] As discussed below in our cost analyses for Dry Sorbent Injection (DSI) and Spray Dryer Absorber (SDA) SO_2 scrubbers, our cost model allows for the inclusion or exclusion of the cost of the additional auxiliary power required for the pollution controls we considered to be included in the variable operating costs. We chose to include this additional auxiliary power in all cases. Consequently, we believe that any energy impacts of compliance have been adequately considered in our analyses.

Regarding the analysis of non-air quality environmental impacts, the BART Guidelines advise: [296]

> Such environmental impacts include solid or hazardous waste generation and discharges of polluted water from a control device. You should identify any significant or unusual environmental impacts associated with a control alternative that have the potential to affect the selection or elimination of a control alternative. Some control technologies may have potentially significant secondary environmental impacts. Scrubber effluent, for example, may affect water quality and land use. Alternatively, water availability may affect the feasibility and costs of wet scrubbers. Other examples of secondary environmental impacts could include hazardous waste discharges, such as spent catalysts or contaminated carbon. Generally, these types of environmental concerns become important when sensitive site-specific receptors exist or when the incremental emission reductions potential of the more stringent control is only marginally greater than the next most-effective option. However, the fact that a control device creates liquid and solid waste that must be disposed of does not necessarily argue against selection of that technology as BART, particularly if the control device has been applied to similar facilities elsewhere and the solid or liquid waste is similar to those other applications. On the other hand, where you or the source owner can show that unusual circumstances at the proposed facility create greater problems than experienced elsewhere, this may provide a basis for the elimination of that control alternative as BART.

The SO_2 control technologies we considered in our analysis—DSI and scrubbers—are in wide use in the coal-fired electricity generation industry. Both technologies add spent reagent to the waste stream already generated by the facilities we analyzed, but do not present any unusual environmental impacts. As discussed below in our cost analyses for DSI and SDA SO_2 scrubbers, our cost model includes waste disposal costs in the variable operating costs. Consequently, we believe that with one possible exception, any non-air quality environmental impacts have been adequately considered in our analyses. An examination of the aerial photo of the Tolk facility, which we present in our FIP TSD, does not reveal any obvious source of surface water. We therefore assume that well water is used. In light of this and its potential relationship to the energy and non-air quality environmental impacts of compliance, we limit our SO_2 control analysis for Tolk to DSI and dry scrubbers.

3. Remaining Useful Life

Regarding the analysis of the remaining useful life, the BART Guidelines advise:

> The ''remaining useful life'' of a source, if it represents a relatively short time period, may affect the annualized costs of retrofit controls. For example, the methods for calculating annualized costs in EPA's OAQPS Control Cost Manual require the use

[291] Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program, June 1, 2007.

[292] For reasons we discuss in our FIP TSD, we believe that the Tolk facility may merit a special consideration of the energy and non-air quality environmental impacts of compliance.

[293] See 79 FR 9353, footnote 137. We also finalized our proposal in 79 FR 52420, using this same reasoning.

[294] Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program, June 1, 2007. Page 19.

[295] 70 FR 39168 (July 6, 2005).

[296] 70 FR 39169 (July 6, 2005).

of a specified time period for amortization that varies based upon the type of control. If the remaining useful life will clearly exceed this time period, the remaining useful life has essentially no effect on control costs and on the BART determination process. Where the remaining useful life is less than the time period for amortizing costs, you should use this shorter time period in your cost calculations.

In determining the cost of scrubbers in our prior Oklahoma FIP, we used a lifetime of 30 years. In so doing, we noted [297] that scrubber vendors indicate that the lifetime of a scrubber is equal to the lifetime of the boiler, which might easily be over 60 years. We also noted that many scrubbers that were installed between 1975 and 1986 are still in operation today (*e.g.,* Coyote Station, H.L. Spurlock Unit 2, East Bend Unit 2, Laramie River Unit 3, Cholla 5, Basin Electric, Mitchell Unit 33, and all of the units in Table 30 that currently have scrubbers). Further, we noted that standard cost estimating handbooks and published papers report 30 years as a typical life for a scrubber and that many utilities routinely specify 30+ year lifetimes in requests for proposal and to evaluate proposals. We have used this 30 year lifetime approach in prior actions and we therefore adopted the same scrubber lifetime in our present analysis. See 76 FR 52388 (Aug. 22. 2011); 76 FR 81728 (Dec. 28, 2011); *Oklahoma* v. *EPA,* 723 F.3d 1201 (July 19, 2013), *cert. denied* (U.S. May 27, 2014).

We see no reason to assume that a DSI system installation, which is a much less complex and costly (capital costs, as opposed to annualized costs) technology in comparison to a scrubber installation, should have a shorter lifetime. As with a scrubber, we expect the boiler to be the limiting factor when considering the lifetime of a coal-fired power plant. We have therefore similarly assumed that the lifetime of a DSI system is 30 years, as constrained by the boiler lifetime, as noted above.

The BART Guidelines provide further clarification:

> Where this affects the BART determination, this date should be assured by a federally- or State-enforceable restriction preventing further operation. We recognize that there may be situations where a source operator intends to shut down a source by a given date, but wishes to retain the flexibility to continue operating beyond that date in the event, for example, that market conditions change. Where this is the case, your BART analysis may account for this, but it must maintain consistency with the statutory requirement to install BART within 5 years. Where the source chooses not to accept a federally enforceable condition requiring the source to shut down by a given date, it is necessary to determine whether a reduced time period for the remaining useful life changes the level of controls that would have been required as BART.

As in a BART determination, we propose to adopt the same requirement regarding the need for a federally enforceable restriction for any DSI or scrubber remaining useful life of less than 30 years.

4. Analysis of the PPG Flat Glass Plant

The Wichita Falls PPG flat glass plant is located in Wichita Falls, Texas. The plant began operations in 1974.[298] The facility produces flat glass on two production lines, each with its own natural gas furnace. A furnace typically lasts ten to twelve years until re-bricking is required. In 2007, PPG applied to the TCEQ for a standard permit registration [299] in order to obtain authorization for the implementation of a low-NO_X oxy-fuel injection conversion to its Melting Furnace No. 1. As a result of this upgrade, PPG calculated its NO_X emissions from Furnace No. 1 would decrease by approximately 1,996 tpy to 894.25 tpy. PPG also further reduced their NO_X emissions as a result of a fuel conservation project which occurred with the rebuilding of Furnace No. 2. This project lowered the NO_X emissions of Furnace No. 2 from an allowable annual NO_X limit of 3,236.82 tpy to 2,947.49 tpy. These reductions were incorporated into a permit alteration.[300]

Table 31 below compares the 2018 projected CENRAP emission inventory to the 2002 CENRAP emission inventory, the current permit limits for the two furnaces, and average actual annual emissions for the facility. We projected the visibility impact from this facility at the 2018 projected emission level to be 0.635 Mm^{-1} at the Wichita Mountains (using source apportionment). Permit allowable emissions for NO_X for the two furnaces are much lower than projected and modeled for 2018 and lower than the 2002 emission level. The 2018 projected emissions for SO_2 also exceed the permitted emissions for furnace No. 2. Average annual emissions are only 44% of the projected 2018 emissions for NO_X and 81% of the projected SO_2 emissions. Therefore, we estimate that the current visibility impact due to the facility is significantly lower than the 2018 projected value. We are proposing to find that the Wichita Falls PPG flat glass plant is adequately controlled to address visibility impacts from this facility for the first planning period. We encourage the State of Texas to revisit this issue when Furnace No. 2 is scheduled for its next re-bricking.

TABLE 31—EMISSION COMPARISON FOR PPG FLAT GLASS PLANT

	CENRAP 2002 emission inventory (tpy)		CENRAP 2018 emission inventory (tpy)		Permit allowable [301] (tpy)		Average annual emissions (tpy, 2009–2012) [302]	
	NO_X	SO_2	NO_X	SO_2	NO_X	SO_2	NO_X	SO_2
Furnace No. 1	2,694.5	48.0	4,526.8	80.7	894.3	180.3	.....	.....
Furnace No. 2	2,495.2	279.7	4,191.9	470.0	2,947.5	350.4	.....	.....
Furnace No. 1 and No. 2	5,189.7	327.7	8,718.8	550.6	3,841.7	530.7	.....	.....
Facility total	5,317.0	371.0	8,929.0	623.0	.....	.....	3,887.8	501.9

[297] Technical Support Document for the Oklahoma Regional Haze State Implementation Plan and Federal Implementation Plan. March 2011, p. 14.

[298] *http://corporate.ppg.com/Our-Company/Worldwide-Operations/North-America/Wichita-Falls.*

[299] Standard Permit Registration, PPG Industries, Inc., Wichita Falls Plant, Account No. WH–0040–R. Submitted by ENVIRON, dated October 11, 2007.

[300] Permit Alteration, Permit Number: 898, Flat Glass Manufacturing Facility, Wichita Falls, Wichita County, Regulated Entity Number: RN102522950, Customer Reference Number: CN600124614, Account Number: WH–0040–R.

[301] Permit Alteration, Permit Number: 898, Flat Glass Manufacturing Facility, Wichita Falls, Wichita County, Regulated Entity Number: RN102522950, Customer Reference Number:

[302] TCEQ point source emission inventory. Downloaded from *https://www.tceq.texas.gov/airquality/point-source-ei/psei.html* and available in the docket for this action.

E. Use of Confidential Business Information

Within our Cost TSD, we calculate the SO_2 removal efficiencies for the underperforming scrubbers listed in Table 30, and present information that discusses how these scrubbers have been historically upgraded and what kinds of equipment revisions are typically required. In order to assess the potential range of options available to upgrade the scrubbers in the facilities listed in Table 30, we must have an understanding of what upgrades may have already been performed. Because most of this information is not available publicly, we requested it under authority granted to us under Section 114(a) of the CAA. For each unit, we then conducted a cost analysis for eliminating any scrubber bypass and upgrading the units' overall SO_2 removal efficiency to at least 95%. As most of the information we received in response to our Section 114(a) requests was claimed as Confidential Business Information (CBI) under 40 CFR part 2, subpart B, we are limited in what we are able to publicly state in this analyses. Consequently, although our full cost analysis is available on a facility-by-facility basis for viewing by the companies who provided us with the CBI material, we can only provide a summary of it below.

F. Reasonable Progress and Long-Term Strategy Scrubber and DSI Cost Results

As we discuss in our Cost TSD, we evaluated each unit at its maximum recommended level of control, considering the type of SO_2 control device:

- We evaluated each unit at its maximum recommended DSI performance level, according to the IPM DSI documentation, assuming milled trona: 80% SO_2 removal for an ESP installation and 90% SO_2 removal for a baghouse installation. This level of control is within the range of control of SO_2 scrubbers, and thus allows a better comparison of the costs of DSI and scrubbers.
- However, we believe that the maximum performance level for DSI can only be determined after an onsite performance test. We believe it is useful to evaluate lesser levels of DSI control (and correspondingly lower costs). We therefore also evaluated all the units at a DSI SO_2 control level of 50%, which we believe is likely achievable for any unit.
- The SDA level of control was assumed to be a maximum of 95% not to go below 0.06 lbs/MMBtu.
- The wet FGD level of control was assumed to be a maximum of 98% not to go below 0.04 lbs/MMBtu.

Below, we present a summary of our DSI, SDA, and wet FGD cost analysis:[303]

TABLE 32—SUMMARY OF DSI, SDA, AND WET FGD COST ANALYSIS

Facility	Unit	Control	Control level (%)	SO_2 Reduction (tpy)	$/Ton reduced	Capital cost	Annualized cost
Big Brown	1	DSI	50.0	15,334	$2,223	$19,096,000	$34,086,871
		DSI	90.0	27,600	2,996	33,357,000	82,684,241
		SDA	95.0	29,134	1,377	226,656,000	40,104,566
		Wet FGD	98.0	30,054	1,255	256,032,000	37,708,999
	2	DSI	50.0	15,407	2,201	19,035,000	33,909,822
		DSI	90.0	27,733	2,994	32,965,000	81,649,586
		SDA	95.0	29,273	1,373	229,544,000	40,185,893
		Wet FGD	97.9	30,169	1,257	259,141,000	37,909,708
Monticello	1	DSI	50.0	8,933	2,728	17,137,000	24,364,819
		DSI	90.0	16,079	3,420	23,580,000	54,991,417
		SDA	95.0	16,972	2,012	224,262,000	34,154,932
		Wet FGD	97.0	17,328	1,937	250,804,000	33,558,169
	2	DSI	50.0	8,215	3,086	17,057,000	25,351,370
		DSI	90.0	14,786	3,845	23,468,000	56,850,489
		SDA	95.0	15,608	2,254	227,409,000	35,183,025
		Wet FGD	96.8	15,907	2,170	254,177,000	34,523,884
Coleto Creek	1	DSI	50.0	8,030	2,792	15,888,000	22,416,218
		DSI	90.0	14,453	3,460	21,863,000	50,001,685
		SDA	93.5	15,012	2,356	240,408,000	35,366,916
		Wet FGD	95.7	15,361	2,278	262,435,000	34,996,979
Tolk	171B	DSI	50.0	5,016	3,084	13,938,000	15,465,578
		DSI	90.0	9,028	3,592	19,179,000	32,426,429
		SDA	91.7	9,195	3,178	218,306,000	29,218,836
		Wet FGD	94.4	9,474	3,204	243,048,000	30,352,765
	172B	DSI	50.0	5,517	2,828	13,873,000	15,600,155
		DSI	90.0	9,931	3,221	19,090,000	31,985,880
		SDA	90.8	10,015	2,998	226,957,000	30,022,609
		Wet FGD	93.8	10,355	3,019	252,559,000	31,257,301
Welsh	1	DSI	50.0	4,042	3,718	14,888,000	15,026,538
		DSI	80.0	6,467	4,019	18,901,000	25,992,966
		SDA	88.7	7,169	3,489	201,549,000	25,009,785
		Wet FGD	92.5	7,474	3,508	221,282,000	26,216,294
	2	DSI	50.0	4,128	3,611	14,775,000	14,906,814
		DSI	80.0	6,605	3,879	18,758,000	25,622,166
		SDA	88.2	7,285	3,438	202,108,000	25,045,518
		Wet FGD	92.2	7,608	3,454	221,821,000	26,276,805

[303] In this table, the capital cost is the total cost of constructing the facility. The annualized cost is the sum of the annualized capital cost and the annualized operational cost. See our Cost TSD for more information on how these costs were calculated.

TABLE 32—SUMMARY OF DSI, SDA, AND WET FGD COST ANALYSIS—Continued

Facility	Unit	Control	Control level (%)	SO_2 Reduction (tpy)	$/Ton reduced	Capital cost	Annualized cost
	3	DSI	50.0	4,305	3,690	15,023,000	15,884,663
		DSI	80.0	6,887	3,998	19,071,000	27,531,831
		SDA	88.7	7,634	3,368	204,177,000	25,713,148
		Wet FGD	92.5	7,959	3,379	224,298,000	26,895,390
W. A. Parish	5	DSI	50.0	7,079	2,559	15,227,000	18,111,990
		DSI	90.0	12,741	2,995	20,953,000	38,161,382
		SDA	92.5	13,095	2,441	240,112,000	31,970,651
		Wet FGD	95.0	13,449	2,389	260,195,000	32,124,808
	6	DSI	50.0	7,654	2,699	15,934,000	20,660,436
		DSI	90.0	13,776	3,229	21,924,000	44,478,086
		SDA	93.1	14,251	2,401	248,503,000	34,220,158
		Wet FGD	95.4	14,603	2,334	270,350,000	34,085,705
	7	DSI	50.0	6,168	2,805	14,641,000	17,301,527
		DSI	90.0	11,102	3,296	20,145,000	36,594,402
		SDA	92.7	11,432	2,559	211,443,000	29,250,022
		Wet FGD	95.1	11,733	2,542	233,698,000	29,821,127

G. Reasonable Progress and Long-Term Strategy Scrubber Upgrade Cost Results

In our Cost TSD, we analyze those units listed in Table 30 with an existing SO_2 scrubber in order to determine if cost-effective scrubber upgrades are available. Because all of the scrubber systems we evaluate are wet scrubbers, we limit our analyses of scrubber upgrades to wet scrubbers. Below, we present a summary of the results of that analysis.

With the exception of San Miguel, we are limited in what information we can include in this section, because in developing our scrubber cost estimates we used information that was claimed as CBI. This information was submitted in response to our Section 114(a) requests. We can therefore only present the following summary. With the exception of San Miguel, we propose to find that for all the units we analyzed:

- The absorber system had either already been upgraded to perform at an SO_2 removal efficiency of at least 95%, or it could be upgraded to perform at that level using proven equipment and techniques.
- The SO_2 scrubber bypass could be eliminated, and the additional flue gas could be treated by the absorber system with at least a 95% removal efficiency.
- Additional modifications necessary to eliminate the bypass, such as adding fan capacity, upgrading the electrical distribution system, and conversion to a wet stack could be performed using proven equipment and techniques.
- The additional SO_2 emission reductions resulting from the scrubber upgrade are substantial, ranging from 68% to 89% reduction from the current emission levels, and are cost-effective.

A summary of our analyses is as follows:

TABLE 33—SUMMARY OF SCRUBBER UPGRADE RESULTS

Unit	2009–2013 3-Year avg. SO_2 emissions (eliminate max and min) (tons)	SO_2 Emissions at 95% control (tons)	SO_2 Emission reduction due to scrubber upgrade (tons)	SO_2 Emission rate at 95% control (lbs/MMBtu)
W. A. Parish WAP8	2,586	836	1,750	0.04
Monticello 3	13,857	1,571	12,286	0.06
Sandow 4	22,289	4,625	17,664	0.20
Martin Lake 1	24,495	3,706	20,789	0.12
Martin Lake 2	21,580	3,664	17,917	0.12
Martin Lake 3	19,940	3,542	16,389	0.11
Limestone 1	10,913	2,466	8,446	0.08
Limestone 2	11,946	2,615	9,331	0.08

We calculated the cost-effectiveness for each of these units. Because those calculations depended on information claimed by the companies as CBI we cannot present it here, except to note that in all cases, the cost-effectiveness was less than $600/ton. We invite the facilities listed above to make arrangements with us to view the full cost analysis for their units.

H. Summary of the Modeled Benefits of Emission Controls

Prior to doing the control cost evaluations discussed in the sections above, we conducted several steps in support of our review which was ultimately used in our proposed FIP. We initially conducted a Q/D analysis on all facilities in Texas, using the distances to Class I areas in Texas and surrounding states. This Q/D analysis narrowed the list of over 1,600 facilities to 38 facilities. We chose to use the CENRAP photochemical modeling platform with some minor upgrades to evaluate the 38 facilities and determine if this smaller subset of sources, or individual sources, would yield visibility benefits worth considering for reasonable progress analysis. We chose to use the CAMx photochemical model instead of

CALPUFF for several reasons, including:

- The large distances between sources and Class I areas are outside the typical range of CALPUFF. Because of the range, we were concerned that CALPUFF could overestimate impacts.
- Using a photochemical model allowed us to assess improvements on the 20% worst and the 20% best days.
- Using a photochemical model allowed us to use a more refined chemistry mechanism and use the same scientific tools used for reasonable progress analysis at Class I areas.
- CAMx has both PSAT and Plume-In-Grid capabilities, whereas the other available photochemical model CMAQ (Community Multi-scale Air Quality modeling system) did not have these tools.

Full details of our Q/D and initial evaluation of 38 facilities with CAMx are discussed further in Appendix A of our FIP TSD. Based on the results of modeling the 38 facilities, we further narrowed the list to the smaller group of sources that we evaluated in a second round of CAMx modeling. Please see Appendix A of our FIP TSD, where we describe in detail the different modeling runs we conducted for our review, our methodology and selection of emission rates, our modeling results, and our final modeling analysis that we used to evaluate the benefits of the proposed controls and their associated emission decreases on visibility impairment values. We used modeling results from the initial modeling and a second round of modeling to estimate the benefits of emission reductions from controls/control upgrades. Below we present a summary of our analysis and our proposed findings regarding the estimated visibility benefits of emission reductions based on the CAMx modeling results.

Our modeling focused on calculating the extinction and visibility impacts and benefits at the Wichita Mountains, the Guadalupe Mountains, and Big Bend primarily, but also included analysis at a number of other Class I areas in states surrounding Texas. In so doing, we focused on the same sources listed in Table 30, above, that we did in our control cost evaluations. In evaluating the impacts and benefits of potential controls, we utilized a number of metrics, including change in deciviews in 2018 and natural conditions situations, change in extinction, change in percentage of total extinction, recent actuals vs. CENRAP 2018 projections, etc. For a full discussion of our review of all the modeling results, and factors that we considered in evaluating and weighing all the results, precedents, please see Appendix A of our FIP TSD. Below, we present the modeled visibility impacts based on their percentage extinction levels for the 20% worst days for the Wichita Mountains, Big Bend, and the Guadalupe Mountains:

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Figure 1. Extinction level and percent of total extinction at the Wichita Mountains for 20% worst days for the 9 facilities

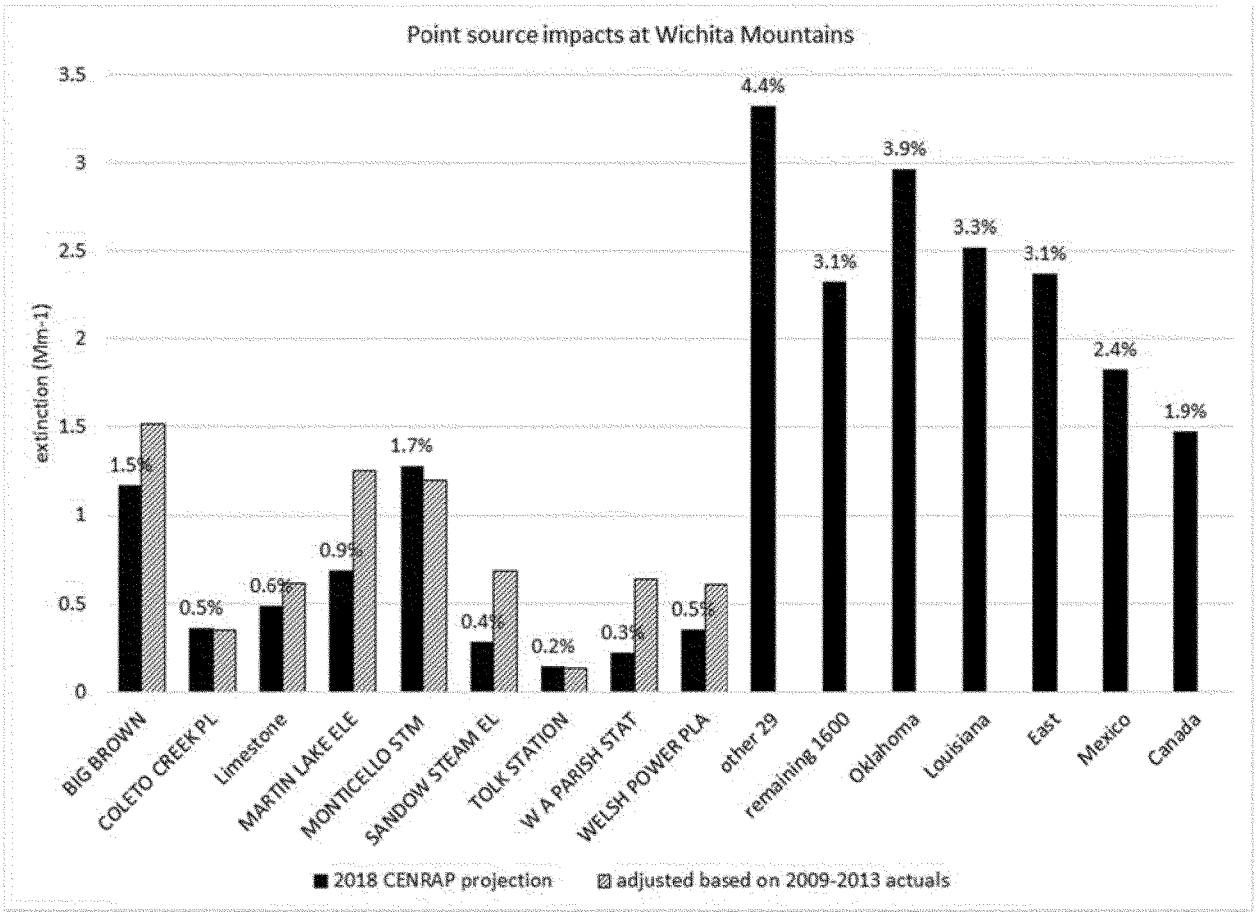


Figure 2. Extinction level and percent of total extinction at Big Bend for 20% worst days for the 9 facilities

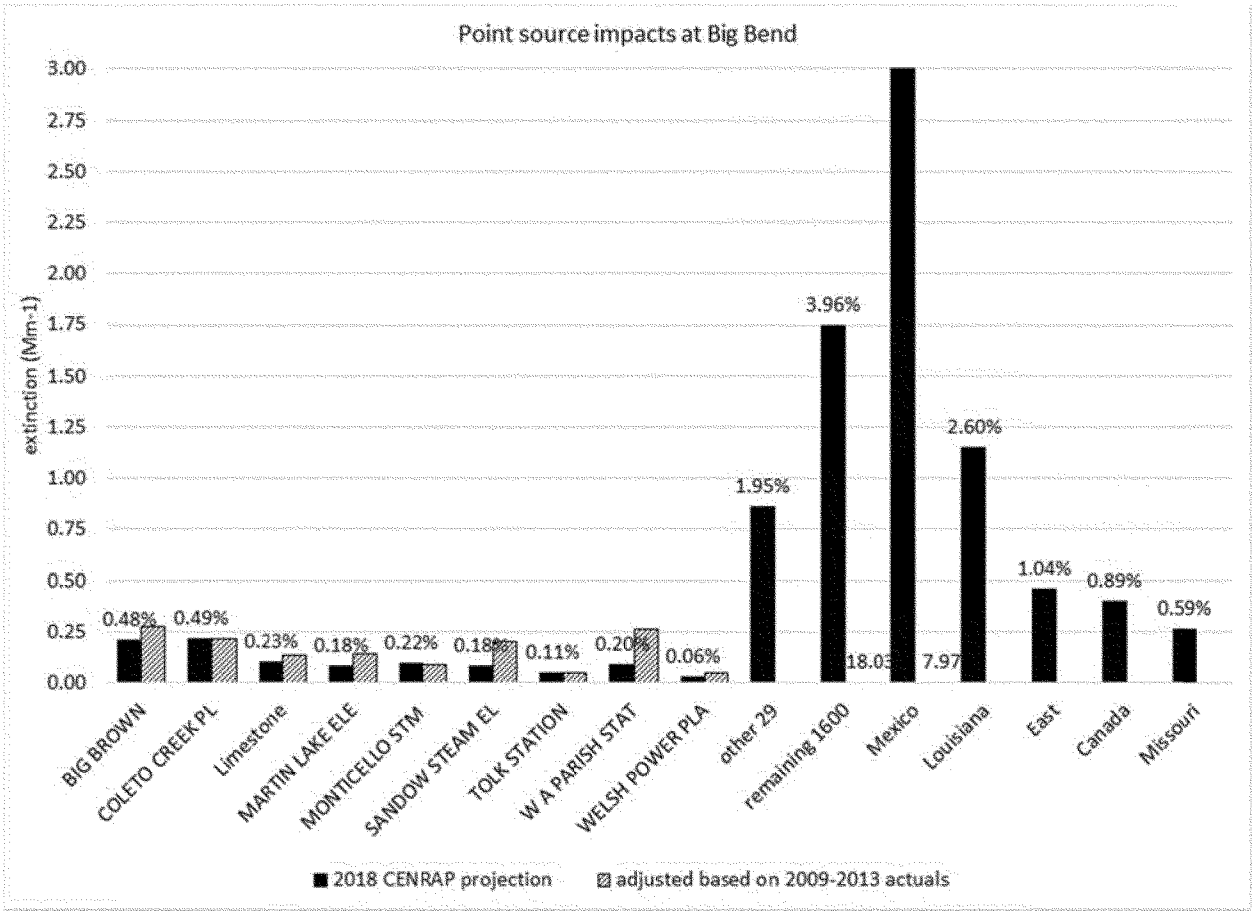
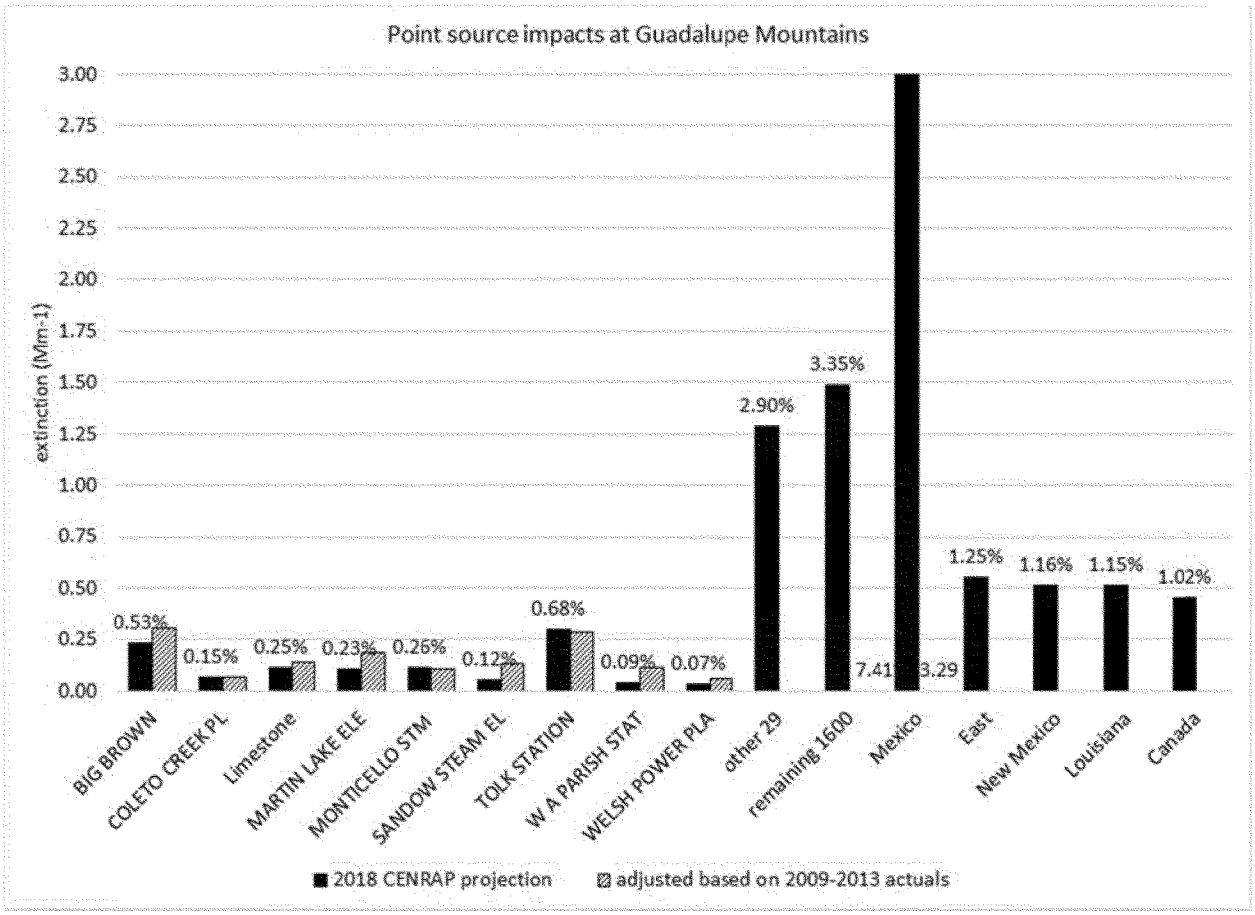


Figure 3. Extinction level and percent of total extinction at the Guadalupe Mountains for 20% worst days for the 9 facilities



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In Figures 1, 2, and 3, above, the visibility impacts from all of the units in Table 30 are represented, with the exception of San Miguel, for the reasons we discuss below in Section VII.I. In addition, the collective visibility impact from the remaining 29 sources which included San Miguel and 28 sources we elected not to include in our control cost analysis are also represented. As shown by Figure 1, a number of these facilities have significant visibility impacts at the Wichita Mountains. For instance, using actual emissions, Big Brown alone accounts for an impact equivalent to more than ⅓ of the total impact from point sources within the State of Oklahoma. Visibility impacts from these sources at Texas' Class I areas are much more limited.

In evaluating benefits of potential controls, we also considered estimated deciview improvements based on both a degraded 2018 background and a ''clean'' background based on average annual natural conditions, as shown in the tables below. Because our analysis is based on a full photo-chemical grid model that includes modeling all emissions in the modeling domain, the model results are inherently a degraded background analysis and the results are impacted by emissions from other sources. To estimate the full benefit of reductions on a source we have estimated the ''clean'' background results based on the modeled extinction impact levels for each source and calculated the del-dv based on annual average natural conditions. A true ''clean'' background model would not include interactions from emissions from other sources. Due to the inclusion of all these other sources at 2018 estimated emission levels, the estimated impacts from a source (or from controlling a source) are less than the results that would be obtained using emission levels of sources that would exist when natural conditions are achieved. We note that CALPUFF based modeling simulates 'clean' background conditions with no other sources included than the source(s) being evaluated. See our FIP TSD for more discussion on this issue. The deciview improvement based on the 2018 background conditions provides an estimate of the amount of benefit that can be anticipated in 2018 and the impact a control may have on the established RPG for 2018. However, this estimate based on degraded or ''dirty'' background conditions underestimates the visibility improvement that would be realized for the control options under consideration. Because of the non-linear nature of the deciview metric, as a Class I area becomes more polluted the visibility impairment from an individual source in terms of deciviews becomes geometrically less. Results based solely on a degraded background, will rarely if ever demonstrate an appreciable effect on incremental visibility improvement in a given area. Rather than providing for incremental improvements towards the goal of

natural visibility, degraded background results will serve to instead maintain those current degraded conditions. Therefore, the visibility benefit estimated based on natural or ''clean'' conditions is needed to assess the full benefit from potential controls. In our final decision for our North Dakota SIP and FIP,[304] we explained this by noting:

> This is true because of the nonlinear nature of visibility impairment. In other words, as a Class I area becomes more polluted, any individual source's contribution to changes in impairment becomes geometrically less. Therefore the more polluted the Class I area would become, the less control would seem to be needed from an individual source.

The Eighth Circuit Court upheld this point in *North Dakota* v. *EPA*. 730 F.3d 750, 766 (8th Cir. 2013).

1. Visibility Benefits of DSI, SDA, and Wet FGD

We evaluated the visibility benefits of DSI, for the thirteen units depicted in Table 30 that currently have no SO_2 control. We evaluated all the units using the same control levels we employed in our control cost analyses. In summary, we evaluated these units at a DSI SO_2 control level of 50%, which we believe is likely achievable for any unit. We also evaluated each unit at its maximum recommended DSI performance level, of 80% SO_2 removal for an ESP installation and 90% SO_2 removal for a baghouse installation. As we note in Section VII.F, we believe these are maximum performance levels for DSI but we do not know whether a given unit is actually capable of achieving these DSI control levels. At the lower performance level we assumed, we conclude that the corresponding visibility benefits from DSI would also be close to half of the benefits from scrubbers resulting in the visibility benefits from scrubber retrofits being much more beneficial.[305]

We also evaluated the visibility benefits for scrubber retrofits (wet FGD and SDA) for these same units, assuming the same control levels corresponding to SDA and wet FGD that we used in our control cost analyses. The visibility benefits from DSI, SDA, and wet FGD are quantified specifically in Appendix A of our FIP TSD. Below, we present a summary of some of those visibility benefits:

TABLE 34—AVERAGE CHANGE IN DECIVIEW LEVELS AT THE WICHITA MOUNTAINS FOR THE 20% WORST DAYS

Unit	Visibility improvement 2018 background (Environ)					Visibility improvement (average natural conditions)				
	DSI Low	DSI High	SDA	WFGD	WFGD Upgrade	DSI Low	DSI High	SDA	WFGD	WFGD Upgrade
Big Brown 1	0.045	0.081	0.085	0.088	.....	0.225	0.401	0.423	0.436	.....
Big Brown 2	0.045	0.081	0.086	0.088	.....	0.226	0.403	0.425	0.438	.....
Coleto Creek 1	0.021	0.038	0.039	0.040	.....	0.105	0.189	0.196	0.200	.....
Limestone 1	.....	.....	.....	.....	0.027	.....	.....	.....	.....	0.135
Limestone 2	.....	.....	.....	.....	0.030	.....	.....	.....	.....	0.149
Martin Lake 1	.....	.....	.....	.....	0.047	.....	.....	.....	.....	0.234
Martin Lake 2	.....	.....	.....	.....	0.040	.....	.....	.....	.....	0.202
Martin Lake 3	.....	.....	.....	.....	0.037	.....	.....	.....	.....	0.185
Monticello 1	0.026	0.047	0.050	0.051	.....	0.132	0.236	0.249	0.254	.....
Monticello 2	0.024	0.043	0.046	0.047	.....	0.121	0.217	0.229	0.233	.....
Monticello 3	.....	.....	.....	.....	0.036	.....	.....	.....	.....	0.181
Sandow 4	.....	.....	.....	.....	0.062	.....	.....	.....	.....	0.312
Tolk 171b	0.004	0.006	0.006	0.007	.....	0.018	0.032	0.033	0.034	.....
Tolk 172b	0.004	0.007	0.007	0.007	.....	0.020	0.035	0.036	0.037	.....
WA Parish 5	0.012	0.022	0.023	0.023	.....	0.062	0.111	0.114	0.117	.....
WA Parish 6	0.013	0.024	0.025	0.025	.....	0.067	0.120	0.124	0.127	.....
WA Parish 7	0.011	0.019	0.020	0.020	.....	0.054	0.097	0.099	0.102	.....
WA Parish 8	.....	.....	.....	.....	0.003	.....	.....	.....	.....	0.015
Welsh 1	0.012	0.019	0.021	0.022	.....	0.059	0.094	0.105	0.109	.....
Welsh 2	0.012	0.019	0.021	0.022	.....	0.060	0.096	0.106	0.111	.....
Welsh 3	0.012	0.020	0.022	0.023	.....	0.063	0.101	0.111	0.116	.....

TABLE 35—AVERAGE CHANGE IN DECIVIEW LEVELS AT BIG BEND FOR THE 20% WORST DAYS

Unit	Visibility improvement 2018 background (Environ)					Visibility improvement (average natural conditions)				
	DSI low	DSI high	SDA	WFGD	WFGD upgrade	DSI low	DSI high	SDA	WFGD	WFGD upgrade
Big Brown 1	0.012	0.021	0.022	0.023	.....	0.046	0.082	0.086	0.089	.....
Big Brown 2	0.012	0.021	0.022	0.023	.....	0.046	0.082	0.087	0.089	.....
Coleto Creek 1	0.018	0.033	0.034	0.035	.....	0.071	0.128	0.133	0.136	.....
Limestone 1	.....	.....	.....	.....	0.008	.....	.....	.....	.....	0.033
Limestone 2	.....	.....	.....	.....	0.009	.....	.....	.....	.....	0.036
Martin Lake 1	.....	.....	.....	.....	0.008	.....	.....	.....	.....	0.030
Martin Lake 2	.....	.....	.....	.....	0.007	.....	.....	.....	.....	0.026
Martin Lake 3	.....	.....	.....	.....	0.006	.....	.....	.....	.....	0.023
Monticello 1	0.003	0.005	0.005	0.006	.....	0.011	0.020	0.021	0.022	.....
Monticello 2	0.003	0.005	0.005	0.005	.....	0.010	0.018	0.019	0.020	.....
Monticello 3	.....	.....	.....	.....	0.004	.....	.....	.....	.....	0.015

[304] 77 FR 20912 (Apr. 6, 2012).

[305] Our multiple CAMx runs yielded data on three or more levels of emissions (controlled and uncontrolled) on a number of facilities and based on the data a linear relationship between emission level and visibility impairment on a source specific basis is a reasonable analytical approach. See FIP TSD Appendix A for more details.

TABLE 35—AVERAGE CHANGE IN DECIVIEW LEVELS AT BIG BEND FOR THE 20% WORST DAYS—Continued

Unit	Visibility improvement 2018 background (Environ)					Visibility improvement (average natural conditions)				
	DSI low	DSI high	SDA	WFGD	WFGD upgrade	DSI low	DSI high	SDA	WFGD	WFGD upgrade
Sandow 4	.....	.....	.....	.....	0.026	.....	.....	.....	.....	0.102
Tolk 171b	0.002	0.003	0.003	0.003	.....	0.007	0.012	0.013	0.013	.....
Tolk 172b	0.002	0.003	0.003	0.004	.....	0.008	0.014	0.014	0.014	.....
WA Parish 5	0.007	0.013	0.013	0.014	.....	0.028	0.051	0.052	0.054	.....
WA Parish 6	0.008	0.014	0.015	0.015	.....	0.031	0.055	0.057	0.058	.....
WA Parish 7	0.006	0.011	0.012	0.012	.....	0.025	0.044	0.046	0.047	.....
WA Parish 8	.....	.....	.....	.....	0.002	.....	.....	.....	.....	0.007
Welsh 1	0.001	0.002	0.002	0.002	.....	0.005	0.008	0.008	0.009	.....
Welsh 2	0.001	0.002	0.002	0.002	.....	0.005	0.008	0.009	0.009	.....
Welsh 3	0.001	0.002	0.002	0.002	.....	0.005	0.008	0.009	0.009	.....

TABLE 36—AVERAGE CHANGE IN DECIVIEW LEVELS AT THE GUADALUPE MOUNTAINS FOR THE 20% WORST DAYS

Unit	Visibility improvement 2018 background (Environ)					Visibility improvement (average natural conditions)				
	DSI Low	DSI High	SDA	WFGD	WFGD Upgrade	DSI low	DSI high	SDA	WFGD	WFGD upgrade
Big Brown 1	0.014	0.024	0.026	0.027	.....	0.054	0.096	0.101	0.105	.....
Big Brown 2	0.014	0.025	0.026	0.027	.....	0.054	0.097	0.102	0.105	.....
Coleto Creek 1	0.006	0.010	0.011	0.011	.....	0.023	0.041	0.043	0.044	.....
Limestone 1	.....	.....	.....	.....	0.009	.....	.....	.....	.....	0.037
Limestone 2	.....	.....	.....	.....	0.010	.....	.....	.....	.....	0.041
Martin Lake 1	.....	.....	.....	.....	0.010	.....	.....	.....	.....	0.041
Martin Lake 2	.....	.....	.....	.....	0.009	.....	.....	.....	.....	0.036
Martin Lake 3	.....	.....	.....	.....	0.008	.....	.....	.....	.....	0.033
Monticello 1	0.004	0.006	0.007	0.007	.....	0.014	0.025	0.027	0.027	.....
Monticello 2	0.003	0.006	0.006	0.006	.....	0.013	0.023	0.024	0.025	.....
Monticello 3	.....	.....	.....	.....	0.005	.....	.....	.....	.....	0.019
Sandow 4	.....	.....	.....	.....	0.017	.....	.....	.....	.....	0.069
Tolk 171b	0.012	0.022	0.022	0.023	.....	0.048	0.085	0.087	0.090	.....
Tolk 172b	0.013	0.024	0.024	0.025	.....	0.052	0.094	0.095	0.098	.....
WA Parish 5	0.003	0.006	0.006	0.006	.....	0.013	0.023	0.024	0.024	.....
WA Parish 6	0.004	0.006	0.007	0.007	.....	0.014	0.025	0.026	0.027	.....
WA Parish 7	0.003	0.005	0.005	0.005	.....	0.011	0.020	0.021	0.021	.....
WA Parish 8	.....	.....	.....	.....	0.001	.....	.....	.....	.....	0.003
Welsh 1	0.002	0.003	0.003	0.003	.....	0.007	0.011	0.012	0.012	.....
Welsh 2	0.002	0.003	0.003	0.003	.....	0.007	0.011	0.012	0.012	.....
Welsh 3	0.002	0.003	0.003	0.003	.....	0.007	0.011	0.012	0.013	.....

The tables above show the estimated benefit (in deciviews) anticipated from the evaluated controls at each unit on the 20% worst days for each Class I area, considering both ''dirty'' background conditions projected in 2018 modeling completed by Environ and the ''clean'' background conditions consistent with the estimated annual average natural conditions. We weighed these del-dv benefits, as well as extinction benefits and percentage of total extinction basis information, as further discussed in our TSD, in making our proposed findings about the benefits of potential controls. For brevity we are not including all the information that we considered which is discussed in FIP TSD Appendix A. Based on the information presented here and in our TSD materials, we propose to find that installing either wet FGD or SDA scrubbers on five of these units would yield significant visibility improvements at the Wichita Mountains. These five units are: Big Brown 1 and 2, Coleto Creek, and Monticello 1 and 2. We propose to find that scrubber installations on Big Brown 1 and 2 would also yield significant benefits at both Guadalupe Mountains and Big Bend, and that a scrubber installation on the Coleto Creek unit would also yield significant visibility benefits at Big Bend.

In comparison to the above five units, we propose to find that the visibility benefits from installing scrubbers on the W. A. Parish 5, 6, and 7 units; and Welsh 1, 2, and 3 units would not yield large enough visibility benefits to be considered at this time.

We also evaluated the visibility benefits of installing scrubbers on Tolk units 171B and 172B, limiting our analysis to SDA. The visibility benefits of SDA scrubbers on the Tolk units are projected to occur mainly at the Guadalupe Mountains. We note that the deciview visibility benefits projected at the Guadalupe Mountains from controls on the Tolk units are smaller than those from scrubber upgrades at W. A. Parish or Welsh for impacts at the Wichita Mountains. However, when we evaluated other metrics, such as extinction benefit or percent of extinction benefits, we believe that the overall visibility benefit for installing scrubbers on the Tolk units was superior to either the W. A. Parish or the Welsh units. In particular, the Wichita Mountains has a much higher total extinction for the baseline and the 2018 projection than the Guadalupe Mountains, so the relative improvement

in extinction levels is higher when the Tolk units are controlled for the Guadalupe Mountains, than if the W. A. Parish or the Welsh units were controlled for the Wichita Mountains. Therefore, considering all the visibility benefits relative to the respective Class I areas, we propose to find that the visibility benefits from installation of dry scrubbers on the Tolk units would be significant and beneficial towards the goal of meeting natural visibility conditions at Guadalupe Mountains.

2. Visibility Benefits of Scrubber Upgrades

We also modeled the visibility benefits of those same units for which we conducted control cost analysis for upgrading their existing scrubbers. We assumed the same 95% control level we used in our control cost analyses. The visibility benefits from these scrubber upgrades are quantified specifically in Appendix A of our FIP TSD. Below, we present a summary of the del-dv visibility benefits. For the other visibility benefit results based on extinction and percentage of extinction see Appendix A of our FIP TSD.

TABLE 37—DECIVIEW IMPROVEMENT AT CLASS I AREAS FOR SCRUBBER UPGRADES

Emission unit	Control (%)	SO_2 Reduction (tpy)	WIMO		BIBE		GUMO	
			2018	avg. NC	2018	avg. NC	2018	avg. NC
Limestone 1	95	8,446	0.027	0.135	0.008	0.033	0.009	0.037
Limestone 2	95	9,331	0.030	0.149	0.009	0.036	0.010	0.041
Martin Lake 1	95	20,789	0.047	0.234	0.008	0.030	0.010	0.041
Martin Lake 2	95	17,917	0.040	0.202	0.007	0.026	0.009	0.036
Martin Lake 3	95	16,389	0.037	0.185	0.006	0.023	0.008	0.033
Monticello 3	95	12,286	0.036	0.181	0.004	0.015	0.005	0.019
Sandow 4	95	17,664	0.062	0.312	0.026	0.102	0.017	0.069
WA Parish 8	95	1,750	0.003	0.015	0.002	0.007	0.001	0.003

Our review of the impacts/benefits of scrubber upgrades on eight units at five facilities show that scrubber upgrades conducted at seven of the eight units would result in significant visibility improvements at the Wichita Mountains. These seven units are: Limestone 1 and 2; Martin Lake 1, 2, and 3; Monticello 3; and Sandow 4. We also project some visibility benefit at Big Bend, the Guadalupe Mountains and other Class I areas. We propose to find that the level of visibility improvement from a scrubber upgrade on W. A. Parish 8 to be relatively small in comparison to the other units we evaluated, and not large enough to consider as beneficial at this time.

I. Proposed Reasonable Progress and Long-Term Strategy Determinations

Below, we present our proposed reasonable progress and long-term strategy determinations for our Texas and Oklahoma FIPs. This includes proposed determinations for those units with no SO_2 controls for which we conducted DSI, SDA, and wet FGD cost analysis and visibility modeling. This also includes proposed determinations for those units already scrubbed to some degree, for which we conducted scrubber upgrade cost analysis and visibility modeling. Please see our FIP and Cost TSDs for more information.

1. Proposed Reasonable Progress and Long-Term Strategy Determination for San Miguel

We propose to find that the San Miguel facility has upgraded its SO_2 scrubber system to perform at the reasonably highest level that can be expected (94% based on a 2009–2013 average) based on the extremely high sulfur content of the coal being burned, and the technology currently available. We thus do not propose any further control. We propose to find that the San Miguel facility maintain a 30 Boiler Operating Day rolling average SO_2 emission rate of 0.60 lbs/MMBtu based on the most recent actual emissions data. We believe that based on the scrubber upgrades it has recently performed and its demonstrated ability to maintain an emission rate below this value on a monthly basis from December 2013 to June 2014 that it can consistently achieve this emission level. See our Cost TSD for more details about our analysis of the scrubber upgrades that San Miguel has performed on its unit. We are specifically soliciting comments on this proposed emission limit and the potential need for a slightly higher limit to provide sufficient operational headroom to demonstrate compliance.

2. Proposed Reasonable Progress and Long-Term Strategy Determination for Units Other Than San Miguel

In Section VII.F, we present the results of our SO_2 control cost analysis for those units listed in Table 30 with no SO_2 control. In Section VII.G, we present the results of our control cost analysis for upgrading those units equipped with underperforming wet FGD scrubbers. In Section VII.H, we present the results of our modeled visibility benefits for these controls. We believe that we have provided the technical analysis that was lacking in Texas' development of its RPGs for the Guadalupe Mountains and Big Bend, and in its consultations with Oklahoma for the development of the RPG for the Wichita Mountains. Further, we believe that our proposed control set, which we discuss below, developed through our reasonable progress four factor analysis, would ensure that Texas secures its share of the reductions needed for the RPGs of the Wichita Mountains, the Guadalupe Mountains, and Big Bend. Specifically, we propose to find that our technical analysis and control set makes whole our disapproval of:

- Section 51.308(d)(1)(i)(A), regarding Texas' reasonable progress four factor analysis.
- Section 51.308(d)(1)(i)(B), regarding Texas' calculation of the emission reductions needed to achieve the URPs for the Guadalupe Mountains and Big Bend.
- Section 51.308(d)(1)(ii), regarding Texas' RPGs for the Guadalupe Mountains and Big Bend.
- Section 51.308(d)(3)(i) regarding Texas' long-term strategy consultation.
- Section 51.308(d)(3)(ii) regarding Texas securing its share of reductions in other states' RPGs.
- Section 51.308(d)(3)(iii) regarding Texas' technical basis for its long-term strategy.
- Section 51.308(d)(3)(v)(C), regarding Texas' emissions limitations and schedules for compliance to achieve the RPGs for Big Bend and the Guadalupe Mountains.

We also believe that this technical analysis and control set makes whole our proposed disapproval of Oklahoma's submission under Section 51.308(d)(1), except for Section

51.308(d)(1)(vi), which we propose to approve. We believe our technical analysis provides the information that Oklahoma should have had during its consultations with Texas in order to determine whether sources in Texas should have been controlled to improve the visibility at the Wichita Mountains. We believe our proposed control set would ensure that Texas' share of the emission reductions are incorporated into Oklahoma's RPGs.

For all but one of the units we analyzed that currently have no SO_2 controls, even at the lower level of control of 50%, the cost-effectiveness of DSI was worse (higher $/ton) than either SDA or wet FGD, even with the latter options offering much greater levels of control and visibility benefit. At the higher 80% or 90% level of control, the cost-effectiveness of DSI was worse than either SDA or wet FGD in all cases. Consequently, we are not proposing that DSI be installed at any unit.

With the exception of Tolk,[306] all of the scrubber retrofits were analyzed on the basis of both SDA and wet scrubbers. The SDA level of control was assumed to be a maximum of 95% not to go below 0.06 lbs/MMBtu. The wet FGD level of control was assumed to be a maximum of 98% not to go below 0.04 lbs/MMBtu. As we discuss in our Cost TSD, the cost-effectiveness ($/ton) of wet FGD was better than SDA in all cases except for the Tolk and Welsh units, which burn Power River Basin (PRB) coal. However, even in those cases, the cost-effectiveness of wet FGD was only 0.5 to 0.8% greater than SDA. Given the greater visibility improvement of wet FGD over SDA, we propose to base our cost/benefit reasonable progress and long-term strategy determination on wet FGD, except for the Tolk units, due to their potential water issue.

3. Proposed Reasonable Progress and Long-Term Strategy Determination for Scrubber Upgrades

We propose to find that the cost-effectiveness of the scrubber upgrades ($600/ton or less) to be reasonable, and that on an individual basis, any reasonable amount of visibility improvement due to their installation justifies their cost. We believe this is the case for all of the scrubber upgrades except for the Parish 8 unit. Despite the same level of cost-effectiveness of the Parish 8 unit, we do not believe that the visibility benefits are large enough to justify the implementation of a scrubber upgrade on that unit. Therefore we propose that the scrubbers for the Sandow 4; Martin Lake 1, 2, 3; Monticello 3, and Limestone 1 and 2 units be upgraded to perform at a 95% control level. This level of control corresponds to the emission limits listed in Table 38, below.

4. Proposed Reasonable Progress and Long-Term Strategy Determination for Scrubber Retrofits

The cost-effectiveness of the scrubber retrofits for the Welsh and Parish units are within a $/ton range that we have previously found to be cost-effective in BART determinations. However, we do not believe that their individual projected visibility improvements merit the installation of scrubbers at this time. We encourage the State of Texas to re-evaluate this determination as part of its next regional haze SIP submittal.

Similar to the scrubber upgrades, we believe the scrubber retrofits for the Big Brown units to be cost-effective and we find the projected visibility benefits from them to be significant. We therefore propose that the Big Brown units meet emission limits corresponding to this evaluation. Our proposed SO_2 emission limits for the Big Brown units are shown in Table 38.

In comparison to the Big Brown units, the cost-effectiveness of the scrubber retrofits for the Monticello, Coleto Creek, and Tolk units are less, although still well within the range that we have found acceptable for BART. Also, in comparison to the Big Brown units, the visibility improvements projected to occur due to the installation of the scrubber retrofits are less. For instance, as we discuss above in Section VII.H, the visibility benefits of SDA scrubbers on the Tolk units are projected to occur mainly at the Guadalupe Mountains. Those visibility benefits are smaller than the visibility benefits at Wichita Mountains from scrubber upgrades at W. A. Parish or Welsh, which we are not proposing to control. However, when we evaluated other metrics, such as extinction benefit or percent of extinction benefits, we concluded that the overall visibility benefit for installing scrubbers on the Tolk units was superior to either the W. A. Parish or the Welsh units. Thus, we consider these visibility benefits to be significant. Consequently, we propose that the Monticello, Coleto Creek, and Tolk units meet SO_2 emission limits corresponding to this evaluation. Our proposed SO_2 emission limits for these units are shown in Table 38. In recognition of their lesser cost/benefit ratio, we are specifically soliciting comments on the appropriateness of one or more of these scrubber retrofits.

We propose that compliance be based on a 30 Boiler Operating Day (BOD) period. As the BART Guidelines direct, ''[y]ou should consider a boiler operating day to be any 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time at the steam generating unit.''[307] To calculate a 30 day rolling average based on boiler operating day, the average of the last 30 ''boiler operating days'' is used. In other words, days are skipped when the unit is down, as for maintenance. This, in effect, provides a margin of safety by eliminating spikes that occur at the beginning and end of outages. Although we are not conducting BART determinations, our reasonable progress guidance notes the similarity between some of the reasonable progress factors and the BART factors contained in Section 51.308(e)(1)((ii)(A), and suggests that the BART Guidelines be consulted regarding cost, energy and non-air quality environmental impacts, and remaining useful life. We are therefore relying on our BART Guidelines for assistance in establishing the emission limit averaging period as well.

TABLE 38—PROPOSED 30 BOILER OPERATING DAY SO_2 EMISSION LIMITS

Unit	Proposed SO_2 emission limit (lbs/MMBtu)
Scrubber Upgrades:	
Sandow 4	0.20
Martin Lake 1	0.12
Martin Lake 2	0.12
Martin Lake 3	0.11
Monticello 3	0,06
Limestone 2	0.08
Limestone 1	0.08
San Miguel*	0.60
Scrubber Retrofits:	
Big Brown 1	0.04
Big Brown 2	0.04
Monticello 1	0.04
Monticello 2	0.04
Coleto Creek 1	0.04
Tolk 172B	0.06
Tolk 171B	0.06

*As we note elsewhere, we do not anticipate that San Miguel will have to install any additional control in order to comply with this emission limit.

J. Treatment of Potential Error in Scrubber Upgrade Efficiency Calculations

In our Cost TSD, we discuss how we calculated the SO_2 removal efficiency of the units we analyzed for scrubber upgrades. We note that due to a number

[306] As we discuss in section VII.D.2, we are only considering SDA in our cost/benefit analysis for Tolk due to a potential water issue that may have energy and non-air quality impact considerations.

[307] 70 FR 39172 (July 6, 2005).

of factors we could not accurately quantify, our calculations of scrubber efficiency may contain some error. Based on the results of our scrubber upgrade cost analysis, we do not believe that any reasonable error in calculating the true tons of SO_2 removed affects our proposed decision to require emission reductions, as all of the scrubber upgrades we analyzed are cost-effective (low $/ton). In other words, were we to make reasonable adjustments in the tons removed to account for any potential error in our scrubber efficiency calculation, we would still propose to upgrade these SO_2 scrubbers. We believe we have demonstrated that upgrading an underperforming SO_2 scrubber is one of the most cost-effective pollution control upgrades a coal fired power plant can implement to improve the visibility at Class I areas.

However, our proposed FIP does specify a SO_2 emission limit that is based on 95% removal in all cases. This is below the upper end of what an upgraded wet SO_2 scrubber can achieve, which is 98–99%, as we have noted in our Cost TSD. We believe that a 95% control assumption provides an adequate margin of error for any of the units for which we have proposed scrubber upgrades, such that they should be able to comfortably attain the emission limits we have proposed. However, for the operator of any unit that disagrees with us on this point, we propose the following:

(1) The affected unit should comment why it believes it cannot attain the SO_2 emission limit we have proposed, based on a scrubber upgrade that includes the kinds of improvements (*e.g.,* elimination of bypass, wet stack conversion, installation of trays or rings, upgraded spray headers, upgraded ID fans, using all recycle pumps, etc.) typically included in a scrubber upgrade.

(2) After considering those comments, and responding to all relevant comments in a final rulemaking action, should we still require a scrubber upgrade in our final decision making action we will provide the company the following option to seek a revised emission limit after taking the following steps:

(a) Install a CEMS at the inlet to the scrubber.

(b) Pre-approval of a scrubber upgrade plan conducted by a third party engineering firm that considers the kinds of improvements (*e.g.,* elimination of bypass, wet stack conversion, installation of trays or rings, upgraded spray headers, upgraded ID fans, using all recycle pumps, etc.) typically performed during a scrubber upgrade. The goal of this plan will be to maximize the unit's overall SO_2 removal efficiency.

(c) Installation of the scrubber upgrades.

(d) Pre-approval of a performance testing plan, followed by the performance testing itself.

(e) A pre-approved schedule for 2.a through 2.d.

(f) Should we determine that a revision of the SO_2 emission limit is appropriate, we will have to propose a modification to our decision making to do so. It should be noted that any proposal to modify the SO_2 emission limit will be based largely on the performance testing and may result in a proposed increase or decrease of that value.

K. Proposed Natural Conditions for the Texas Class I Areas

As discussed in Section V.B.1, we propose to disapprove Texas' calculation of the natural visibility conditions for the Big Bend and Guadalupe Class I areas under Section 51.308(d)(2)(iii). The TCEQ used a refined approach to calculating the natural conditions for the Guadalupe Mountains and Big Bend. This approach, among other things, requires knowledge about the amount of coarse mass and soil that is attributable to natural sources. The TCEQ has provided data that supports the conclusion that a large portion of dust impacting visibility at its Class I areas is likely due to natural sources. We agree that dust storms and other blown dust from deserts are a significant contributor to visibility impairment at the Texas Class I areas that may not be captured accurately by our default method. However, we do not believe, as the TCEQ asserts, that all coarse mass and soil can be attributable to 100% natural sources.

Although we believe that some coarse mass and soil should be attributable to natural sources, we do not have the information necessary to determine how much should be attributable to natural sources. We therefore acknowledge that like the TCEQ, we cannot accurately reset the natural conditions for the Guadalupe Mountains and Big Bend by using the TCEQ's methodology, which depends on this information. In lieu of this, we propose to rely on the adjusted default estimates for the new IMPROVE equation from the Natural Conditions II committee,[308] which was the starting point for the Texas natural visibility calculations, but solicit comment on the acceptability of alternate estimates in the range between our default estimates and the Texas estimates. We propose that the natural conditions for the Guadalupe Mountains and Big Bend be set as follows:

TABLE 39—NATURAL CONDITIONS (NC II) FOR THE GUADALUPE MOUNTAINS AND BIG BEND

Class 1 area	20% Best days (dv)	20% Worst days (dv)
Guadalupe Mountains	0.99	6.65
Big Bend	1.62	7.16

We recommend that the State of Texas re-evaluate the natural conditions for its Class I areas in the next regional haze SIP.

L. Calculation of Visibility Impairment for the Texas Class I Areas

Using our proposed natural visibility conditions for the Guadalupe Mountains and Big Bend, we propose to reset the amount of natural visibility impairment for these Class I areas under Section 51.308(d)(2)(iv)(A). We do this by modifying the table we present in our TX TSD. We replace Texas' calculations of natural visibility for its Class I areas, with the adjusted default values (NC II), discussed above. We retain the baseline visibility values we proposed to approve, then recalculate the amount the baseline values exceed the natural visibility conditions. We propose that the natural visibility impairment for the Guadalupe Mountains and Big Bend be set as follows:

[308] Regional Haze Rule Natural Level Estimates Using the Revised IMPROVE Aerosol Reconstructed Light Extinction Algorithm, Copeland, S. A., et al, Final Paper # 48, available in our docket.; NC II, or new IMPROVE natural visibility conditions are available at: *http://vista.cira.colostate.edu/Docs/IMPROVE/Aerosol/NaturalConditions/NaturalConditionsII_Format2_v2.xls*, for which we have filtered the data for Texas Class I areas and which is also available in our docket.

TABLE 40—REVISED VISIBILITY METRICS FOR THE CLASS I AREAS IN TEXAS

Class I area	Haze index (deciviews)	
	Most impaired	Least impaired
Estimate of Natural Visibility Conditions		
Big Bend	7.16	1.62
Guadalupe Mountains	6.65	0.99
Baseline Visibility Conditions, 2000–2004		
Big Bend	17.30	5.78
Guadalupe Mountains	17.19	5.95
Estimate of Extent Baseline Exceeds Natural Visibility Conditions		
Big Bend	10.14	4.16
Guadalupe Mountains	10.54	4.96

M. Uniform Rates of Progress and the Emission Reductions Needed To Achieve Them

Section 308(d)(1)(i)(B) requires that we analyze and determine the rates of progress needed to attain natural visibility conditions by the year 2064 and consider the uniform rate of improvement in visibility and the emission reduction measures needed to achieve them. Below, we present the URPs for the 20% worst days for the Guadalupe Mountains and Big Bend, using the natural conditions we propose to establish above:

TABLE 41—URP FOR BIG BEND

Baseline conditions (dv)	Annual improvement needed to meet URP (dv)	Visibility at 2018 (dv)	Improvement needed by 2018 (dv)	Natural conditions at 2064 (dv)
17.30	0.17	14.93	2.37	7.16

TABLE 42—URP FOR THE GUADALUPE MOUNTAINS

Baseline conditions (dv)	Annual improvement needed to meet URP (dv)	Visibility at 2018 (dv)	Improvement needed by 2018 (dv)	Natural conditions at 2064 (dv)
17.19	0.18	14.73	2.46	6.65

Please see our FIP TSD for graphical representations of these URPs. We propose to find that it is not reasonable to provide for rates of progress at Wichita Mountains, Big Bend, or Guadalupe Mountains that would attain natural visibility conditions by 2064 (*i.e.,* the URP). Our demonstration that a slower rate of progress is reasonable is based on the reasonable progress analyses performed by us and Texas that considered the four statutory reasonable progress factors, as described above.

N. Reasonable Progress Goals and Demonstration

We are quantifying proposed RPGs (in deciviews) for the 20-percent worst days in 2018. The proposed RPGs for Oklahoma's Class I area, the Wichita Mountains, and Texas' two Class I areas, Big Bend and the Guadalupe Mountains, account for the emission reductions from the reasonable progress control measures identified above in our proposed regional haze FIPs. The proposed RPGs reflect the results of our reasonable progress analysis of point sources as described in detail in our FIP TSD. These proposed RPGs are established based on an adjustment of the 2018 RPGs established by Texas and Oklahoma that were based on the 2018 CENRAP modeling. We note that we do not anticipate implementation of the identified scrubber retrofits by the end of 2018. Therefore, we are only adjusting the RPGs established by the states to reflect the additional anticipated visibility benefit from the scrubber upgrades over the 2018 projected visibility conditions. The tables below show the new adjusted RPGs as well as the additional improvement that is anticipated once all the scrubber retrofits have been implemented sometime after 2018. These new RPGs provide for an improvement in visibility on the worst days during this planning period. Table 44 below estimates the RPG if all proposed controls were implemented by 2018.

TABLE 43—PROPOSED RPGS FOR 20% WORST DAYS BASED ON PREDICTED BENEFIT OF SCRUBBER UPGRADES BEYOND 2018 CENRAP PROJECTED VISIBILITY CONDITIONS.

	Baseline (dv)	2018 CENRAP Projection (dv)	Predicted additional benefit due only to FIP scrubber upgrades (dv)	Proposed RPG (dv)	Natural visibility	Number of years needed to reach natural visibility
Wichita Mountains	23.81	21.47	0.14	21.33	7.58	92
Big Bend	17.30	16.6	0.03	16.57	7.16	194
Guadalupe Mountains	17.19	16.3	0.04	16.26	6.65	159

TABLE 44—CALCULATED RPGS FOR 20% WORST DAYS BASED ON PREDICTED BENEFIT OF ALL PROPOSED CONTROLS BEYOND 2018 CENRAP PROJECTED VISIBILITY CONDITIONS

	Baseline (dv)	2018 CENRAP Projection (dv)	Predicted additional benefit due only to FIP scrubber upgrades (dv)	Additional benefit predicted due to FIP scrubber retrofits (dv)	Total benefit from proposed controls	RPG Assuming all controls in place by 2018	Natural visibility	Number of years needed to reach natural visibility
Wichita Mountains	23.81	21.47	0.14	0.30	0.45	21.03	7.58	82
Big Bend	17.3	16.6	0.03	0.09	0.12	16.48	7.16	173
Guadalupe Mountains	17.19	16.3	0.04	0.12	0.15	16.14	6.65	141

As discussed in more detail in the FIP TSD, current actual emissions for many of the units that we propose to control are higher than the projected CENRAP 2018 emission rate. Therefore, the actual visibility impact due to emissions from these sources and the anticipated benefit from controls are larger than the benefits calculated above based on the 2018 CENRAP projected visibility conditions. The table below summarizes the amount of visibility benefit we anticipate will occur from the implementation of our proposed FIP controls and the resulting emission reductions from the current actual average annual emissions.

TABLE 45—ANTICIPATED VISIBILITY BENEFIT DUE TO EMISSION REDUCTIONS FROM ACTUAL EMISSION LEVELS

	Predicted benefit due to FIP scrubber upgrades (dv)	Benefit predicted due to FIP scrubber retrofits (dv)	Total benefit from proposed controls (dv)
Wichita Mountains	0.28	0.33	0.62
Big Bend	0.07	0.10	0.17
Guadalupe Mountains	0.07	0.12	0.20

We propose to find that it is not reasonable to provide for rates of progress at the Wichita Mountains, Big Bend, or the Guadalupe Mountains that would attain natural visibility conditions by 2064 (*i.e.,* the URP). Our demonstration that a slower rate of progress is reasonable is based on the reasonable progress analyses performed by us and the states that considered the four statutory reasonable progress factors, as described above. Although progress is slower than the URP, the proposed FIP would provide for RPGs that reflect an improved rate of progress and a shorter time period to reach natural visibility conditions at each of the Class I areas, compared with the RPGs established by Texas and Oklahoma in their regional haze SIPs. We have provided an estimate of the number of years needed to meet natural visibility conditions at the rate of progress proposed by us as reasonable. We have also estimated the RPG and the number of years to meet natural visibility conditions if all proposed controls were in place by 2018. We note that this does not take into account the visibility benefit from scrubber retrofits included in this proposed FIP that will be implemented after 2018.

VIII. Our Evaluation of the Texas Infrastructure SIP Submittals for Interstate Transport and Visibility Protection

To determine whether the CAA Section 110(a)(2)(D)(i) requirement for visibility protection is satisfied, the SIP must address the potential for interference with visibility protection caused by the pollutant (including precursors) to which the new or revised NAAQS applies. Pollutants which could interfere with visibility protection include: (1) SO_2 (which is also a precursor for $PM_{2.5}$), (2) nitrogen oxides (which includes NO_2 and are precursors for ozone and $PM_{2.5}$) and (3) particulate matter.[309] An approved regional haze SIP that fully meets the regional haze requirements in 40 CFR 51.308 satisfies the requirement for visibility protection as it ensures that emissions from the state will not interfere with measures required to be included in other state SIPs to protect visibility. In the infrastructure SIP submittals for the ozone, $PM_{2.5}$, NO_2 and SO_2 NAAQS Texas indicated that the Regional Haze SIP fulfilled its obligation for addressing emissions that would interfere with measures required to be included in the SIP for any other state to protect visibility.

As we note above, we gave limited disapproval to the Texas Regional Haze SIP based on its reliance on CAIR. As

[309] Section II.A.3 of Appendix Y to Part 51—Guidelines for BART Determinations Under the Regional Haze Rule and 40 CFR 51.166(b)(i)(b).

explained in our limited disapproval of the Texas regional haze SIP, many states (including Texas) relied on the improvement in visibility expected to result from the implementation of CAIR in developing their long-term strategy.[310] Texas relied on its own CAIR SIP as legal justification for these planned controls and did not include separate enforceable measures in its regional haze SIP to ensure these EGU reductions. As CAIR has been replaced by CSAPR, and CSAPR is going into effect in 2015, we propose to determine that Texas may not rely on its regional haze SIP to ensure that emissions from Texas do not interfere with the measures to protect visibility in nearby states. We propose to disapprove Texas' SIP submittals for the 1997 $PM_{2.5}$, 2006 $PM_{2.5}$, 1997 ozone, 2008 ozone, 2010 NO_2 and 2010 SO_2 NAAQS, with respect to interstate transport of air pollution and visibility protection. CSAPR and our proposed FIP, which relies on emission reductions from the implementation of CSAPR in lieu of BART, addresses this deficiency in the Texas SIP.

An additional reason for our proposed disapproval of the submittals for the 1997 $PM_{2.5}$, 2006 $PM_{2.5}$ and 2010 SO_2 NAAQS is our proposed conclusion that additional control of SO_2 emissions in Texas is needed to prevent interference with measures required to be included in the Oklahoma SIP to protect visibility. Our proposed FIP addresses this deficiency in the Texas SIP.

IX. Proposed Determination of Nationwide Scope and Effect

Section 307(b)(1) of the CAA indicates which Federal Courts of Appeal have venue for petitions of review of final agency actions by the EPA under the CAA. This section provides, in part, that petitions for review must be filed in the U.S. Court of Appeals for the District of Columbia Circuit (i) when the agency action consists of ''nationally applicable regulations promulgated, or final actions taken, by the Administrator'' or (ii) when such action is locally or regionally applicable, if ''such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination.'' [311]

We propose to find and publish that this rule is based on a determination of nationwide scope and effect. The rule discusses our interpretation of multiple provisions of the Regional Haze Rule and explains how those provisions operate in the visibility-transport context. Our interpretation of our regulations is applicable to all states, not just Texas and Oklahoma. Consequently, our determination of nationwide scope and effect is ''consistent with the legislative history of the CAA, which evinces a clear congressional intent to 'centralize review of 'national' SIP issues in the D.C. Circuit.' '' [312] This determination is also appropriate because in the 1977 CAA Amendments that revised CAA Section 307(b)(1), Congress noted that the Administrator's determination that an action is of ''nationwide scope or effect'' would be appropriate for any action that has ''scope or effect beyond a single judicial circuit.'' [313] Here, the scope and effect of this rulemaking extends to two judicial circuits.

Accordingly, we propose to determine that this is a rulemaking of nationwide scope or effect such that any petitions for review must be filed in the U.S. Court of Appeals for the District of Columbia Circuit.

X. Proposed Action

A listing of our proposed actions is provided below.

A. Texas Regional Haze

We propose to partially approve and partially disapprove a revision to the Texas SIP received from the State of Texas on March 31, 2009, that intended to address regional haze for the first planning period from 2008 through 2018. This revision was intended to address the requirements of the CAA and our rules that require states to prevent any future, and remedy any existing, manmade impairment of visibility in mandatory Class I areas. We propose to approve a portion of this SIP revision as meeting certain requirements of the regional haze program and to disapprove portions addressing the requirements related to RP, the long-term strategy and the calculation of natural visibility conditions. We propose a FIP to implement SO_2 emission limits on fifteen Texas sources, and to establish the natural visibility conditions at two Class I areas in Texas to address these issues. Specifically, we propose to disapprove the portions of the Texas regional haze SIP addressing the following regional haze rule requirements:

- 51.308(d)(1)(i)(A)
- 51.308(d)(1)(i)(B)
- 51.308(d)(1)(ii)
- 51.308(d)(2)(iii)
- 51.308(d)(2)(iv)(A)
- 51.308(d)(3)(i)
- 51.308(d)(3)(ii)
- 51.308(d)(3)(iii)
- 51.308(d)(3)(v)(C)

We propose a FIP to cure these defects in the Texas regional haze SIP. We propose to approve all other sections of the Texas regional haze SIP.

With regard to Texas' BART Rules, we propose a FIP to replace Texas' reliance on CAIR in 30 TAC 116.1510(d) with reliance on CSAPR. We propose to approve the remainder of the provisions in Texas' BART rules.

Our proposed regional haze FIP relies on the already promulgated CSAPR FIP for Texas at 40 CFR 52.2283–84 to satisfy the BART requirement for SO_2 and NO_X emissions from EGUs.

Our proposed FIP requires that the following SO_2 emission limits be met on a 30 BOD period.

TABLE 46—PROPOSED 30 BOILER OPERATING DAY SO_2 EMISSION LIMITS

Unit	Proposed SO_2 emission limit (lbs/MMBtu)
Scrubber Upgrades:	
Sandow 4	0.20
Martin Lake 1	0.12
Martin Lake 2	0.12
Martin Lake 3	0.11
Monticello 3	0.06
Limestone 2	0.08
Limestone 1	0.08
San Miguel*	0.60
Scrubber Retrofits:	
Big Brown 1	0.04
Big Brown 2	0.04
Monticello 1	0.04
Monticello 2	0.04
Coleto Creek 1	0.04
Tolk 172B	0.06
Tolk 171B	0.06

*As we note elsewhere, we do not anticipate that San Miguel will have to install any additional control in order to comply with this emission limit.

We propose that compliance with these limits be within five years of the effective date of our final rule for Big Brown Units 1 and 2, Monticello Units 1 and 2, Coleto Creek Unit 1, and Tolk Units 171B and 172B. Although this is not a BART action, this is the maximum amount of time allowed under the regional haze Rule for BART compliance. We based our cost analysis on the installation of wet FGD and SDA scrubbers for these units, and in the past we have typically required that scrubber retrofits under BART be operational within five years.

[310] 77 FR 33643 (June 7, 2012).

[311] 42 U.S.C. Section 7607(b)(1).

[312] *Texas* v. *EPA,* 2011 U.S. App. LEXIS 5654 at *15 (5th Cir. Feb. 14, 2011) (citing Admin. Conference of the U.S., Recommendations on Judicial Review Under the Clean Air Act, 41 FR 56767, 56769 (Dec. 30, 1976) (Comments of G. William Frick)).

[313] H.R. Rep. No. 95–294 at 323–24, reprinted in 1977 U.S.C.C.A.N. 1402–03.

We propose that compliance with these limits be within three years of the effective date of our final rule for Sandow 4; Martin Lake Units 1, 2, and 3; Monticello Unit 3; and Limestone Units 1 and 2. We believe that three years is appropriate for these units, as we based our cost analysis on upgrading the existing wet FGD scrubbers of these units, which we believe to be less complex and time consuming that the construction of a new scrubber. We solicit comments on alternative timeframes, of from two years up to five years from the effective date of our final rule.

We propose that compliance with these limits be within one year for San Miguel. We believe that one year is appropriate for this unit because we based our analysis on scrubber upgrades that San Miguel has already performed, and because it has demonstrated its ability to meet this emission limit. We are specifically soliciting comments on this proposed emission limit and the potential need for a slightly higher limit to provide sufficient operational headroom to demonstrate compliance.

Our proposed FIP also resets the natural conditions and the URPs for the Guadalupe Mountains and Big Bend Class I areas, and establishes new RPGs for the 20% worst days for these Class I areas.

We propose that this FIP will fully satisfy the FIP obligation stemming from our proposed disapproval of portions of the Texas SIP.

B. Oklahoma Regional Haze

We are also proposing to partially disapprove a portion of a revision to the Oklahoma SIP submitted by the State of Oklahoma on February 19, 2010. Specifically, we propose to disapprove the portion of the Oklahoma regional haze SIP that addresses the requirements of Section 51.308(d)(1), except for Section 51.308(d)(1)(vi).

We propose a FIP to reset Oklahoma's RPGs based on our analysis conducted in support of our proposed Texas FIP. We propose to find that the same controls we have proposed above in our Texas FIP also serve to cure the defects in these sections of Oklahoma's regional haze SIP as well, thus satisfying the FIP obligation stemming from our proposed disapproval of portions of the Oklahoma SIP.

C. Interstate Transport of Air Pollution and Visibility Protection

We propose to disapprove portions of Texas SIP submittals that address CAA provisions for prohibiting air pollutant emissions from interfering with measures required to protect visibility in any other state for the 1997 $PM_{2.5}$, 2006 $PM_{2.5}$, 1997 ozone, 2008 ozone, 2010 NO_2 and 2010 SO_2 NAAQS (CAA Section 110(a)(2)(D)(i)(II) and visibility protection). Specifically, we propose to disapprove portions of the following SIP submittals made by Texas for new or revised NAAQS:

- April 4, 2008: 1997 8-hour Ozone, 1997 $PM_{2.5}$ (24-hour and annual)
- May 1, 2008: 1997 8-hour Ozone, 1997 $PM_{2.5}$ (24-hour and annual)
- November 23, 2009: 2006 24-hour $PM_{2.5}$
- December 7, 2012: 2010 NO_2
- December 13, 2012: 2008 8-hour Ozone
- May 6, 2013: 2010 1-hour SO_2 (Primary NAAQS)

We propose to determine that our regional haze FIP will satisfy our FIP obligation for interstate transport of air pollution and visibility protection.

XI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This proposed action is not a ''significant regulatory action'' under the terms of Executive Order 12866 [314] and is therefore not subject to review under Executive Orders 12866 and 13563.[315] The proposed FIP applies to only eight facilities. It is therefore not a rule of general applicability.

B. Paperwork Reduction Act

This proposed action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. Section 3501 *et seq.* Because it does not contain any information collection activities, the Paperwork Reduction Act does not apply. See 5 CFR 1320(c).

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (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. For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant impact on a substantial number of small entities. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the small entities subject to the rule. This rule does not impose any requirements or create impacts on small entities. This proposed SIP action under Section 110 of the CAA will not in-and-of itself create any new requirements on small entities but simply approves or disapproves certain state requirements for inclusion into the SIP. Accordingly, it affords no opportunity for the EPA to fashion for small entities less burdensome compliance or reporting requirements or timetables or exemptions from all or part of the rule. The fact that the CAA prescribes that various consequences (*e.g.,* emission limitations) may or will flow from this action does not mean that the EPA either can or must conduct a regulatory flexibility analysis for this action. We have therefore concluded that, this action will have no net regulatory burden for all directly regulated small entities.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on state, local, and Tribal governments and the private sector. Under Section 202 of UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to state, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more (adjusted for inflation) in any one year. Before promulgating an EPA rule for which a written statement is needed, Section 205 of UMRA generally requires EPA to identify and consider a reasonable

[314] 58 FR 51735 (October 4, 1993).

[315] 76 FR 3821 (January 21, 2011).

number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of Section 205 of UMRA do not apply when they are inconsistent with applicable law. Moreover, Section 205 of UMRA allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under Section 203 of UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that Title II of UMRA does not apply to this proposed rule. In 2 U.S.C. Section 1502(1) all terms in Title II of UMRA have the meanings set forth in 2 U.S.C. Section 658, which further provides that the terms ''regulation'' and ''rule'' have the meanings set forth in 5 U.S.C. Section 601(2). Under 5 U.S.C. Section 601(2), ''the term 'rule' does not include a rule of particular applicability relating to . . . facilities.'' Because this proposed rule is a rule of particular applicability relating to eight named facilities, EPA has determined that it is not a ''rule'' for the purposes of Title II of UMRA.

E. Executive Order 13132, Federalism

This action does not have federalism implications. It 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.

F. Executive Order 13175, Coordination with Indian Tribal Governments

This proposed action does not have tribal implications, because the SIP submittals the EPA is proposing to approve or disapprove would not have a substantial direct effect on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, this proposed rule does not have tribal implications as specified by Executive Order 13175 [316], nor will it impose substantial direct costs on tribal governments or preempt tribal law. Thus, Executive Order 13175 does not apply to this action. Consistent with the EPA policy the EPA nonetheless is offering consultation to tribes regarding this rulemaking action. The EPA will respond to relevant comments in the final rulemaking action.

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

Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks [317] 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 we have reason to believe may have a disproportionate effect on children. EPA interprets EO 13045 as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under Section 5–501 of the EO has the potential to influence the regulation. This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This action is not subject to EO 13045 because it implements specific standards established by Congress in statutes. However, to the extent this proposed rule will limit emissions of SO_2 the rule will have a beneficial effect on children's health by reducing air pollution.

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

This proposed action is not subject to Executive Order 13211 [318] 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.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 [319] establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. We have determined that this proposed rule, if finalized, will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This proposed federal rule limits emissions of SO_2 from eight facilities in Texas.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxides, Visibility, Interstate transport of pollution, Regional haze, Best available control technology.

Dated: November 24, 2014.

Ron Curry,

Regional Administrator, Region 6.

Title 40, chapter I, of the Code of Federal Regulations is proposed to be amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

■ 1. The authority citation for part 52 continues to read as follows:

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

[316] 65 FR 67249 (Nov. 9, 2000).

[317] 62 FR 19885 (Apr. 23, 1997).

[318] 66 FR 28355 (May 22, 2001).

[319] 59 FR 7629 (Feb. 16, 1994).

■ 2. Part 52 is proposed to be amended by adding paragraph (d) in Section 52.2284 and paragraphs (d) and (e) in Section 52.2304.

The additions read as follows:

Subpart SS—Texas

§ 52.2284 Interstate pollutant transport provisions; What are the FIP requirements for decreases in emissions of sulfur dioxide?

* * * * *

(d) Requirements for Martin Lake Units 1, 2, and 3; Monticello Units 1, 2, and 3, Limestone Units 1 and 2; Sandow Unit 4; Big Brown Units 1 and 2; Coleto Creek Unit 1; Tolk Units 1 and 2; and San Miguel affecting visibility.

(1) *Applicability.* The provisions of this section shall apply to each owner or operator, or successive owners or operators, of the coal burning equipment designated as: Martin Lake Units 1, 2, and 3; Monticello Units 1, 2, and 3, Limestone Units 1 and 2; Sandow Unit 4; Big Brown Units 1 and 2; Coleto Creek Unit 1; Tolk Units 1 and 2; and San Miguel.

(2) *Compliance Dates.* Compliance with the requirements of this section is required within 3 years of the effective date of this rule for Martin Lake Units 1, 2, and 3; Monticello Unit 3, Limestone Units 1 and 2; and Sandow Unit 4. Compliance with the requirements of this section is required within 5 years of the effective date of this rule for Big Brown Units 1 and 2; Monticello Units 1 and 2; Coleto Creek Unit 1; and Tolk Units 1 and 2. Compliance with the requirements of this section is required within one year for San Miguel. These compliance dates apply unless otherwise indicated by compliance dates contained in specific provisions.

(3) *Definitions.* All terms used in this part but not defined herein shall have the meaning given them in the Clean Air Act and in parts 51 and 60 of this title. For the purposes of this section:

24-hour period means the period of time between 12:01 a.m. and 12 midnight.

Air pollution control equipment includes selective catalytic control units, baghouses, particulate or gaseous scrubbers, and any other apparatus utilized to control emissions of regulated air contaminants which would be emitted to the atmosphere.

Boiler-operating-day means any 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time at the steam generating unit.

Daily average means the arithmetic average of the hourly values measured in a 24-hour period.

Heat input means heat derived from combustion of fuel in a unit and does not include the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources. Heat input shall be calculated in accordance with 40 CFR part 75.

Owner or Operator means any person who owns, leases, operates, controls, or supervises any of the coal burning equipment designated in paragraph (a).

Regional Administrator means the Regional Administrator of EPA Region 6 or his/her authorized representative.

Unit means one of the coal fired boilers covered under paragraph (a) of this section.

(4) *Emissions Limitations.* SO_2 emission limit. The individual sulfur dioxide emission limit for a unit shall be as listed in the following table in pounds per million British thermal units (lb/MMBtu) as averaged over a rolling 30 boiler-operating-day period.

Unit	SO_2 Emission limit (lbs/MMBtu)
Sandow 4	0.20
Martin Lake 1	0.12
Martin Lake 2	0.12
Martin Lake 3	0.11
Monticello 3	0.06
Limestone 2	0.08
Limestone 1	0.08
Big Brown 1	0.04
Big Brown 2	0.04
Monticello 1	0.04
Monticello 2	0.04
Coleto Creek 1	0.04
Tolk 172B	0.06
Tolk 171B	0.06
San Miguel	0.60

For each unit, SO_2 emissions for each calendar day shall be determined by summing the hourly emissions measured in pounds of SO_2. For each unit, heat input for each boiler-operating-day shall be determined by adding together all hourly heat inputs, in millions of BTU. Each boiler-operating-day of the thirty-day rolling average for a unit shall be determined by adding together the pounds of SO_2 from that day and the preceding 29 boiler-operating-days and dividing the total pounds of SO_2 by the sum of the heat input during the same 30 boiler-operating-day period. The result shall be the 30 boiler-operating-day rolling average in terms of lb/MMBtu emissions of SO_2. If a valid SO_2 pounds per hour or heat input is not available for any hour for a unit, that heat input and SO_2 pounds per hour shall not be used in the calculation of the 30 boiler-operating-day rolling average for SO_2.

(5) *Testing and monitoring.*

(i) No later than the compliance date of this regulation, the owner or operator shall install, calibrate, maintain and operate Continuous Emissions Monitoring Systems (CEMS) for SO_2 on the units listed in Section (1) in accordance with 40 CFR 60.8 and 60.13(e), (f), and (h), and Appendix B of Part 60. The owner or operator shall comply with the quality assurance procedures for CEMS found in 40 CFR part 75. Compliance with the emission limits for SO_2 shall be determined by using data from a CEMS.

(ii) Continuous emissions monitoring shall apply during all periods of operation of the coal burning equipment, including periods of startup, shutdown, and malfunction, except for CEMS breakdowns, repairs, calibration checks, and zero and span adjustments. Continuous monitoring systems for measuring SO_2 and diluent gas shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. Hourly averages shall be computed using at least one data point in each fifteen minute quadrant of an hour. Notwithstanding this requirement, an hourly average may be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant in an hour) if data are unavailable as a result of performance of calibration, quality assurance, preventive maintenance activities, or backups of data from data acquisition and handling system, and recertification events. When valid SO_2 pounds per hour, or SO_2 pounds per million Btu emission data are not obtained because of continuous monitoring system breakdowns, repairs, calibration checks, or zero and span adjustments, emission data must be obtained by using other monitoring systems approved by the EPA to provide emission data for a minimum of 18 hours in each 24 hour period and at least 22 out of 30 successive boiler operating days.

(6) *Reporting and Recordkeeping Requirements.* Unless otherwise stated all requests, reports, submittals, notifications, and other communications to the Regional Administrator required by this section shall be submitted, unless instructed otherwise, to the Director, Multimedia Planning and Permitting Division, U.S. Environmental Protection Agency, Region 6, to the attention of Mail Code: 6PD, at 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202–2733. For each unit subject to the emissions limitation in this section and upon completion of the installation of CEMS as required in this section, the

owner or operator shall comply with the following requirements:

(i) For each emissions limit in this section, comply with the notification, reporting, and recordkeeping requirements for CEMS compliance monitoring in 40 CFR 60.7(c) and (d).

(ii) For each day, provide the total SO_2 emitted that day by each emission unit. For any hours on any unit where data for hourly pounds or heat input is missing, identify the unit number and monitoring device that did not produce valid data that caused the missing hour.

(7) *Equipment Operations.* At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the unit including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Regional Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the unit.

(8) *Enforcement.*

(i) Notwithstanding any other provision in this implementation plan, any credible evidence or information relevant as to whether the unit would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed, can be used to establish whether or not the owner or operator has violated or is in violation of any standard or applicable emission limit in the plan.

(ii) Emissions in excess of the level of the applicable emission limit or requirement that occur due to a malfunction shall constitute a violation of the applicable emission limit.

* * * * *

§ 52.2304 Visibility protection.

* * * * *

(d) Portions of SIPs addressing noninterference with measures required to protect visibility in any other state are disapproved for the 1997 $PM_{2.5}$, 2006 $PM_{2.5}$, 1997 ozone, 2008 ozone, 2010 NO_2 and 2010 SO_2 NAAQS.

(e) *Measures Addressing Disapproval Associated with* NO_X and SO_2.

(1) The deficiencies associated with NO_X identified in EPA's disapproval of the regional haze plan submitted by Texas on March 31, 2009, are satisfied by Section 52.2283

(2) The deficiencies associated with SO_2 identified in EPA's disapproval of the regional haze plan submitted by Texas on March 31, 2009, are satisfied by Section 52.2284.

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