6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 51

[FRL-]

Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed Rule.

SUMMARY: On July 1, 1999, EPA promulgated regulations to address regional haze, (64 Fed. Reg. 3714). These regulations were challenged, and on May 24, 2002, the U.S. Court of Appeals for the District of Columbia Circuit issued a ruling vacating the regional haze rule in part and sustaining it in part. *American Corn Growers Ass'n v. EPA*, 291 F.3d 1 (D.C. Cir. 2002). Today's proposed rule addresses the court's ruling in that case.

In addition, prior to the court's decision, EPA had proposed guidelines for implementation of the best available retrofit technology (BART) requirements under the regional haze rule, (66 FR 38108; July 20, 2001). The proposed guidelines were intended to clarify the requirements of the regional haze rule's BART provisions. We proposed to add the guidelines as appendix Y to 40 CFR part 51 and also

proposed to add regulatory text requiring that these guidelines be used for addressing BART determinations under the regional haze rule. In addition, we proposed one revision to guidelines issued in 1980 for facilities contributing to "reasonably attributable" visibility impairment.

In the *American Corn Growers case*, the court vacated and remanded the BART provisions of the regional haze rule. To respond to the court's ruling, we are proposing new BART provisions and reproposing the BART guidelines. The *American Corn Growers* court also remanded to the Agency its decision to extend the deadline for the submittal of regional haze plans. Subsequently, Congress amended the deadlines for regional haze plans.[1] We are proposing to amend the rule to conform to the new statutory deadlines.

DATES: Comments on this proposal must be received by **[insert date 60 days after publication in the Federal Register]**.

ADDRESSES: Comments may be submitted electronically, by mail, by facsimile, or through hand delivery/courier. For the detailed instructions as provided in section I.B. of the **SUPPLEMENTARY INFORMATION** section.

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[1] Consolidated Appropriations Act for Fiscal Year 2004, Public Law 108-199, January 23, 2004.

FOR FURTHER INFORMATION CONTACT: If you would like further information about this proposed rule or to request a public hearing, contact Kathy Kaufman, Integrated Policies and Strategies Group, (919) 541-0102 or by e-mail kaufman.kathy@epa.gov or Todd Hawes, Integrated Policies and Strategies Group, (919) 541-5591 or by e-mail hawes.todd@epa.gov.

SUPPLEMENTARY INFORMATION:

I. General Information

A. *Regulated Entities.*

Entities potentially regulated by this action are States and Indian Tribes containing major stationary sources of pollution affecting visibility in federally protected scenic areas.

B. How and To Whom Do I Submit Comments?

Docket. We have established an official public docket for this action under Docket No. OAR-2002-0076. The official public docket consists of the documents specifically referenced in this action, any public comments received, and other information related to this action. Although a part of the official docket, the public docket does not include confidential business information or other information whose disclosure is restricted by statute. The

official public docket is the collection of materials that is available for public viewing at the Air Docket in the EPA Docket Center, Room B102, 1301 Constitution Ave., NW, Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Air Docket is (202) 566-1742. A reasonable fee may be charged for copying.

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Outline. The contents of today's preamble are listed in the following outline.

I. Overview of Today's Proposed Actions

Today's rulemaking provides for the following proposed changes to the regional haze regulations:

(1) revised regulatory text in response to the *American Corn Growers* court's remand, to require that the BART determination includes an analysis of the degree of visibility improvement resulting from the use of control technology at each source subject to BART,

(2) revised regulatory text in 40 CFR 51.308(b) and deletion of 40 CFR 51.308(c) *Options for regional planning* in response to Congressional legislation amending the deadlines for submittal of regional haze implementation plans. This provision had provided for an alternative process for States to submit regional haze implementation plans in attainment areas,

(3) BART guidelines, contained in a new appendix Y to 40 CFR part 51,

(4) new and revised regulatory text, to be added to 40 CFR 51.308(e) to require the use of appendix Y in establishing BART emission limits, and

(5) revised regulatory language at 51.302 to clarify the relationship between New Source Performance Standards (NSPS) and BART for reasonably attributable visibility impairment.

How This Preamble Is Structured. Section II provides background on the regional haze rule, the D.C. Circuit Court decision which remanded parts of the rule, and the proposed

changes to the rule and reproposal of the BART guidelines in response to the remand. Section III discusses in more detail the reproposed BART guidelines, including changes from the July 2001 proposal based the court decision and certain comments that we received on the initial proposal. Section IV provides a discussion of how this rulemaking complies with the requirements of Statutory and Executive Order Reviews.

II. Background

A. Regional Haze Rule

In 1999, we published a final rule to address a type of visibility impairment known as regional haze (64 FR 35714; July 1, 1999). The regional haze rule requires States to submit implementation plans (SIPs) to address regional haze visibility impairment in 156 Federally-protected parks and wilderness areas. These 156 scenic areas are called "mandatory Class I Federal areas" in the Clean Air Act (CAA),[2] but are referred to simply as "Class I areas" in today's rulemaking. The 1999 rule was issued to fulfill a long-standing EPA commitment to address regional haze under the authority and requirements of sections 169A and 169B of the CAA.

[2] *See, e.g.* CAA § 169A(a)(1).

As required by the CAA, we included in the final regional haze rule a requirement for BART for certain large stationary sources that were put in place between 1962 and 1977. We discussed these requirements in detail in the preamble to the final rule (64 FR 35737-35743). The regulatory requirements for BART were codified at 40 CFR 51.308(e), and in definitions that appear in 40 CFR 51.301.

The CAA, in 169A(b)(2)(A) and in 169A(g)(7), uses the term "major stationary source" to describe those sources that are the focus of the BART requirement. To avoid confusion with other CAA requirements which also use the term "major stationary source" to refer to a somewhat different population of sources, the regional haze rule uses the term "BART-eligible source" to describe these sources. The BART-eligible sources are those sources which have the potential to emit 250 tons or more of a visibility-impairing air pollutant, were put in place between August 7, 1962 and August 7, 1977, and whose operations fall within one or more of 26 specifically listed source categories. Under the CAA, BART is required for any BART-eligible source which "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area." Accordingly, for stationary sources

meeting these criteria, States must address the BART requirement when they develop their regional haze SIPs.

Section 169A(g)(7) of the CAA requires that States must consider the following factors in making BART determinations:

(1) the costs of compliance,

(2) the energy and nonair quality environmental impacts of compliance,

(3) any existing pollution control technology in use at the source,

(4) the remaining useful life of the source, and

(5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

These statutory factors for BART were codified at 40 CFR 51.308(e)(1)(ii).

In the preamble to the regional haze rule, we committed to issuing further guidelines to clarify the requirements of the BART provision. The purpose of this proposed rulemaking is to fulfill this commitment by providing guidelines for States to use in identifying their BART-eligible sources, in identifying which of those sources must undergo a detailed BART analysis (i.e., which are "sources subject to BART"), and in conducting the technical analysis of possible

controls in light of the statutory factors listed above ("the BART determination").

B. Partial Remand of the Regional Haze Rule in *American Corn Growers*

In response to challenges to the regional haze rule by various petitioners, the D.C. Circuit in *American Corn Growers et al. v. EPA*, 291 F.3d 1 (2002) issued a ruling striking down the regional haze rule in part, and upholding it in part. This section discusses the court's opinion in that case, as background for the discussion of specific changes to the regional haze rule and the BART guidelines presented in the next two sections, respectively.

We explained in the preamble to the 1999 regional haze rule that the BART requirements in section 169A(b)(2)(A) of the CAA demonstrate Congress' intent to focus attention directly on the problem of pollution from a specific set of existing sources (64 FR 35737). The CAA requires that any of these existing sources "which, as determined by the State, emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility [in a Class I area]," shall install the best available retrofit technology for controlling emissions.[3]

[3] CAA §§ 169A(b)(2) & (g)(7).

In determining BART, the CAA requires the State to consider several factors that are set forth in section 169(g)(2) of the CAA, including the degree of improvement in visibility which may reasonably result from the use of such technology.

The regional haze rule addresses visibility impairment resulting from emissions from a multitude of sources located across a wide geographic area. Because the problem of regional haze is caused in large part by the long-range transport of emissions from multiple sources, and for certain technical and other reasons explained in that rulemaking, we had adopted an approach that required States to look at the contribution of all BART sources to the problem of regional haze in determining both applicability and the appropriate level of control. Specifically, we had concluded that if a source potentially subject to BART is located within an upwind area from which pollutants may be transported downwind to a Class I area, that source "may reasonably be anticipated to cause or contribute" to visibility impairment in the Class I area. Similarly, we had also concluded that in weighing the factors set forth in the statute for determining BART, the States should consider the collective impact of BART sources on visibility. In particular, in considering the degree of visibility improvement that could reasonably be anticipated to result

from the use of such technology, we stated that the State should consider the degree of improvement in visibility that would result from the cumulative impact of applying controls to all sources subject to BART. We had concluded that the States should use this analysis to determine the appropriate BART emission limitations for specific sources.[4]

In *American Corn Growers v. EPA,* industry petitioners challenged EPA's interpretation of both these aspects of the BART determination process and raised other challenges to the rule. While rejecting industry's other challenges, the court in *American Corn Growers* concluded that the BART provisions in the 1999 regional haze rule were inconsistent with the provisions in the CAA "giving the states broad authority over BART determinations." 291 F.3d at 8. Specifically, with respect to the test for determining whether a source is subject to BART, the court held that the method that EPA had prescribed for determining which eligible sources are subject to BART illegally constrained the authority Congress had conferred on the States. Id. However, the court expressly declined to hold that the general collective contribution approach to

[4] *See* 66 FR 35737-43 for a discussion of the rationale for the BART requirements in the 1999 regional haze rule.

determining BART applicability was necessarily inconsistent with the CAA, were it not for the infringement on State authority. Id. at 9. Rather, the court stated that the collective contribution approach may have been acceptable if EPA had allowed for a State exemption process based on an individualized contribution determination. Id. at 12.

The court in *American Corn Growers* also found that EPA's interpretation of the CAA requiring the States to consider the degree of improvement in visibility that would result from the cumulative impact of applying controls in determining BART was inconsistent with the language of the Act. 291 F.3d at 8. Based on its review of the statute, the court concluded that the five statutory factors in section 169A(g)(2) "were meant to be considered together by the states." *Id.* at 6.

Finally, the court remanded the schedule in the regional haze rule for the submission of implementation plans for areas that commit to regional planning, indicating that the use of such a "committal SIP" does not appear to satisfy statutory requirements. The court declined to vacate the provision, however, in light of the need to change SIP requirements in order to satisfy the ruling on the BART issue. *Id.* at 15.

C. Proposed Changes in the Visibility Regulations

Today's proposed rule responds to the *American Corn Growers* court's decision on the BART provisions by proposing changes to the regional haze rule at 40 CFR 51.308, and by reproposing the BART guidelines. This section outlines the changes to the regional haze rule due to the court's remand and to subsequent Congressional action regarding deadlines for the submission of regional haze implementation plans. It also explains the minor change we are proposing to the section of the regulation governing the use of the 1980 BART guidelines when conducting BART analyses for certain power plants for reasonably attributable (i.e., localized) visibility impairment.

1. Determination of Which Sources are Subject to BART

Today's proposed action addresses the *American Corn Growers* court's vacature of the requirement in the regional haze rule requiring States to assess visibility impacts on a cumulative basis in determining which sources are subject to BART. Because this requirement was found only in the preamble to the 1999 regional haze rule (*see* 291 F.3rd at 6, citing 64 FR 35741), no changes to the regulations are required. Instead, this issue is addressed in the BART guidelines, which provide States with a number of options for determining which BART-eligible sources "may reasonably be anticipated to cause or contribute to any impairment of

visibility in any mandatory Class I Federal area." These options have been designed to address the holding of *American Corn Growers* by eliminating the previous constraint on State discretion, as explained in further detail in sections II.D. and III below.

2. Consideration of Anticipated Visibility Improvements in BART Determinations

Pursuant to the remand in *American Corn Growers*, we are proposing to amend the regional haze rule to require the States to consider the degree of visibility improvement resulting from a source's installation and operation of retrofit technology, along with the other statutory factors set out in CAA §169A(g)(2), when making a BART determination. This would be accomplished by listing the visibility improvement factor with the other statutory BART determination factors in §308(e)(1)(A), so that States will be required to consider all five factors, including visibility impacts, on an individual source basis when making each individual source BART determination.

In addition, §308(e)(1)(B), which formerly required States to assess visibility on a cumulative basis (i.e., for all BART-eligible sources), would be replaced with a requirement to use the BART guidelines at appendix Y. The guidelines, as will be explained in the next section and in

greater detail in section III, provide for source-specific analysis of anticipated improvement in visibility. These changes, therefore, address the court's holding with respect to the isolation of the visibility improvement factor at this stage of the BART analysis.

3. Implementation Plan Deadlines

As noted above, the 1999 regional haze rule contained a committal SIP mechanism (§308(c)) which the *American Corn Growers* court remanded without vacating. This mechanism was intended to allow states to harmonize regional haze SIP submittals for all areas within the state. At the time the rule was promulgated, the deadline for regional haze SIPs varied depending on the $PM_{2.5}$ attainment or nonattainment status of the area.[5]

In the Omnibus Appropriations Act of 2004,[6] Congress harmonized both designations and regional haze SIP deadlines. Under the Omnibus Appropriations Act, we are required to promulgate $PM_{2.5}$ designations for all areas of each state no later than December 31, 2004. Designations will become effective 30 days afterward, or no later than

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[5] Transportation Equity Act for the 21st Century, Pub. L. No. 105-178, 112 Stat. 107, 463 (1998)(TEA-21).

[6] Consolidated Appropriations Act for Fiscal Year 2004, Public Law 108-199, January 23, 2004.

January 31, 2005. The Omnibus Appropriations Act further provides that regional haze SIPs, for each entire state, are then due not later than 3 years after promulgation of the $PM_{2.5}$ designation.[7] Thus, regional haze SIPs are due no later than January, 31, 2008. We are proposing to amend 40 CFR 51.308(b)and 51.308(c) to comport with the new statutory deadlines, and to eliminate the "comittal" SIP provision.

We are also proposing to amend certain sections of 40 CFR 51.309 to comport with the new statutory deadlines. Under §309 as currently codified, the initial SIPs for states utilizing §309 were due in 2003, and a second set of SIPs for those states are due no later than December 31, 2008. This date was designed to coincide with the latest date §308 SIPs could be due under the statutory scheme prior to amendment by the Omnibus Act. The Omnibus Amendments contain a "no preclusion" provision, clarifying that nothing therein precludes the submission of §309 SIPs by December

[7] CAA §107(d)(7)(A), as amended by the Consolidated Appropriations Act for Fiscal Year 2004, now reads: "In General.– Notwithstanding any other provision of law, not later than 3 years after the date on which the Administrator promulgates the designations referred to in Paragraph (6)(B) for a State, the State shall submit, for the entire State, the State implementation plan revisions to meet the requirements promulgated by the Administrator under section 169B(e)(1) (referred to in this paragraph as 'regional haze requirements')."

31, 2003.[8] The "no preclusion" provision does not expressly provide that the later (currently 2008) §309 deadlines are not precluded. There is therefore some ambiguity as to whether the 3-year-after-designation deadline applies to subsequent §309 SIPs. We believe that policy interests of certainty, clarity, and coordination of efforts are best served by establishing consistent deadlines for SIPs under sections 308 and 309 where appropriate, and by avoiding any ambiguity regarding future section 309 SIP deadlines. Therefore, we are proposing to amend sections 309(d)(4)(v), 309(g)(2), and 309(g)(3), by replacing "December 31, 2008" with "January 31, 2008", to coincide with section 308 SIPs.[9]

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[8] CAA §107(d)(7)(B) "No Preclusion of Other Provisions. – Nothing in this paragraph precludes the implementation of of the agreements and recommendations stemming from the Grand Canyon Visibility Transport Commission Report dated June 1996, including the submission of State implementation plan revisions by the States of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, or Wyoming by December 31, 2003, for implementation of regional haze requirements applicable to those States."

[9] These are the section of 309 establishing deadlines for SIP revisions which contain major new policy initiatives which should, for efficiency, be coordinated with the development of section 308 SIPs; specifically long term strategies and BART requirements for stationary source NO_x and PM, if determined to be necessary (§309(d)(4)(v)), and reasonable progress provisions for additional (non-Colorado Plateau) class I areas (§309(g)(2) – (g)(3)).

We are aware that 2008 deadlines also appear in §309(d)(10) (progress reports) and §309(b)(6)(mobile source tracking and revisions if necessary). We are not proposing to amend these sections because they are part of a scheme

4. Proposed Revisions to the 1980 BART Guidelines

Background. One of the primary purposes of this reproposal is to provide BART guidelines for the regional haze program. As described in the 2001 proposed BART guidelines (66 FR 38108, 38109), however, we are also proposing to make limited revisions to longstanding guidelines for BART under the 1980 visibility regulations for localized visibility impairment that is "reasonably attributable" to one or a few sources.[10] The visibility regulations require States to use a 1980 guidelines document when conducting BART analyses for certain power plants for reasonably attributable visibility impairment. While the analytical process set forth in these guidelines is still generally acceptable for conducting BART analyses for "reasonably attributable" visibility impairment, there are statements in the 1980 BART Guidelines that could be read to indicate that the NSPS may be considered to represent best control for existing sources. While this may have been the

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establishing check points for §309 strategies in 2008, 2013, and 2018, rather than development of new strategies, and thus do not require integration with §308 SIPs.

[10] U.S. Environmental Protection Agency, Guidelines for Determining Best Available Retrofit Technology for Coal-fired Power Plants and Other Existing Stationary Facilities, EPA-450/3-80-009b, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., November 1980 (1980 BART Guidelines).

case in 1980 (e.g., the NSPS for sulfur dioxide (SO_2) from boilers had been recently issued in June 1979), best control levels for recent plant retrofits have exceeded NSPS levels. Therefore, we are proposing to amend this provision of the 1980 visibility regulations to clarify that BART should not be interpreted under the 1980 regulations to preclude control options which are more stringent than NSPS standards.

D. Reproposal of the BART Guidelines

Prior to the *American Corn Growers* decision, we had proposed guidelines for the regional haze BART process. Specifically, on July 20, 2001, the proposed BART guidelines were published in the Federal Register (66 FR 13108-13135). We requested written comments on the proposal and conducted two public hearings. The deadline for written comments was extended from September 18, 2001 to October 5, 2001 in a separate Federal Register notice (66 FR 50135).

Public hearings were held on August 21, 2001 in Alexandria, Virginia and on August 27, 2001 in Chicago, Illinois. Transcripts for these public hearings are available in the public docket for the regulation (Docket A-2000-28, Docket numbers IV-F-01 and IV-F-02). Oral testimony in both public hearings was predominantly from private citizens supportive of the proposed BART guidelines.

We received written comments on the package from many citizens and stakeholder groups.

Today, we are reproposing the BART guidelines to take into account the changes that we are proposing to make to the regional haze rule. Although in reproposing the BART guidelines we have taken into account some of the comments that we received in response to the 2001 action, much of what is set forth in the BART guidelines proposed today is identical to the earlier proposal. Both for those proposed requirements in the BART guidelines which are unchanged from the 2001 proposal, as well as for those that we have changed since 2001, you do not need to resubmit comments unless you have additional information that you would like us to consider, because we will carefully consider **all** comments previously submitted during the comment period on the 2001 proposal in making our final decision on the BART guidelines.

The proposed BART process is set forth in the BART guidelines we are reproposing today in response to the remand. The rest of this section provides an overview of this proposed BART process. The overview summarizes both (1) the process for determining which BART-eligible sources may be reasonably anticipated to cause or contribute to visibility impairment, and thus should be subject to BART,

and (2) the process for evaluating visibility impacts for an individual source's BART determination. (We will discuss these issues in further detail in section III below.)

The BART process

The process of establishing BART emission limitations can be logically broken down into three steps: First, States identify those sources which meet the definition of "BART-eligible source" set forth in 40 CFR §51.301.[11] Second, States determine whether such sources "emit[] any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility [in a Class I area.]" A source which fits this description is "subject to BART." Third, for each source subject to BART, States then identify the appropriate type and the level of control for reducing emissions.

Identifying BART-eligible sources

The CAA defines BART-eligible sources as those sources which fall within one of 26 specific source categories, were built during the 15-year window of time from 1962 to 1977, and have potential emissions greater than 250 tons per year.

[11] "BART-eligible source" is defined as a stationary source of air pollutants that falls within one of 26 listed categories which was put into operation between August 7, 1962 and August 7, 1977, with the potential to emit 250 tons per year of any air pollutant. CAA §§169(b)(2)(A) and (g)(7); 40 CFR §51.301.

The remand did not address the step of identifying BART-eligible sources, which is conceptually the simplest of the three steps.

Sources reasonably anticipated to cause or contribute to visibility impairment (sources subject to BART)

As we noted in the preamble to the 1999 regional haze rule, defining the individual contributions of specific sources of the problem of regional haze can be time-consuming and expensive. Moreover, Congress established a very low threshold in the CAA for determining whether a source is subject to BART. We are accordingly proposing several approaches for States for making the determination of whether a source "emits any pollutants which may reasonably be anticipated to cause or contribute to any visibility impairment." The first two of these approaches would allow States to avoid undertaking unnecessary and costly studies of an individual source's contribution to haze by allowing States to adopt more streamlined processes for determining whether, or which, BART-eligible sources are subject to BART.

In 1999, we adopted an applicability test that looked to the collective contribution of emissions from an area. In particular, we stated that if "a State should find that a BART-eligible source is 'reasonably anticipated to cause or

contribute' to regional haze if it can be shown that the source emits pollutants within a geographic area from which pollutants can be emitted and transported downwind to a Class I area."[12] Under today's proposal, a State has the discretion to consider that all BART-eligible sources within the State are "reasonably anticipated to cause or contribute" to some degree of visibility impairment in a Class I area.

This option is consistent with the *American Corn Growers* court's decision. As previously noted, the court's concern with our original approach governing BART applicability determinations was that it would have "tie[d] the states' hands and force[d] them to require BART controls at sources without any empirical evidence of the particular source's contribution to visibility impairment." 291 F.3d at 8. By the same rationale, we believe it would be an impermissible constraint of State authority to force States to conduct individualized analysis in order to determine that a BART-eligible source "emits any air pollutant which may reasonably be anticipated to cause or contribute to any

[12] 64 FR 335740, July 1, 1999. The regional haze rule discusses at length why we believe that States should draw this conclusion. 64 FR 35739-40.

impairment of visibility in any [Class I] area."[13] In this respect, we believe that it is important to note that the court in *American Corn Growers* expressly declined to hold that consideration of visibility impact on a cumulative basis would be invalid in all circumstances. 291 F.3d at 9. Given the court's emphasis on the importance of the role of the States in making BART determinations, we believe that a State's decision to use a cumulative analysis at the eligibility stage would be consistent with the CAA and the findings of the D.C. Circuit.

We believe there is ample technical evidence supporting a finding by a State that all BART-eligible sources within the State are subject to BART, without further analysis at that stage in the process.[14] Any potential for inequity towards sources would be addressed at the BART determination stage, where we are proposing to require the individualized consideration of a source's contribution in establishing BART emission limits.

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[13] CAA §169A(b)(2)(A).

[14] See 64 FR 35714, 35721. See also July 29, 1997 memorandum to the regional haze docket A-95-38, "Supporting Information for Proposed Applicability of Regional Haze Regulations," by Richard Damberg, EPA, Office of Air Quality Planning and Standards.

The reasoning underlying this approach is discussed in more detail in section III below.

We are also proposing to provide States with the option of performing an analysis to show that the full group of BART-eligible sources in a State cumulatively do not cause or contribute to any visibility impairment in Class I areas. We anticipate that in most, if not all States, the BART-eligible sources are likely to cause or contribute to some visibility impairment in Class I areas. However, it is possible that using a cumulative approach, a State could show that its BART sources do not collectively pose a measurable problem.

Finally, we are also proposing that States may consider the individualized contribution of a BART-eligible source to determine whether a specific source is subject to BART. Specifically, States may choose to undertake an analysis of each BART-eligible source in the State in considering whether each such source meets the test set forth in the CAA of "emit[ting] any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any [Class I] area." Alternatively, States may choose to presume that all BART-eligible sources within the State meet this applicability test, but provide sources with the ability to demonstrate on a case by case basis that

this is not the case. This approach is consistent with the D.C. Circuit's statement that a collective contribution approach may be appropriate so long as the States are allowed to exempt sources on the basis of an individualized contribution determination. 291 F.3d at 8.

For assessing the impact of BART-eligible sources located greater than 50 kilometers (km) from a Class I area, we are proposing that the States use an air quality model able to estimate a single source's contribution to visibility impairment. We are also requesting comment on methods appropriate for Class I areas closer than 50 km; and on other potential methods of assessing a source's individualized contribution to regional haze visibility impairment. (This is explained in greater detail in section III below).

The BART determination

The State must determine the appropriate level of BART control for each source subject to BART. Section 169A(g)(7) of the CAA requires States to consider the following factors in making BART determinations: (1) the costs of compliance, (2) the energy and nonair quality environmental impacts of compliance, (3) any existing pollution control technology in use at the source, (4) the remaining useful life of the source, and (5) the degree of improvement in visibility

which may reasonably be anticipated to result from the use of such technology. The remand did not address the first four steps of the BART determination (the "engineering analysis"). The remand did address the final step, mandating that EPA must provide a way for States to take into account the degree of improvement in visibility that would result from imposition of BART on each individual source.

The BART engineering analysis, comprising the first four factors, is addressed in detail in section IV below, and is substantially similar to the engineering analysis in the original BART guidelines proposed in July, 2001. Section IV also contains a detailed discussion of available and cost-effective controls for reducing SO_2 and nitrogen oxicdes (NOx) emissions from large coal-fired electric generating units (EGUs).

For assessing the fifth factor, the degree of improvement in visibility from various BART control levels, we are proposing that States require individual sources to run CALPUFF, or other EPA-approved model, using site-specific data. To estimate a source's impact on visibility, the source would run the model using current allowable emissions, and then again at the post-control emissions level (or levels) being assessed. Results would then be

tabulated for the average of the 20% worst modeled days at each receptor. The difference in the resulting level of impairment predicted is the degree of improvement in visibility expected.

Alternatively, we request comment on the option of using the hourly modeled impacts from CALPUFF and assessing the improvement in visibility based on the number of hours above a visibility threshold for the pre- and post-control emission rates.

III. Detailed Discussion of Reproposed BART Guidelines

A. Introduction

In this section of the preamble, we discuss the details of the reproposed BART guidelines where we are proposing to make changes to, or to clarify, the BART guidelines proposed in July, 2001. As noted in section II, we will be reviewing the comments received during the comment period on the 2001 proposal and responding to those comments when we issue a final guideline. For each provision of the guidelines that we are changing or clarifying, we provide discussion of, as appropriate:

- background information,
- what we proposed in the July 2001 action,
- a summary or partial summary of the comments received on the provision, and

- the changes or clarifications that we are proposing and the reasons for these changes or clarifications.

B. How to Identify BART-eligible Sources

The CAA, in section 169A(g)(7), provides a specific list of the types of "major stationary sources" that are covered by the BART requirement. Our visibility regulations include this same list in 40 CFR 51.301 in the definition of the term "existing stationary facility" and by reference, "BART-eligible source." Because the terms "major stationary source" and "existing stationary facility" are general in nature and used for other air quality programs, we decided to eliminate any potential confusion by using the term "BART-eligible source" in the regional haze portions of the visibility regulations that were published in 1999. As defined in 40 CFR 51.301, a "BART-eligible source" means the same thing as an "existing stationary facility" as defined in EPA's 1980 visibility regulations, and means the same thing as a "major stationary source" as defined in CAA section 169A(g)(7).

Section II of the reproposed BART guidelines contains a step-by-step process for identifying stationary sources that are "BART-eligible" under the definitions in the regional haze rule. Today's action reproposing the BART guidelines

includes the same four basic steps as in the proposed rule. The four basic steps are:

Step 1: Identify the emission units in the BART categories

Step 2: Identify the start-up dates of those emission units

Step 3: Compare the potential emissions from units identified in Steps 1 and 2 to the 250 ton/yr cutoff

Step 4: Identify the emission units and pollutants that constitute the BART-eligible source.

We received a number of comments on this proposed approach to identifying BART-eligible sources. In this section of the preamble, we discuss some of the previously submitted comments and any changes we are proposing in light of these comments.

Step 1: Identify the emission units in the BART cateories.

Background. The CAA uses the following 26 source category titles to describe the types of stationary sources that are BART-eligible:

(1) Fossil-fuel fired steam electric plants of more than 250 million British thermal units (BTU) per hour heat input,

(2) Coal cleaning plants (thermal dryers),

(3) Kraft pulp mills,

(4) Portland cement plants,

(5) Primary zinc smelters,

(6) Iron and steel mill plants,

(7) Primary aluminum ore reduction plants,

(8) Primary copper smelters,

(9) Municipal incinerators capable of charging more than 250 tons of refuse per day,

(10) Hydrofluoric, sulfuric, and nitric acid plants,

(11) Petroleum refineries,

(12) Lime plants,

(13) Phosphate rock processing plants,

(14) Coke oven batteries,

(15) Sulfur recovery plants,

(16) Carbon black plants (furnace process),

(17) Primary lead smelters,

(18) Fuel conversion plants,

(19) Sintering plants,

(20) Secondary metal production facilities,

(21) Chemical process plants,

(22) Fossil-fuel boilers of more than 250 million BTUs per hour heat input,

(23) Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels,

(24) Taconite ore processing facilities,

(25) Glass fiber processing plants, and

(26) Charcoal production facilities.

Most of the source category titles are general descriptors that are inclusive of all the operations at a given plant. Some plant sites may have more than one of the categories present. Examples of this would include plants with both "petroleum refineries" and "sulfur recovery plants," or with both "iron and steel mill plants" and "sintering plants." On the other hand, some plant sites may include some emissions units meeting one of these 26 descriptions, but other emissions units that do not.

2001 Proposed Rule. In the 2001 proposed BART guidelines, we noted that the category titles were generally clear and we proposed to clarify a few issues, including interpretations where we believed there were ambiguities in the source category titles. We requested comment on whether any other clarifications were needed. The 2001 proposed guidelines clarified that in identifying emissions units for inclusion as a BART-eligible source, States should identify all emissions units at a plant site meeting one or more of the source category descriptions. The 2001 proposed rule

provided specific interpretations for five of the 26 source category titles:

(1) "Steam electric plants of more than 250 million BTU/hr heat input." The 2001 proposal noted that because the category title refers to "plants," boiler capacities must be aggregated to determine whether the 250 million BTU/hr threshold is reached.

(2) "Fossil-fuel boilers of more than 250 million BTU/hr heat input." We proposed two options for interpreting this source category title. The first option, the approach used in the regulations for prevention of significant deterioration (PSD) program, would be to aggregate boiler capacities to determine whether the 250 million BTU/hr threshold is reached. Under the second option, only those boilers that are individually greater than 250 million BTU/hr would fall within the BART source category.

(3) "Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels." In the 2001 proposal, we noted our interpretation that the 300,000 barrel cutoff refers to total, facility-wide tank capacity for tanks that were put in place within the 1962-1977 time period, and includes gasoline and other petroleum-derived liquids.

(4) "Phosphate rock processing plants." In the 2001 proposal, we noted that this category descriptor should be interpreted broadly to include all types of phosphate rock processing facilities, including elemental phosphorous plants as well as fertilizer production plants.

(5) "Charcoal production facilities." In the 2001 proposal, we noted information provided by the National Association of Manufacturers (NAM) on the legislative history for this source category. In its letter, NAM suggested that the legislative history supported a conclusion that BART should cover only a subset of the charcoal production industry. While we indicated that we did not agree with this assessment, we requested comment on whether and how the information cited by NAM is relevant to the interpretation of this or other categories.

Finally, in the 2001 proposal, we requested comment generally on whether any additional source category titles needed clarification.

Comments on the 2001 Proposal. We received a number of comments related to the interpretation of the source category titles. Some of these comments related to the category-specific clarifications we provided in the proposed

guidelines. In addition, there were a few comments in response to our request for additional category titles needing clarification. In this section, we only discuss the previously submitted comments that have led to the changes we are proposing in today's action.

We received many comments related to our interpretation of the term "fossil-fuel boilers of more than 250 million BTUs per hour heat input." A number of comments from environmental groups and States were supportive of an interpretation which would require States to compare the aggregate capacities of boilers against the 250 million BTU/hr cutoff. These comments agreed with our assessment that this would promote consistency with the PSD program. Environmental group comments also noted that the plural term "boilers" was used in the CAA, rather than the singular term "any boiler."

Many commenters from industry groups and some State agencies supported the alternative interpretation of the category, which would require States to consider as BART-eligible only those boilers which are individually greater than 250 million BTU/hr. These commenters generally asserted that this was the plain reading of the source category title, and also that such an approach would be consistent with EPA programs such as NSPS and the NO_X SIP

Call.[15] These commenters noted that, unlike the PSD program, circumvention of the requirements is not possible because BART only applies to boilers already in existence. Other commenters noted that aggregation of boilers may result in inclusion of very small boilers for which BART controls would not be cost effective.

In addition to the general comments on the interpretation of the size cutoff for boilers, we received comments on two other aspects of the term "fossil fuel boilers." Some boilers burn solid fuels that are not fossil fuels, such as wood products. A number of industry commenters suggested that we should interpret the term "fossil fuel" as it was interpreted for the NO_X SIP Call, which treats as "fossil fuel" only those boilers that burn more than 50 percent fossil fuels, on an annual heat input basis. One commenter noted as an example that a boiler that has fossil fuel capacity greater than 250 million BTU/hr, but that only burns such fuels during startup and shutdown, should not be considered as a "fossil fuel fired boiler" for purposes of BART. Comments from the paper industry requested that EPA clarify in the guidelines that a multi-fuel boiler, with a capacity of greater than or equal to 250

[15] The NO_X SIP call requires a number of Eastern States to reduce the summertime emissions of NOx from sources within these States. 63 Fed. Reg. 57,356 (Oct. 27, 1998).

million Btu/hr, would not be considered BART-eligible if the boiler is subject to an enforceable limitation that would prohibit combustion at greater than 250 million BTU/hr.

Several commenters requested that we provide a specific interpretation for the term "secondary metal production facilities." The commenters requested that we formally define the term to include only those facilities within the Standard Industrial Classification (SIC) code 3341, "Secondary Smelting and Refining of Nonferrous Metals." Also, the commenters recommended that a "Secondary Metal Production Facility" be defined to mean one or more emission units that derive more than fifty percent of the metal(s) it produces from purchased scrap and dross.

Reproposal. After considering these comments, we are proposing some changes to the source category definitions.

We agree that the interpretation of "fossil-fuel boilers of more than 250 million BTU/hr heat input" is best read to include only those boilers at a power plant individually greater than 250 million BTU/hr. We agree with comments that this interpretation is a better reading of the category title than the alternative under which States would compare the cumulative boiler capacity over all boilers at a power plant to the 250 million BTU/hr cutoff. We do not agree with comments that any particular meaning can be taken

from the use of the plural word "boilers" in the category title. On the other hand, if a boiler smaller than 250 million BTU/hr is an integral part of an industrial process in a BART source category other than electric utilities -- for example, part of the process description at a chemical process plant -- then we believe that the boiler should be considered for controls as part of the BART source. The logic here is that a State should consider all emission points at an integral industrial process to be part of the BART-eligible source, so that later, when making the actual BART determination, the State would be certain that it has not prematurely ruled out any sensible control options for that process as a whole. That way the State will have retained as much discretion as possible to require control on all or part of an industrial process, on a case-by-case basis, considering all of the BART factors.

We do not believe that this interpretation is likely to have a substantial impact on the amount of BART emissions reductions achieved, because smaller boilers are generally less cost effective to control. Also, we believe that covering only individual utility boilers greater than 250 million BTU/hr may help address States' concerns over the implementation burden of the program.

We also agree with the two clarifications suggested by commenters relating to the term "fossil fuel." We propose to add a statement to the reproposed guidelines clarifying that "fossil fuel boilers" refers to boilers burning greater than 50 percent fossil fuels. We believe that this is a reasonable approach to interpreting the definition in the CAA. Also, we agree that enforceable operational limits for a multi-fuel boiler would be relevant to determining whether its "fossil fuel" capacity exceeds 250 million BTU/hr and that it would be reasonable for States to take such limitations into account. We are proposing to add this clarification to the BART guidelines.

We also wish to clarify that, consistent with other EPA rules, the definition of "steam electric plants of more than 250 million BTU/hr heat input" refers only to plants that generate electricity for sale. We are proposing to add this clarfication to the BART guidelines.

The reproposed guidelines do not take a position on the recommendations in the comments regarding "petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels." We believe that this question is largely moot given that these storage and transfer facilities are already subject to maximum achievable control technology (MACT) standards and in many cases stringent SIP regulations

related to ozone nonattainment. Regardless of the interpretation, we believe that it is unlikely that BART emissions limitations will require further controls.

We have reviewed comments suggesting that "secondary metal production facilities" may be interpreted to include only those facilities within SIC code 3341. We note that the term "secondary metal production" is broader than SIC code 3341. "Secondary metal production" would include secondary ferrous metals facilities such as secondary iron and steel facilities. On the other hand, SIC code 3341 includes only nonferrous metals facilities such as secondary copper, aluminum and lead facilities. We believe, however, that secondary iron and steel facilities are also included within the broad category "iron and steel mill plants." Accordingly, we are proposing that in identifying unique "secondary metal production" facilities that are not in any other BART category, States may identify those unique facilities based upon SIC code 3341.

Step 2: Identify the start-up dates of those emission units. The EPA interpretation of the terms "in existence" and "in operation."

Background. Step 2 in the proposed process for identifying BART-eligible sources would be to identify all emissions units within the listed categories which met the

two tests in the definitions in the regional haze rule: (1) the unit was "in existence on August 7, 1977 and (2) the unit began operation after August 7, 1962. Our visibility regulations define "in existence" and "in operation" in 40 CFR 51.301. We are proposing to retain the same definitions of "in existence" and "in operation" as we had included in the 2001 proposal. The term "in existence" includes sources not yet in operation where the owner or operator has not begun operating but which has:

-- obtained all necessary preconstruction approvals,

-- began on-site construction, or

-- entered into binding agreements or contractual obligations to begin construction of the facility within a reasonable time period.

In contrast, the term "in operation" includes only sources which are actually operating. In the reproposed BART guidelines, as in the previous proposal, we provide examples that illustrate the definitions in the regional haze rule.

We also wish to eliminate any confusion over power plants having boilers built both before 1962 and boilers built within the 1962-1977 time period. The BART guidelines would not require States to find that all boilers at a facility are BART-eligible if one or more boilers at the facility were put in place between the 1962 and 1977

dates. Under Step 2 of the proposed process for identifying BART-eligible sources, States would identify only those boilers that were put in place within the 1962-1977 time period. Only those boilers are carried over to Step 3, and only those boilers would be subject to a BART engineering analysis. We have included clarifying language in the reproposed guidelines on this issue.

Step 3: Compare the potential emissions from the units identified in steps 1 and 2 to the 250 ton/yr cutoff.

Background. Under the definition of "major stationary source" in CAA section 169A(g)(7) and the corresponding definition of "BART-eligible source" in the regional haze rule, BART applies only to a stationary source if it meets the category description and time window criteria described above, and only if it has the potential to emit 250 tons or more of "any pollutant."

There are two issues needing clarification with respect to the 250 tons per year threshold – one regarding what pollutants should be addressed, and two, the definition of stationary source.

What pollutants should I address?

2001 Proposed Rule. The 2001 proposal clarified that the 250 tons per year cutoff applies only to visibility-

impairing pollutants and included a list of pollutants to address: SO_2, NO_X, particulate matter, volatile organic compounds (VOC), and ammonia.

Comments. We received a number of comments related to the proposed inclusion of ammonia. One comment cited three reasons for not including ammonia on the list of visibility-impairing pollutants. First, the commenters believed that we had provided no scientific basis for suggesting that ammonia contributes to visibility impairment. Second, the commenters believed that we should not include ammonia on the list of pollutants without fully discussing the implications for other programs. For example, if ammonia became a "regulated pollutant" under the CAA based upon its inclusion in the guidance, the commenters believed that there would be implications for PSD and other program requirements. Third, the commenters believed that inclusion of ammonia would have the unintended consequence of discouraging selective catalytic reduction (SCR) as a control measure for NO_X, because of the unavoidable but small amount of "ammonia slip" that occurs in using SCR technology.

Reproposal. Based on the comments received on ammonia, and based on our current state of knowledge regarding the role of ammonia in $PM_{2.5}$ formation and the effects on

regional haze that would be expected from reductions in ammonia emissions, we believe that ammonia should not be included on the list at this time.

The following is a our rationale for proposing not to include ammonia. Ammonia is a gas and does not impair visibility directly. It can, however, react with acidic particles or gases in the air to form ammonium compounds. The most common acidic substances with which ammonia reacts are sulfuric acid and nitric acid, which in turn are formed from the reaction of SO2 and Nox with other substances in the atmosphere. Because ammonia generally forms visibility-impairing fine particles in the presence of acidic particles or gases, reductions in SO_2 and NO_x emissions will tend to reduce concentrations of ammonia-based particles in the air. In other words, to reduce ammonium fine particles, States may either require the reduction of ammonia or of SO_2 and NO_x emissions. In determining the proper approach to reducing ammonium, it is worth noting that as SO_2 and NO_x emissions are decreased, the marginal effectiveness of hypothetical ammonia controls will also tend to decrease.

The available ammonia emissions inventory is uncertain, although EPA and other organizations are pursuing improvements. Consequently, compared to the case for SO_2 and NO_x, the ability to identify opportunities for emissions

control and to quantify the effects of such actions in advance is limited.[16]

Because of the uncertainties in assessing the impact of ammonia emissions reductions on visibility, and because $PM_{2.5}$ will decrease due to SO_2 and NO_x controls, we are proposing not to include ammonia on the pollutant list at this time. We request comment on this determination.

Also included in the original pollutant list are VOCs. We propose that VOCs remain on the list.

Our understanding of the relationship between VOC emissions and the formation of $PM_{2.5}$ is rapidly evolving. We recognize that VOC emissions are most likely to contribute to particle formation, and thus to visibility impairment, in the presence of NOx. In rural areas, anthropogenic VOC emissions generally do not appear likely to be a significant contributor to $PM_{2.5}$ formation,[17] while VOC emissions in urban areas are likely to be a contributor to $PM_{2.5}$ formation. This is because VOC emissions are most often present with NO_x emissions in urban areas. In rural areas, by contrast, VOC emissions are not as often present with NO_x emissions.

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[16] For a more in-depth dicussion of the contribution of ammonia emissions from stationary sources to long-range transport of $PM_{2.5}$, see discussion in the proposed Interstate Air Quality Rule (IAQR): 69 FR 4566, January 30, 2004.

[17] See discussion in the NOx SIP call at 63 Fed. Reg. 57,356 (Oct. 27, 1998).

We also recognize that some specific uncertainties about VOCs remain. For example, only certain organic gases are precursors to $PM_{2.5}$, but available inventories cover VOC as an aggregate. It is therefore difficult to estimate emissions of the precursor compounds from these inventories. In addition, available models for estimating air quality from individual source emissions have more uncertainty in predicting ambient $PM_{2.5}$ changes from reductions in emissions of organic gases.

Finally, we recognize that many industrial sources and most mobile sources of organic gases have been subjected to VOC control requirements that have the effect of reducing emissions of the particular compounds that are $PM_{2.5}$ precursors. Given that fact, as well as the uncertainties about VOCs outlined above, we request comment on the level of discretion States should exercise in making BART determinations. Specifically, we request comment on whether States should focus greater control requirements on VOC emissions from BART sources in urban areas. We also request comment on the circumstances under which, in rural areas, for sources subject to BART, States may determine that BART would be no control for VOC.

What is a "stationary source?"

The definition of "building, structure or facility" in the regional haze rule is based, in part, upon grouping of pollutant-emitting activities by 2-digit category according to the SIC Manual. As in the NSR program, however, facilities that convey, store or otherwise assist in the production of the principal product, are considered to fall within the same industrial grouping as the primary facility. Despite this general rule, however, we would like to clarify that in practice, this so-called "support facility" test for BART is narrower than for other programs. We are proposing to add language to the guidelines noting that emission units at a plant, even if they are a "support facility" for purposes of other programs, would not be considered for BART-eligibility unless they were within one of the 26 listed source categories, and unless they were put in place within the 1962 to 1977 time period. For example, a mine, even if a "support facility" for a power plant, would not be considered for BART eligibility.

Step 4: Identify the emission units and pollutants that constitute the BART-eligible source.

Background. The final step in the identification of BART-eligible sources would be to use the results from the previous three steps to identify the universe of equipment that is BART-eligible. If the total allowable emissions

from the stationary source exceed a potential to emit of 250 tons per year for any individual visibility-impairing pollutant, then that collection of emissions units is a BART-eligible source. A BART analysis would be required for each visibility-impairing pollutant emitted from this collection of emissions units.

2001 Proposed Rule. The 2001 proposed guidelines included two examples to clarify this point. In the first example, a source has two emissions units having cumulative emissions exceeding 250 tons for SO_2, but not for NO_X and particulate matter (PM). For this example, we noted that BART would be required for all three pollutants. In the second example, the source has potential emissions that are less than 250 tons for each individual pollutant, but more than 250 tons from the sum over all pollutants. For this second example, we noted that the source would not be BART-eligible.

Reproposal. We received comments on the 2001 proposal suggesting that some BART-eligible sources emit visibility-impairing pollutants at levels that would make a de minimis contribution to regional haze. For example, a source may be BART-eligible because it emits 500 tons per year of one visibility-impairing pollutant, but it may also emit only one ton per year of another pollutant, the emission of which

would have little effect on regional emissions loadings and visibility impairment. A 1 ton/yr amount from a given BART-eligible source would likely represent a de minimis fraction of a total regional inventory.

As noted previously, we believe that once a source is BART-eligible according to the definition in CAA section 169A(g)(7), CAA section 169A(b)(2)(A) requires BART for "any" visibility-impairing pollutant regardless of the amount. Notwithstanding this apparent directive, we are proposing to provide the States with the flexibility to identify de minimis levels of pollutants at BART-eligible sources. We believe that it would be appropriate for States to have this flexibility once they have collected more information on the BART population. We also agree with comments that sources emitting pollutants at values considered de minimis under the PSD program could be de minimis for BART as well. Accordingly, the reproposal includes a provision that any de minimis values that States adopt should not be higher than the PSD levels: 40 tons per year for SO_2, NO_X and VOC, and 15 tons/yr for PM_{10}. We request comment on this provision, and on the idea of including de minimis values. Finally, if a commenter contends that ammonia should be included as a precursor to

$PM_{2.5}$, then the commenter should also comment on an appropriate de minimis value for ammonia.

C. How to determine which BART-eligible sources are subject to BART.

Background. Section 169A of the Act establishes a low triggering threshold for determining whether a BART eligible source is required to procure and install appropriate retrofit technology. States must determine whether BART eligible sources emit "any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in [a Class I] area." In the Regional Haze Rule, we interpreted these statutory provisions as requiring a State to find that a BART - eligible source is "reasonably anticipated to cause or contribute" to regional haze if it can be shown that the source emits pollutants within a geographic area from which pollutants can be emitted and transported downwind to a Class I area.[18]

Reproposal. As explained earlier, as part of the BART process, a State identifies and lists all "BART-eligible" sources. The State must then determine which of those BART-eligible sources may "emit any air pollutant which may reasonably be anticipated to cause or contribute to any

[18] 64 FR at 35740.

impairment of visibility in any [Class I] area." A source which fits this description is "subject to BART." This section explains our proposed process for determining which BART-eligible sources should be subject to BART. We request comment on all aspects of this process.

Determining Which Sources are reasonably anticipated to cause or contribute to visibility impairment (Sources subject to BART)

Three options are proposed. First, the State may choose to consider that all BART-eligible sources in the State are subject to BART (i.e., that none are exempt). As explained previously, we believe this conclusion is reasonable in light of currently available information [reference 1999 study]. We also believe that given American Corn Growers' emphasis on State's prerogatives in making BART determinations, we may lack the authority to deny this option to States.

Second, the State may choose to demonstrate, using a cumulative approach, that none of its BART-eligible sources contribute to visibility impairment. We propose that States should have the option of performing an analysis to show that the full group of BART-eligible sources in a State cumulatively do not cause or contribute to any visibility impairment in Class I areas. We request comment on the

types of analyses that could be used. For instance, one approach may be for States to use a regional scale grid model[19] to demonstrate that its BART-eligible sources do not cause or contribute to regional haze. We anticipate that in most, if not all States, the BART-eligible sources are likely to cause or contribute to visibility impairment in Class I areas. However, it is possible that, using regional scale modeling, a State could show that its BART sources do not collectively cause or contribute to visibility impairment. In such a case, a State could complete its BART analysis relatively quickly, without the need for investing in studies of source-specific contributions to regional haze. At this time, we are neither requiring nor encouraging all States to undertake a cumulative approach.

[19] For regional haze applications, regional scale modeling typically involves use of a photochemical grid model that is capable of simulating aerosol chemistry, transport, and deposition of airborne pollutants, including particulate matter and ozone. Regional scale air quality models are generally applied for geographic scales ranging from a multi-state to the continental scale. Such modeling may not be appropriate for all States, as regional models are most applicable to situations involving multiple BART-eligible sources. Because of the design and intended applications of grid models, they may not be appropriate for all BART assessments, so States should consult with the appropriate EPA Regional Office prior to carrying out any such modeling.

Finally, the State may choose to determine which sources are subject to BART through the use of an individual exemption process, described below.

Individualized Source Exemption Process

We are proposing to provide States with the option of determining which sources are subject to BART through the use of an individualized exemption process. For this option, we propose that States use an air quality model for an individual source to demonstrate no contribution to visibility impairment in a Class I area. We also request comment on alternative approaches that may be used in lieu of this approach, or as a first step in the process by which States may determine which BART-eligible sources, if any, to exempt.

For modeling an individual BART-eligible source located more than 50 km from a Class I area, we propose that an air quality model, such as CALPUFF, be used. The CALPUFF system consists of a diagnostic meteorological model, a gaussian puff dispersion model with algorithms for chemical transformation and complex terrain, and a post processor for calculating concentration fields and visibility impacts. CALPUFF was incorporated into the "Guideline on Air Quality Models" (the Guideline)(40 CFR Part 51, Appendix W) in April 2003.

Traditionally, EPA has used transport and diffusion modeling to predict the effect of directly emitted PM2.5 emissions on PM2.5 ambient concentrations. To simulate the effect of precursor pollutant emissions on PM2.5 concentrations requires air quality modeling that not only addresses transport and diffusion, but also chemical transformations. While we believe that it is technically feasible to model secondary PM formation, and there is at least one model, described above, which incorporates algorithms for estimating secondary transformation, we have not yet fully tested such modeling to determine whether its application is justified as a sole determinant of air quality impacts involving secondary transformation. However, where the statutory criteria for determining regulatory applicability involve relatively low thresholds, or where regulatory decisions involve considerations of multiple factors including, but not limited to, model results, we believe transport and diffusion models such as CALPUFF can be appropriate regulatory tools for evaluating air quality impacts involving secondary transformation. Consequently, we believe its use by States to assess whether a source is reasonably anticipated to cause or contribute to impairment of visibility in Class I areas is reasonable.

We are proposing that a CALPUFF assessment of an individual source be used as the preferred approach for determining whether a BART-eligible source may be exempt from BART. The CALPUFF assessment is specific to each source, taking into account the individual source's emission characteristics, location, and particular meteorological, topographical, and climatological conditions, any of which may have an impact on the transport of PM2.5 and its precursors. Thus, this approach may be more determinative than a non-modeling approach in determining which sources are not contributing to visibility impairment in a Class I area.

Results from the CALPUFF assessment would be used to determine the source's impact on visibility in a Class I area. If a source has an estimated impact on visibility that is lower than the established threshold (described in the section below), then the State may choose to exempt the source from further BART analysis. If the source's impact is equal to or greater than the threshold, the State would determine that the source is subject to BART.

The State or source would apply CALPUFF for source-receptor distances greater than 50 km, since CALPUFF is generally intended for use on scales from 50 km from a source to hundreds of kilometers. However as the modeling

domain increases in size, the requirements for experience in the application of CALPUFF becomes more demanding (e.g., in processing and quality assurance of the meteorology, in understanding the implications of the various model processing options). Therefore we propose that any application of CALPUFF for distances greater than 200 km requires development of a written modeling protocol describing the methods and procedures to be followed, and that the protocol be approved by the appropriate reviewing authority. For source-receptor distances less than 50 km, we are recommending that States use their discretion for determining visibility impacts giving consideration to both CALPUFF and other EPA-approved methods. For example, States would have the option of exempting these sources if air quality modeling results, using an appropriate local-scale model such as PLUVUEII[20], show that their emissions are below a level that would be reasonably anticipated to cause or contribute to visibility impairment in any Class I area.

Metric for Visibility Degradation

[20] PLUVUEII is a model used for estimating visual range reduction and atmospheric discoloration caused by plumes resulting from the emissions of particles, nitrogen oxides, and sulfur oxides from a single source. The model predicts the transport, dispersion, chemical reactions, optical effects and surface deposition of point or area source emissions. It is available at http://www.epa.gov/scram001/tt22.htm#pluvue.

In providing an individual source exemption option, a metric is needed to assess a source's contribution to visibility degradation. The metric we are using in the regional haze rule is the deciview, which is derived directly from light extinction, an index commonly used to measure visibility degradation.

As outlined in the 1999 Regional Haze rule (64 FR 35725-35727, July 1, 1999), a one deciview change in haziness is a small but noticeable change in haziness under most circumstances when viewing scenes in a Class I area. The deciview can be used to express changes in visibility impairment that correspond to human perception in a linear, one for one, manner. The deciview concept was introduced in 1994 in an article appearing in a peer-reviewed journal (Pitchford and Malm, *Atmospheric Environment, 28* (5), 1994). We believe that visible changes of less than one deciview are likely to be perceptible in some cases, especially where the scene being viewed is highly sensitive to small amounts of pollution. We acknowledge that for other types of scenes, with other site-specific conditions, a change of more than one deciview might be required in order for the change to be perceptible.

Threshold levels

A 1991 report from the National Acid Precipitation Assessment Program (NAPAP) states that "changes in light extinction of 5% will evoke a just noticeable change in most landscapes."[21] Converting a 5 percent change in light extinction to a change in deciviews yields a change of approximately 0.5 deciviews. This is a natural breakpoint at which to set the exemption level, since visibility degradation may begin to be recognized by a human observer at this extinction level.[22] Thus, we are proposing a 0.5 deciview change as the threshold for determining that an individual source is causing visibility impairment at a Class I area. This level would be calculated by measuring the air quality screening modeling results for an individual source against natural visibility conditions. Natural visibility conditions are those conditions that are estimated to exist in a given

[21] National Acid Precipitation Assessment Program (NAPAP). Acid Deposition: State of Science and Technology. Report 24, Visibility: Existing and Historical Conditions – Causes and Effects, Washington, DC, 1991. See Appendix D, p. 24-D2.

[22] Ibid.

Class I area in the absence of human-caused impairment [23]. We believe that measuring against natural visibility conditions is appropriate because the ultimate goal of the regional haze program is a return to natural conditions. Additionally, regional haze strategies are developed to make reasonable progress towards this goal, and visibility degradation and improvement are appropriately measured against natural conditions.

We also request comment on using a threshold that is more or less than 0.5 deciviews. Given uncertainties over the deciview change that is perceptible, and the modeling of a source's contribution to haze in a Class I area, a different threshold may be appropriate. Furthermore, we recognize that there may be situations where impacts from more than one BART-eligible source, when taken together, would adversely affect visibility at a particular Class I area even though the impact of each individual source would be below the visibility threshold. In this case, there would be a noticeable impact on visibility from BART-eligible sources because of the contribution of multiple sources, yet impacts from an individual source alone would

[23] U.S. EPA. September 2003. Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule. http://www.epa.gov/ttncaaa1/t1/memoranda/rh_envcurhr_gd.pdf This document has estimates of default conditions as well as measures to develop refined estimates of natural conditions.

not be noticeable. Given the statutory language that a source "which may reasonably be anticipated to cause *or contribute* to visibility impairment" is subject to BART,[24] a lower threshold may be appropriate as it would effectuate Congress's intent that the BART applicability test not establish a high hurdle. We accordingly request comment on what threshold would be appropriate to address these issues.

Alternative Approaches to the Assessment Using CALPUFF

The CALPUFF assessment described previously can be a time-consuming and data-intensive approach; we are concerned about the resource burdens this might pose for States and sources. Therefore, we are also considering alternative approaches that would be credible and require fewer resources. These approaches could serve as a first step in the process for determining whether a source contributes to visibility impairment in a Class I area. We are considering several alternative approaches for making this exemption determination. These approaches, in no particular order, include: 1) a simpler screening assessment using CALPUFF 2) look-up tables (i.e., tables that require emissions and distance information for making an exemption determination), 3) source ranking, and 4) using Emissions divided by Distance, known as the Q/D method.

[24] CAA § 169A(b)(2)(emphasis added).

Each approach has strengths and limitations. We request comment on all of these approaches. A more complete and detailed explanation of the four alternative approaches, including examples, is available in a memo to the docket.[25]

A Screening Assessment Using CALPUFF

We are proposing that CALPUFF be run in a screening assessment to evaluate individual sources. This approach would be less data- and time-intensive than running CALPUFF in the assessment described previously due to greatly simplified preparation and processing of input data. This simpler screening assessment utilizes source and receptor location, as well as meteorological, topographical and climatological conditions from a regionally-specific profile. However, like the assessment described previously, this screening assessment also utilizes the individual source's particular emission characteristics. The table below illustrates the differences between the screening assessment of the kind described previously as the preferred approach and the simpler, more generalized screening assessment.

Type	CALPUFF Assessment	CALPUFF Screening Assessment

[25] Memorandum to the docket: *Summary of Alternative Approaches for Individual Source BART exemptions*, Todd Hawes, March 12, 2004. Docket No. OAR-2002-0076.

Model used	CALPUFF	CALPUFF
Input meteorology	process 5 years of location-specific, meteorology data	representative met location (data already processed)
Terrain included	site-specific terrain included	no (assumed flat)
Source-Receptor distances	Source to Class I area receptor	Source to Class I area receptor
Location of Visibility impact	Maximum impact at receptor using appropriate distance and direction from source	Maximum impact in any direction at source-receptor distance

Results from this screening assessment would be used to determine the source's impact on visibility in a Class I area. If a source has an estimated impact on visibility that is lower than the established threshold, the State may choose to exempt the source from further BART analysis. If the source's impact is equal to or greater than the threshold, the State would determine that the source is subject to BART. The source would then have the option of performing the screening assessment described previously as the preferred approach to demonstrate that its visibility

impacts do not exceed the threshold level and that it qualifies for exemption.

We request comment on the use of this approach as an assessment of individual source impacts on visibility.

Look-Up Tables Developed From Screening-Level Air Quality Modeling

For even greater ease of use, look-up tables could be developed for application in the individual source exemption process. Under this approach, a State or source would use a look-up table developed by EPA to determine the source's predicted impact on a Class I area and, consequently, its exemption status. The State or source would use the source's emissions information and distance from a Class I area to determine if it is exempt from BART.

The look-up tables could be developed by first using CALPUFF in screening assessments to estimate levels of visibility impairment (in deciviews) associated with different combinations of distance to a Class I area and tons per year of emissions. A table would show the distance from the representative BART-eligible source to a Class I area and the associated allowable emissions of visibility-impairing pollutants (e.g., SO_2, NOx, and direct PM2.5) at that distance that will yield a modeled impact of 0.5 deciviews. A State or source could "look up" a source's distance and emission combination and compare its allowable

emissions of visibility-impairing pollutants to the table to make the BART exemption determination for the source.

If a BART-eligible source has emissions of visibility-impairing pollutants that are less than the emissions shown on the table for sources that are the same distance as the source from a Class I area, the State could exempt the source from BART. Alternatively, if a BART-eligible source's emissions of visibility-impairing pollutants are greater than the emissions shown on the table, the State could determine that the source is subject to BART. The source would have the option of running the CALPUFF model, or other EPA-approved model, to demonstrate that its visibility impacts do not exceed a change in light extinction of 0.5 deciviews and that it qualifies for exemption.

An example of a look-up table for EGUs is shown in the technical memo to the docket.[26] A more in-depth discussion of the look-up table development is given in the *Summary of Technical Analysis for the Proposed Rule*[27]. The advantages of the look-up tables are that they are easy to use and no modeling would be required. However, they may be too

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[26] Ibid.

[27] *Summary of Technical Analyses for the Proposed Rule*, Mark Evangelista, U.S. Environmental Protection Agency, April 12, 2004, Docket No. OAR-2002-0076.

general to represent all source categories. For instance, the source category in the example is for EGUs. Another source category will likely have entirely different source and emissions characteristics which may require development of a separate look-up table. Several sets of look-up tables requiring several sets of assumptions would be cumbersome and complex.

Source Ranking

A source ranking approach is another possible option for determining whether an individual source may be exempted from BART. This approach would require a separate analysis for each Class I area.

First, a State would determine the universe of BART-eligible sources within a prescribed distance from the Class I area. Then, using a pre-determined common metric, such as total emissions of visibility impairing pollutants at each source, a State would sort the sources in descending order according to the metric and determine the cumulative frequency (a running total or percentage) of the ranked sources according to the chosen metric. The sources that fall below a pre-determined frequency level could be presumed to be insignificant contributors, and the State could exempt them from BART. A source that falls above the pre-determined frequency level would be subject to BART. The source would have the option of running the CALPUFF

screening model, or other EPA-approved model, to demonstrate that its visibility impacts do not exceed the threshold level and that it qualifies for exemption. A more complete and detailed explanation of this approach, including an example, is available in a memo to the docket.[28]

We request comment on the source ranking approach and on an appropriate frequency level for determining individual source exemption.

Emissions divided by Distance(Q/D) Method

Another option for exemption for which we request comment is a non-modeling based approach identified as Q/D (with "Q" being allowable emissions, in tons per year, and "D" representing the the distance, in km, to the nearest Class I area, multiplied by a prescribed constant). The method, originally developed by the North Carolina Department of Environment and Natural Resources, is a tool to eliminate distant, insignificant emission sources from ambient assessments submitted under the Prevention of Significant Deterioration (PSD) program[29]. The Q/D method

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[28] Memorandum to the docket: *Summary of Alternative Approaches for Individual Source BART exemptions*, Todd Hawes, March 12, 2004. Docket No. OAR-2002-0076.

[29] *A Screening Method for PSD,* Memorandum from Bruce P. Miller, U.S. Environmental Protection Agency, to Eldewins Haynes, North Carolina Department of Natural Resources and Community Development, September 12, 1985, Docket No. OAR-2002-0076.

determines a source to be insignificant if the allowable emissions in tons per year (Q) divided by a constant times the distance in kilometers(D) is greater than a value of 1. For example, North Carolina uses a constant of 20, which was determined empirically. Therefore, a source could be considered insignificant if its emissions divided by 20 times its distance, in km, from the nearest Class I area is greater than 1. For this application for determining exemption from BART, the combined emissions of SO2, NOx, and PM2.5 of a BART-eligible unit could be divided by the distance to the nearest Class I area. If that quotient is less than 1, the source would not be subject to BART. If a source is not found to be exempt under this approach, the CALPUFF screening analysis could still be used for an exemption determination.

We request comment on the Q/D method, including comment on what value for the constant would be appropriate and why.

D. The BART Determination Process

Background. Section 169A(g)(7) of the CAA requires States to consider the following factors in making BART determinations: (1) the costs of compliance, (2) the energy and nonair quality environmental impacts of compliance, (3) any existing pollution control technology in use at the source, (4) the remaining useful life of the source, and (5) the degree of improvement in visibility which may reasonably

be anticipated to result from the use of such technology. The D.C. Circuit's decision did not address the first four steps of the BART determination (the "engineering analysis"), which are discussed in detail in the guideline. The court's opinion did address the final step, mandating that the degree of improvement in visibility that would result from imposition of BART on each individual source be taken into account in determining BART.

2001 Proposed Rule. Section IV of the 2001 proposed BART guidelines was entitled "Engineering Analysis of BART Options." The purpose of this section was to address the requirement in 40 CFR 51.308(e)(1)(ii)(B) in the regional haze rule that States identify the "best system of continuous emissions control technology" taking into account "the technology available, the costs of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment in use at the source, and the remaining useful life of the source." Thus, in the 2001 proposed guidelines, section IV addressed four of the five statutory factors to be considered in the BART determination. Section V, "Consideration of Visibility Impacts," contained a consolidated discussion, addressing visibility considerations in deciding both which BART-eligible sources should be subject to BART, as well as the fifth statutory factor – assessing the degree of visibility

improvement which may reasonably be anticipated to result from control technology.

Reproposal. In the proposed guidelines, we are adding a fifth step to the Engineering Analysis. The five proposed steps in the engineering analysis are as follows:

1 -- Identify all available retrofit control technologies,

2 -- Eliminate technically infeasible options,

3 -- Rank remaining control technologies by control effectiveness,

4 -- Evaluate impacts and document the results, and

5 -- Evaluate the visibility impacts of applying controls.

In this portion of the preamble, we discuss a number of other issues.

1. How does BART relate to maximum achievable control technology (MACT) standards developed under CAA section 112?

In the 2001 proposed rule, we did not provide any discussion of the relationship of BART controls to MACT requirements. A number of commenters suggested that there are cases where additional controls beyond MACT are not warranted. We believe that for VOC and PM sources subject to MACT standards, States may streamline the BART analysis by including a discussion of the MACT controls and whether

any major new technologies have been developed subsequent to the MACT standards.

We believe that there are many sources, particularly sources of VOC and PM emissions, that are well-controlled because they are regulated by the MACT standards. Examples of MACT sources which effectively control VOC and PM emissions include (among others) secondary lead facilities, organic chemical plants subject to the hazardous organic national emissions standard for hazardous air pollutants (HON), pharmaceutical production facilities, and equipment leaks and wastewater operations at petroleum refineries. (We believe this is also true for emissions standards developed for municipal waste incinerators under the CAA amendments of 1990.) In many cases, it will be unlikely that States will identify emission controls more stringent than the MACT standards without identifying control options that would cost many thousands of dollars per ton. Unless there are new technologies subsequent to the MACT standards which would lead to cost-effective increases in the level of control, we believe that States may conclude that a source meeting MACT standards in these cases will satisfy the BART requirement.

The reproposed guidelines have been revised to include the discussion of MACT standards. The reproposed guidelines would require that a State identify any source where they

are relying on MACT standards to achieve a BART level of control. Moreover, the reproposed guidelines would require a State to provide the public with a discussion of its decision to rely on a MACT standard as BART for a given source and pollutant.

2. How do I identify all available retrofit emission control techniques?

2001 Proposed Rule. In the 2001 proposed guidelines, we discussed a number of concepts regarding the identification of "all available" retrofit technologies. This discussion noted that "all" means a reasonable set of technologies. For example, the guidelines noted that it is not necessary to list all permutations of available control levels that exist for a given technology -- the list is complete if it includes the maximum level of control each technology is capable of achieving.

The proposed guidelines made clear that the list of "available" technologies should reflect a comprehensive review, including technologies applied outside of the United States, and including technologies that may have only been applied previously to new sources. The proposed guidelines noted that control measures could include add-on control devices, switching to inherently lower-emitting processes, or a combination of the two. The proposed guidelines stated that BART did not require a source to undertake a complete

replacement of the source with a lower-emitting design. The guidelines included a list of references which are available for identifying possible control measures, noting that the list was not necessarily all-inclusive. Finally, this passage of the proposed guidelines noted that sources with existing control devices in place must consider any available options for improving the performance of those control devices.

Comments. We received a few comments on this part of the 2001 proposal. Some comments recommended that controls typically used at new sources, such as those representing best available control technology (BACT) or lowest acheiveable emission rate (LAER), would be more stringent than BART should require. One commenter representing a utility company noted that the requirement to consider all controls, including those outside of the United States, could be burdensome to States. This commenter recommended that the analysis be limited to a "reasonable range" of technologies.

Reproposal. We are proposing to amend the language in the BART guidelines on the topic of identification of "all" retrofit technologies. We do not believe that it is necessary that States conduct detailed evaluations of control measures that are very unlikely to be selected as BART. Accordingly, we believe that, in order to reduce the

administrative burden, States may consider developing screening levels based on the "cost effectiveness" of emissions control (i.e. the cost of emission control technology per each ton of emissions reduced). We view such dollar/ton screening levels as criteria for rejecting control options for consideration on the basis of costs and not as the sole basis for a BART decision. The overall BART decision must be made in consideration of all of the statutory factors.

We also recognize that there may be cases where States may wish to consider control measures above whatever screening levels they may establish. For example, the effect of nitrate particles varies and there are a few areas where nitrates are likely to be more important than for the rest of the nation. Also, a few sources may emit levels of NOx higher than the presumptive control level of 0.2 lbs/MMBtu, even after consideration of all available control technologies (such as low NOx burners and other combustion controls) below any established screening levels (see discussion in section III. 6. below).

Within the above constraints, we believe that the BART analysis should begin with a comprehensive review of those technologies that could be used to reduce emissions from a given BART-eligible source. We note that this analysis may be limited to a reasonable range of options and

need not consider all permutations of control levels for a given technology.

In this proposal, we are seeking comment on two alternative approaches for conducting a BART engineering analysis. We prefer the first approach. Under this first alternative, the BART analysis would be very similar to the BACT review as described in the New Source Review Workshop Manual (Draft, October 1990). Consistent with the Workshop Manual, the BART engineering analysis would be a process which provides that all available control technologies be ranked in descending order of control effectiveness. Under this option, you must first examine the most stringent alternative. That alternative is selected as the "best" unless you demonstrate and document that the alternative cannot be justified based upon technical considerations, costs, energy impacts, and non-air quality environmental impacts. If you eliminate the most stringent technology in this fashion, you then consider the next most stringent alternative, and so on.

We also request comment on an alternative decision-making approach that would not necessarily begin with an evaluation of the most stringent control option. Under this approach, you would have more choices in the way you structure your BART analysis. For example, you could choose to begin the BART determination process by evaluating the

least stringent technically feasible control option or an intermediate control option drawn from the range of technically feasible control alternatives. Under this approach, you would then consider the additional emission reductions, costs, and other effects (if any) of successively more stringent control options. Under such an approach, you would still be required to (1) display and rank all of the options in order of control effectiveness, including the most stringent control option, and to identify the average and incremental costs of each option; (2) consider the energy and non-air quality environmental impacts of each option; and (3) provide a justification for adopting the control technology that you select as the "best" level of control, including an explanation as to why you rejected other more stringent control technologies. While both approaches require essentially the same parameters and analyses, we prefer the first approach described above, because we believe it may be more straightforward to implement than the alternative and would tend to give more thorough consideration to stringent control alternatives.

3. Consideration of nonair quality environmental impacts.

2001 Proposed Rule. The 2001 proposal called for States to address environmental impacts other than air quality, and energy impacts, due to controlling emissions of

the pollutant in question. Such environmental impacts include solid or hazardous waste generation and discharges of polluted water from a control device.

The proposed guidelines contained a number of examples of the types of nonair quality impacts that should be considered. The guidelines noted that States should take into account that there are beneficial nonair quality environmental impacts that could result from control measures. For example, control measures under consideration for BART may reduce acid deposition.

The guidelines clarified that the procedure for conducting an analysis of nonair quality environmental impacts should be based on a consideration of site-specific circumstances. Under the proposed guidelines, in Step 3 it would not be necessary to perform this analysis of environmental impacts for the entire list of technologies, if a State proposes to adopt the most stringent alternative. Instead, the analysis need only address those control alternatives with any significant or unusual environmental impacts that have the potential to affect the selection or elimination of a control alternative.

Comments. One utility commenter requested that EPA better clarify the BART determination factors other than costs of compliance. A State commenter wanted EPA to explain the bounds of a nonair quality review on

environmental effects, citing possible requirements to assess statewide water quality standards as an example of how broad and open-ended the analysis could be. Several environmental groups asked us to be more specific with respect to consideration of the beneficial nonair quality related effects of implementing emissions controls as part of the BART determination. The comments pointed out that acid and total nitrogen loading affects water quality in rivers, lakes, coastal waters and also affects soil chemistry. These comments point out that these impacts can be magnified at higher elevations due to direct cloud deposition. Acidic deposition and increased nitrogen loading appear to be linked to damage to forested ecosystems, such as declines in sensitive tree species, death of aquatic organisms and poor water quality. Some comments pointed out that even a qualitative assessment of these beneficial impacts can inform the BART determination and should be part of the process. Comments from several Midwestern States requested that the guidelines provide that incompatibility with control for another pollutant, such as mercury, should be a criterion for rejecting (or modifying) a BART control option.

Reproposal. The Guidelines discussion of energy impacts remains the same as the discussion in the 2001 proposal. For nonair quality impacts, we agree that more

clarification is needed. We do not see this factor as requiring an open-ended analysis of every affected nonair resource. We also do agree with commenters that the nonair quality assessment should include the beneficial effects of control options being considered in the BART determination. Both quantitative and qualitative information can be used in this assessment. We do not view this factor as requiring States to conduct an analysis of every possibly affected nonair quality effect, but rather as requiring States to consider clearly documented nonair quality effects. Moreover, we expect the Federal Land Managers to provide available information for assessing the ability of emission controls to reduce impacts on forests, soils, native species and other resources through the consultation requirement for regional haze SIP development contained in 40 CFR 51.308(i)(2)of the regional haze rule. This information should identify the specific nonair quality effects to consider and specific criteria for evaluating their significance, so that States are not faced with open-ended analyses.

States should also consider other information on beneficial effects which include specific data on nonair quality concerns made available to them, such as through public comments, in making the BART determination. We also agree with the Midwestern States comments that when controls

for a visibility-impairing pollutant are shown to be incompatible with control of another air pollutant, this may create air quality or nonair quality related environmental concerns that should be taken into account in comparing control alternatives. At the same time, we note that it is important to evaluate fully and document the magnitude and nature of the concern identified. The mere presence of an actual or theoretical concern should not be cited as the reason for eliminating an option. Also, once a source-specific BART determination is made for two regulated pollutants, if the result is two different BART technologies that do not work well together, a State could then substitute a different technology or combination of technologies that achieve at least the same emissions reductions for each pollutant.

4. Evaluating the significance of the costs of control.

2001 Proposed Rule. The 2001 proposed rule requested comment on evaluating the significance of the costs of compliance – specifically, on whether the guidelines should contain specific criteria, and on whether such criteria would improve implementation of the BART requirement.

Comments. A few industry commenters, and two State commenters, suggested that specific criteria for evaluating cost, or for comparing cost with visibility benefits, should be included, but did not suggest what those specific

criteria should be. Several environmental groups and environmental consulting firms suggested that specific cost criteria would not improve BART determinations, because BART sources and source categories vary considerably.

Reproposal. We are proposing a sequential process for conducting the impacts analysis that includes a complete evaluation of the costs of control. For evaluating the significance of the costs of control, we continue to request comment on whether such criteria would improve implementation of the BART requirement. If commenters believe such criteria are warranted, we request comment on what criteria would be appropriate. For example, we request comment on whether it would be helpful to include criteria such as those in the work of the Western Regional Air Partnership (WRAP),[30] wherein a system is described which views as "low cost" those controls with an average cost effectiveness below $500/ton, as "moderate" those controls with an average cost effectiveness between $500 to $3000 per ton, and as "high" those controls with an average cost effectiveness greater than $3000 per ton.

5. Sulfur dioxide controls for utility boilers.

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[30] Technical Support Documentation. Voluntary Emissions Reduction Program for Major Industrial Sources of Sulfur Dioxide in Nine Western States and a Backstop Market Trading Program. An Annex to the Report of the Grand Canyon Visibility Transport Commission. Section 6A.

2001 Proposed Rule. In the 2001 proposed guidelines, we cited a report by EPA's Office of Research and Development to support a presumption that, for utility boilers where there is no existing control technology in place, a 90-95 percent reduction in SO_2 is generally cost effective to achieve using scrubbers. This document is entitled Controlling SO_2 Emissions: A Review of Technologies, EPA-600/R-00-093. We also provided, in a memorandum to the docket for the proposal, calculations showing scrubber costs of about $200-$1000 per ton of SO_2 removed for the 90-95 percent control levels. The proposal made clear that we would allow States to consider case-by-case variations (for example, type of fuel used, severe space limitations, and presence of existing control equipment) that could affect the costs of applying retrofit controls. We requested comments on whether the 90-95 percent presumption is appropriate or whether another presumption should be established instead.

Comments. We received many comments on the 90-95% control presumption for utility boilers.

Many utility industry comments were critical of the presumptive level. These comments did not address whether the 90-95 percent level was achievable, nor did they address EPA's cost calculations. Instead, the comments were generally critical of the provision as a Federal mandate

that would reduce State flexibility in making BART determinations.

Comments from States in the Northeast and from environmental groups were generally supportive of the presumptive levels of control. Some of these comments expressed concerns that the technology may advance to greater levels of achievable control before BART decisions are made. Accordingly, those comments recommended that we add language to the final guidelines to ensure that the 90-95 percent level would not be considered to represent the maximum level of control that States could consider.

Comments from several Midwestern States recommended that the presumptive level be expressed as a performance level, for example as a pounds/million BTU level, rather than as a percent control level. These comments expressed concerns that facilities which have already reduced emissions for purposes of the acid rain program could inappropriately be treated in the same way as those that had not yet reduced their emissions.

Reproposal. In today's action reproposing the BART guidelines, we are proposing a level of SO_2 control that is generally achievable for electric generating units (EGU)s of a certain size. Specifically, we are proposing that in establishing BART emission limits, States, as a general matter, must require owners and operators of greater than

750 MW power plants to meet specific control levels of either 95 percent control, or controls in the range of .1 to .15 lbs/MMBtu, on each EGU greater than 250 MW. We are proposing to establish such a default requirement based on the consideration of certain factors discussed below. Although we believe that this level of control is likely appropriate for all greater than 750 MW power plants subject to BART, a State may establish a different level of control if the State can demonstrate that an alternative determination is justified based on a consideration of the evidence before it. In addition, for power plants 750 MW and less in size, we are establishing a rebuttable presumption that States should require any EGU between 250 MW and 750 MW in size to meet these same control levels. This presumption would apply unless the State has persuasive evidence that an alternative determination is justified. Our intent is that it should be extrememly difficult to justify a BART determination less than the default control level for a plant greater than 750 MW, and just slightly less difficult for a plant 750 MW or smaller.

As stated earlier, by specifically singling out, in section 169A of the CAA, a specific set of existing sources to be addressed by the States (or the Administrator) in their plans, Congress clearly signaled through the BART requirements a particular concern that the States and EPA

focus on pollution from these sources. The CAA gives the States the authority "to decide which sources impair visibility and what BART controls should apply to those sources." *American Corn Growers v. EPA*, 291 F.3d at 8. However, section 169A further states that "[i]n the case of a fossil-fuel fired generating plant having a total generating capacity in excess of 750 MW, the [BART] emission limitations . . . shall be determined pursuant to guidelines" issued by EPA. This language, and the legislative history, indicate that although Congress generally left the determination of BART emission limits to the States (subject to the requirements of EPA's implementing regulations), it intended EPA to take a more active role in the process of establishing BART emission limits for large power plants. Furthermore, the legislative history from 1977 makes clear that Congress understood 25 years ago that a specific type of SO_2 controls (flue gas desulfurization (FGD) or "scrubbers") was readily available for these plants. We believe it is consistent with Congress' mandate that EPA establish guidelines for determining BART emission limitations for this category of sources and, given the availability and low cost of controls for these sources, for EPA to require that these power plants meet specific control levels, unless the State has

persuasive evidence that an alternative determination is justified.

In addition to the statutory language and the legislative history, we believe that requiring specific BART emission limitations for greater than 750 MW power plants in most cases is supported by sound policy considerations and a careful review of the information we have regarding these sources' emissions, costs of control, and impacts on visibility. First, sulfates resulting from SO_2 emissions are an important contributor to visibility impairment nationwide, and preliminary data that we have suggests that the estimated 28 BART-eligible EGUs located at 750 MW power plants emit over one million tons of SO_2 per year, or, on an individual EGU basis, an average of over 39,000 tons of SO_2 per year.[31] In other words, these sources are some of the largest emitters of SO_2 in the United States.

Second, as discussed below, highly effective control technologies (i.e., FGD) are available to control SO_2 emissions from utility boilers; the average costs per ton of emissions removed from such EGUs (usually between $200 and

[31] See http://www.epa.gov/airmarkets/epa-ipm/results2003.html. This is the Table of Parsed Run Data for EPA Modeling Applications Using IPM. Most of the 750 MW power plants addressed by this provision contain one or more 250 MW boilers constructed between 1962 and 1977. Thus, on average, most (each) plant emits far more than 39,000 tons per year of SO_2 from units covered by the BART requirement.

$1300 per ton) are well within the levels considered for application under many CAA regulatory programs. Based on the cost models in the Controlling SO_2 Emissions report,[32] for example, it appears that, where there is no existing control technology in place, 95 percent control can generally be achieved at EGUs using coal with relatively high sulfur content at cost-effectiveness values cited above.[33] Similarly, for EGUs using relatively low sulfur coal, reducing SO_2 emission levels to 0.1 to 0.15 lbs/MMBtu is also cost-effective as compared to other measures to reduce pollution, falling within the same range of cost effectiveness as that discussed above.[34]

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[32] Documentation of the presumption that 90-95 percent control is achievable is contained in a recent report entitled Controlling SO_2 Emissions: A Review of Technologies, EPA-600/R-00-093, available on the internet at http://www.epa.gov/ORD/WebPubs/so2. This report summarizes percentage controls for FGD systems worldwide, provides detailed methods for evaluating costs, and explains the reasons why costs have been decreasing with time.

[33] We have used the cost models in the Controlling SO_2 Emissions report to calculate cost-effectiveness ($/ton) estimates for FGD technologies for a number of example cases. (See note to docket A-2000-28 from Tim Smith, EPA/OAQPS, December 29, 2000). We also believe it is reasonable to expect States to consider the maximum level that these scrubbers are capable of achieving. Thus, for example, we believe that a scrubber installation which allowed part of the flue gas stream to bypass the scrubber and remain uncontrolled, or be controlled to a lesser degree, should not be considered to represent BART.

[34] Ibid.

Third, we believe that individual BART-eligible EGUs subject to this provision contribute substantially to visibility impairment in Class I areas. For example, based on modeling runs using CALPUFF for a typical 250 MW EGU, modeling results have shown visibility effects greater than 7 deciviews at Class I areas at distances of 200 km.[35] At 90 percent control for a 250 MW source, the maximum modeled impact would improve to 1.3 deciviews. A 95 percent control level would yield further substantial improvement in visibility to just under 1 deciview. Note however that even at a 95 percent control level, just one source can have maximum impacts above the threshold of the visible range (0.5 deciviews) and may still impair visibility at the nearest Class I area.

Therefore considering the range of the costs of compliance for these sources and the degree of improvement in visibility that may be anticipated from the use of the highly effective control technologies that are available for these sources, we have determined that it is appropriate to establish in these guidelines specific control levels for States to use in determining BART for these sources. We are proposing that as a general matter, States must find that

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[35] *Summary of Technical Analyses for the Proposed Rule*, Mark Evangelista, U.S. Environmental Protection Agency, April 12, 2004, Docket No. OAR-2002-0076.

for EGUs greater than 250 MW at 750 MW power plants subject to BART, the appropriate BART emission limitation reflects either at least 95 percent control, or a comparable performance level of 0.1 to 0.15 lbs of SO_2 per million BTU range, unless the State has persuasive evidence (as discussed below) that an alternative determination is justified.

We are proposing a performance level as an alternative to a percentage reduction to account for the difference between coal with higher, as opposed to lower, sulfur content. As noted, we received comments on the proposed 2001 BART guidelines that the control technology presumption should be expressed as a performance level (lb/million BTU) rather than as a percentage control. In response to these comments, we are taking into account the fact that the actual level of performance after application of scrubber technologies will be influenced not only by the percentage control, but also by the sulfur content of the fuel used.

As discussed above, we believe that this proposal of 95 percent control, or a comparable performance level of 0.1 to 0.15 lbs of SO_2 per million BTU, represents controls that are achievable at reasonable cost-effectiveness levels. These control levels are functionally equivalent to the 90-95% control levels contained in the 2001 proposal. However the choice between 95 percent and an emission rate in the range

of 0.1 to 0.15 lbs/MMBtu better reflects a recognition of the differences in overall emissions that are achievable by using different coal types. For example, coal boilers in the West generally use lower sulfur content Western coals. The low end of the range in the 2001 proposal recognized that dry scrubbers employed in the West would have difficulty achieving a 95% level of control. However, the 2001 proposal did not explicitly recognize that 90% control in the West may actually represent a lower overall sulfur emission rate, given the lower sulfur content in the coal used. Conversely, wet scrubbers employed in the East could easily get 95% control or more. But because Eastern coal boilers generally use higher sulfur content Eastern coals, the overall sulfur emission rate might still remain higher in the East than in the West.

While emission rates vary by both sulfur content and scrubber type, the following table illustrates demonstrated control efficiencies for the West and East.

Emission Rates and Scrubber Control Percentages for Bituminous Coal

WEST				**EAST**		
% Sulfur Coal	Scrubber	lb SO_2/MMBtu		% Sulfur Coal	Scrubber	lb SO_2/MMBtu

0.7%	90%	0.10	2.5%	95%	0.18
1.0%	90%	0.15	2.5 %	96%	0.15

Assume: 13,000 lb Coal/Btu and 1 MW = 10.5 x 10^6 Btu/hr, from AP-42[36]

We request comment on whether these control levels are appropriate, or whether different levels should be established instead. We also request comment on which specific target number in the 0.1 to 0.15 lb/million BTU range should be considered to represent BART, especially for those EGUs that cannot achieve 95 percent control. For whatever target levels commenters wish to offer, they should provide documentation supporting the basis for their proposals.

Although we are proposing to establish a requirement that these control levels are BART for 250 MW EGUs at greater than 750 MW power plants that are subject to BART, States would still have the ability to take into account any unique circumstances that support an alternative determination. The CAA identifies five factors that the

[36] *Examples of SO2 control calculations for various sulfur contents in bituminous coal*, Note from Todd Hawes to Docket OAR-2002-0076, April 8, 2004.

States generally must consider in making a BART determination. CAA section 169A(g)(2). If, in any specific case, the State finds that these factors demonstrate that the presumed control levels do not represent BART, we propose that the State may make a reasoned determination as to the appropriate level of control. If a State chooses to deviate from the required level, it must provide documentation supporting and explaining its determination.

Nevertheless, we believe that it would be extremely difficult to argue, in any instance, that the above control levels should not be determined to be BART for these units at these large power plants. For the reasons outlined above, we believe that only in extremely rare and unique circumstances could a State determine that such controls are not cost effective, or that the visibility impact of such a plant does not warrant such controls. We also believe that only under extreme circumstances would consideration of any of the remaining three factors (energy and nonair quality environmental impacts, existing pollution control technology in place, and remaining useful life of the source) suggest that these control levels are too stringent to be determined to be BART. For example, a source might show proof that it will be shutting down within the next 5 years. Or a source might be located in a remote desert area, where use of water for FGD would deplete an aquifer. As discussed above,

however, in the vast majority of cases, we believe that these control levels should be considered to represent BART.

In addition, the control levels at issue are based on our understanding of the current capabilities of scrubbers, as well as the costs faced by the utility industry for installing these controls. We recognize that it is possible that capabilities of scrubber technologies may improve and it is likely that scrubber costs will continue to decline as scrubber technologies improve.[37],[38] Accordingly, we have added a brief discussion to the reproposed guidelines to ensure that States take into account updated information on scrubber performance as scrubber technology improves.

We also believe that States should find that the control levels described above are cost effective for all utility boilers greater than 250 MW in size, regardless of the size of the power plant at which they are located. There appears to be no significant difference in utility

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[37] Zipper and Gilroy, *Sulfur Dioxide Emissions and Market Effects under the Clean Air Act Acid Rain Program* (Air and Waste Management Association, 1998, vol. 48, pp.829-37) shows that capital costs for FGD fell by 50 percent between 1989 and 1996. See http://www.awma.org/journal/ShowAbstract.asp?Year=1998&PaperID=748.

[38] See also, *Market-Based Advanced Coal Power Systems - Final Report* (Office of Fossil Energy, US Department of Energy, 1999), section 1, at http://fossil.energy.gov/programs/powersystems/publications/marketbasedsystems/.

boilers at power plants that are greater than 750 MW, and those 750 MW or less, other than the number of boilers located at the facility. For the most part, plants greater than 750 MW generally consist of multiple units, many of which are smaller than 750 MW each.[39] Absent unusual circumstances which would lead to substantially higher costs than for typical facilities, a utility boiler greater than 250 MW in size should be able to achieve either a 95 percent reduction in SO_2 emissions or a comparable performance level of 0.1 to 0.15 lbs/MMBtu at a very reasonable cost. We request comment on whether this level of control is reasonable for such sources. Such unusual circumstances could be similar to the examples cited above with regard to greater than 750 MW plants (that a source might show proof that it will be shutting down within the next 5 years, or a source might be located in a remote desert area, where use of water for FGD would deplete an aquifer.) Although the hurdle for not achieving the default control level for

[39] See http://www.epa.gov/airmarkets/epa-ipm/#documentation. This is the NEEDS (National Electric Energy System) Database for IPM V.2.1, NEEDS (National Electric Energy System) Database for IPM 2003. The NEEDS database contains the generation unit records used to construct the "model" plants that represent existing and planned/committed units in EPA modeling applications of IPM. NEEDS includes basic geographic, operating, air emissions, and other data on all the generation units that are represented by "model" plants in EPA's v. 2.1 update of IPM. See Chapter 4 of the Documentation Report (link) for a discussion of the data sources underlying NEEDS.

greater than 750 MW plants is intended to be higher than the hurdle for less than 750 MW plants, we are unable to think of an example that would apply to 250 MW units and above at one size plant but not the other. We request comment on any such examples that might exist.

6. Nitrogen oxide controls for utility boilers.

Background. In addition to being a major source of SO2 emissions, EGUs and other combustion units are a major source of NOx emissions. NOx emissions also contribute to regional haze, both through formation of light scattering nitrate particles in a manner similar to sulfate formation from SO2 emissions, but also through promoting the formation of sulfate particles. Based on an examination of the contribution to haze in Class I areas from the IMPROVE network, SO2 emissions comprise the most significant contribution. However, in some areas and at some times, the NOx contribution can be greater than the SO2 contribution. Also, NOx emissions can be an important direct and indirect contributor to PM2.5 formation. In addition, in areas with high EGU SO2 and NOx contributions, a reduction only of SO2 emissions would result in nitrate 'substitution' for sulfates, reducing the regional haze benefits.[40]

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[40] See http://vista.cira.colostate.edu/improve/Publications/Reports/2000/PDF/Chapter3final00.pdf. These are summary statistics of exctinction by species from the IMPROVE network.

2001 Proposed Rule. In discussing the process for identifying all available retrofit emission control techniques in the 2001 proposed guidelines, we identified general information sources that address NOx control strategies (66 FR 38123). The proposed guidelines, however, did not contain a detailed discussion of available NOx control strategies for utilities.

Comments. We received several comments from environmental and multi-state organizations requesting that we specifically address technologies for control of NO_X at BART sources. These commenters provided information showing that NO_X emissions result in the formation of visibility-impairing nitrate particles. In addition, these commenters requested that we establish a presumptive 90 percent removal of emissions of NO_X from currently uncontrolled utility boilers. The commenters provided information regarding the level of visibility impairment in Class I areas, as well as in urban areas, created by secondary particles related to emissions of NO_X. The commenters noted that, while nitrate contributes less to visibility impairment, relative to sulfate, on the worst impaired days in summer, it has a more significant role in visibility impairment in winter when some of the worst days occur. In addition, the commenters point out that major reductions in SO_2 emissions, and the ammonium sulfate particles they create in the atmosphere,

could lead to increases in nitrate particles. The reason for this is that reductions in ammonium sulfate particles could "free up" ammonia, making it available to form ammonium nitrate particles. The commenters argued that BART should control SO_2 and NO_X simultaneously.

In addition to direct visibility concerns in and around Class I areas, commenters stated that NO_X emissions reductions would contribute to improved public health. One commenter noted that reductions of NOx emissions from BART sources would result in enhanced benefits to ecosystems in high elevation Class I areas. Another commenter noted increasing trends in particulate nitrate concentrations at several Class I areas and suggested that EPA conduct a review of technologies, similar to the ORD report on SO_2 emissions controls, to be used as basis for a presumptive level of control.

Reproposal. We agree that emissions of NO_X from sources subject to BART, and the resulting nitrate particles formed by NO_X in the atmosphere, should be appropriately addressed in a BART analysis. We also agree with commenters that greater control of SO_2 at large coal-fired utility plants may result in greater availability of NOx in the atmosphere. Recent data from EPA's IMPROVE monitoring networks confirms that the contribution of nitrates to visibility impairment

is significant, and may be increasing, at a number of sites in the West.[41]

The approach to assessing the available methods for removal of NO_X differs from the approach used to assess controls for removal of SO_2. The engineering approach for removal of SO_2 from existing combustion sources is generally removal technology applied to the flue gas stream. For reducing emissions of NO_X at existing combustion sources, there are two somewhat distinct engineering approaches available.[42] One is to use combustion modifications (including careful control of combustion air and/or low-NOx burners) and the other is removal technology applied to the flue gas stream (selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR)). These overall techniques can be applied alone or in combination.

Unlike the methods for controlling SO_2, which overall fall within a fairly narrow range of cost effectiveness and control efficiencies, the removal efficiencies and costs associated with the two overall categories of control techniques for NOx vary considerably, depending upon the

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[41] See http://wrapair.org/forums/ioc/meetings/030728/index.html (especially presentation by John Vimont, National Park Service).

[42] An overview of NOx control technologies is available at the following website: http://www.fetc.doe.gov/coalpower/environment/nox/index.html

design and operating parameters of the particular boiler being analyzed.[43] In general combustion controls and low-NOx burners are cost effective for utility boilers burning sub-bituminous coal, and may be less cost effective for units burning lignite.[44]

In this rulemaking, we are proposing that States, in establishing BART emission limits for Nox, must, as a general matter, require sources to determine BART as discussed below. For sources currently using controls such as SCR to reduce NOx emissions during part of the year, we are proposing that a State should presume in a BART determination that using these same controls year-round

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[43] See http://www.epa.gov/ttn/catc/products.html#cccinfo (EPA Air Pollution Control Cost Manual), section 4 (NOx controls), chapter 2.

[44] See http://www.epa.gov/airmarkets/epa-ipm/#documentation. This is the NEEDS Database for IPM V.2.1, the NEEDS Database for IPM 2003. The NEEDS database contains the generation unit records used to construct the "model" plants that represent existing and planned/committed units in EPA modeling applications of IPM. The NEEDS database includes basic geographic, operating, air emissions, and other data on all the generation units that are represented by "model" plants in EPA's v. 2.1 update of IPM. See Chapter 4 of the Documentation Report for a discussion of the data sources underlying NEEDS. Data on units, their controls and characteristics are also part of the NEEDS database.

would be cost effective.[45] As the most significant costs associated with SCR are capital costs, the additional costs of operating this control technology throughout the year would be relatively modest.[46]

For all other power plants subject to BART, we believe that States should require the lowest emission rate that can be achieved without the installation of post-combustion controls. Thus, we are proposing that the States must, as a general matter, require these sources to achieve a control level of 0.2 lbs/MMBtu.[47] We are proposing to establish such a presumption because for most of the utilities subject to this rule, a 0.2 lb/MMBtu emission rate can be generally achieved through the use of combustion controls or low-NOx burners. We request comment on this emission rate. We also request comment on whether another emission rate higher or

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[45] In 1998, we issued a rule requiring a number of Eastern States to reduce the summertime emissions of NOx from sources within these States. 63 FR 57356, October 27, 1998). As a result of this rule, 19 States and the District of Columbia have required power plants to reduce NOx emissions seasonally.

[46] See *Status Report on NOx Control Technologies and Cost-Effectiveness for Utility Boilers*, Northeast States for Coordinated Air Use Management and Mid-Atlantic Regional Air Management Association, June 1998, at: http://www.nescaum.org/pdf/execsum_nox.pdf.

[47] The EPA Clean Air Market Division's "Cost Tool" gives information on control effectiveness (dollar/ton removed) and overall NOx control efficiencies for various control technologies.

lower than 0.2 lb/MMBtu reflects an emission rate that can generally be achieved through the use of combustion controls or low-NOx burners. These controls are applicable to most EGUs, are relatively inexpensive,[48] and are already widely applied. We recognize that a small number of the largest power plants may need to install an SCR unit to meet this control level. In such relatively rare cases, a State, at its discretion, may find SCR to be appropriate if the source causes visibility impacts sufficiently large to warrant the additional capital cost.

Notwithstanding the general assessment presented above, we ask for comment in particular on the question of what rate of NOx emissions can be achieved with low NOx burners or advanced combustion controls on certain specific types of boilers. For instance, we recognize that some wall-fired dry bottom boilers may not be able to meet an emissions rate of 0.2 lb/MMBtu without post-combustion controls. Similarly, we also recognize that, without post-combustion controls, wet bottom, cyclone, and cell burners probably cannot achieve a rate of 0.2 lb/MMBtu due to unique design and operational characteristics, such as relatively small

[48] http://www.epa.gov/airmarkets/epa-ipm/#documentation This is the Documentation Report (2003 Analyses), and Documentation Report (V. 2.1 Update). Data on units, their controls and characteristics are also part of the NEEDS database, referenced above.

furnace size or relatively large heat release rate. We also seek comment on the impact of coal rank on NOx emissions rates that can be achieved without post-combustion controls. If you choose to comment on any of these issues, please provide data or technical information supporting your comments and recommendations.

We believe that States should determine in almost every case that these control levels represent a reasonable determination of BART for large EGUs. As discussed above, achieving these emissions reductions is generally cost effective. In addition, as commenters on the 2001 guideline noted, nitrates contribute significantly to regional haze. Thus, a State considering the costs of meeting these control levels and the degree of improvement in visibility should, in most instances, find that at a minimum, these controls represent BART. We acknowledge that there could be unique or extreme circumstances, for those few of the largest EGUs that cannot achieve 0.2 lbs/MMBtu without SCR or SNCR, under which a State might find SCR or SNCR to be unreasonable. We request comment on what specific circumstances might exist, if any, to justify a lesser degree of control. Commenters should provide documentation for any such examples.

7. Consideration of visibility impacts.

2001 Proposed Rule. Under the 2001 proposed guidelines, States would have been required to use a

regional modeling analysis to assess the cumulative impact on visibility of the controls selected in the engineering analysis. States would use this cumulative impact assessment to make a determination of whether the controls, in their entirety, provide a sufficient visibility improvement to justify installation.

Comments. We received many comments regarding the cumulative nature of our process for considering the degree of visibility improvement. These commenters believed that the degree of visibility analysis should consider source-specific visibility impacts. These commenters also asserted that our process was not consistent with the requirements for BART in the CAA.

Reproposal. The fifth statutory factor addresses the degree of improvement in visibility which may reasonably be anticipated to result from the use of control technology. The *American Corn Growers* decision, discussed in detail in section II above, vacated the approach in the regional haze rule of requiring States to assess the degree of visibility improvement from the imposition of controls on all sources subject to BART in a State. We understand the court decision to require that we allow for an analysis of impacts that focuses on each individual source undergoing a BART determination.

Therefore, this reproposal focuses on the use of single source emissions modeling for assessing the degree of improvement in visibility from various BART control levels. For the purpose of the BART determination, a State or individual source would run the CALPUFF model, or other EPA-approved model, using source-specific and site-specific data. We recognize that such models may be useful in analyses where modeling results alone are not determinative of regulatory consequences. We believe that CALPUFF is based on sufficiently sound technical grounds to inform regulatory decisions that are based on a cumulative weight of evidence such as the statutorily-defined factors for consideration in assessing BART for regional haze.

For sources subject to BART that are located greater than or equal to 50 km from all receptors in a Class I area, the State or source would run the model at the current allowable emissions level, and then again at the post-control emissions level (or levels) being assessed. Results would be tabulated for the average of the 20% worst modeled days at each receptor. The difference in the resulting level of impairment predicted is the degree of improvement in visibility expected. For example, if the average impact from the 20% worst days for a source's pre-control emission rate for a particular receptor is a change of 1.0 deciviews,

and its post-control impact is 0.4 deciviews, the net visibility improvement is 0.6 deciviews (60 percent). All receptors in the Class I area should be analyzed.

For sources subject to BART that are located less than 50 km from a Class I area, the State would use its discretion in determining visibility impacts for current allowable versus post-control emissions giving consideration to both CALPUFF and other EPA-approved methods such as PLUVUEII[49]. We request comment on this and other possible approaches to calculating the degree of visibility improvement expected for sources located less than 50 km from a Class I area.

We also note that the proposed methodology is for Regional Haze Rule BART determination only; other metrics may be used for BART determinations made in response to certification of impairment by a Federal Land Manager.

Alternatively, we are requesting comment on the option of using the hourly modeled impacts from CALPUFF and assessing the improvement in visibility based on the number

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[49] PLUVUEII is a model used for estimating visual range reduction and atmospheric discoloration caused by plumes resulting from the emissions of particles, nitrogen oxices, and sulfur oxides from a single source. The model predicts the transport, dispersion, chemical reactions, optical effects and surface deposition of point or area source emissions. It is available at http://www.epa.gov/scram001/tt22.htm#pluvue.

of hours above the 0.5 deciview threshold for the pre- and post-control emission rates. We also request comment on combinations of the proposed and alternative options above. For example, the deciview change for each hour of the 20% worst modeled days could be assessed. Finally, we request comment on the use of the simpler screening version of CALPUFF to do the analysis.

E. Trading program guidance.

Background. The regional haze rule allows States the option of implementing an emissions trading program or other alternative measure instead of requiring BART (40 CFR 51.308(e)(2)). This option provides the opportunity for achieving better environmental results at a lower cost than under a source-by-source BART requirement. A trading program must include participation by BART sources, but may also include sources that are not subject to BART.

2001 Proposed Rule. In the 2001 proposed guidance, we provided an overview of the steps involved in developing a trading program consistent with 40 CFR 51.308(e)(2). We focused this discussion on emission cap and trade programs which we believe will be the most common type of economic incentive program (EIP) developed as an alternative to BART. The BART guidelines discussed three basic steps for cap and trade programs: (1) developing emission budgets; (2)

allocating emission allowances to individual sources; and (3) developing a system for tracking individual source emissions and allowances.

The proposal noted that an emissions budget generally represents a total emissions amount for a single pollutant such as SO_2. As noted in the preamble to the regional haze rule (64 FR 35743, July 1, 1999), we believe that unresolved technical difficulties generally preclude interpollutant trading for addressing visibility impairment.

Once an emissions budget or "cap" is set, the next step in an emission trading program alternative to BART is to issue allowances to individual sources, consistent with the cap. Once the allowances are established, it is also necessary to have in place a tracking system to ensure that the allowances are met.

In the 2001 proposed guidelines, we did not include detailed recommendations on how to allocate emissions or how to develop a tracking system. We noted that it would not be appropriate for us to require a particular process and criteria for individual source allocations. The 2001 proposal noted that we did, however, agree to provide information on allocation processes to State and local agencies.

Comments. Regarding the sources to include in a trading program, some commenters suggested that a trading program could be expanded beyond the set of BART-eligible sources.

With regard to the geographic area covered by a trading program for BART, the WRAP enquired whether the backstop emissions trading program under section 309 of the regional haze rule could be expanded to other western States when they submit their section 308 SIPs.

Comments from the environmental officials for Indian Tribes suggested that the guidelines should ensure that some number of allowances are set aside for Tribes. Otherwise, the commenters believed that a trading program may perpetuate historical barriers to economic development in Indian country.

Reproposal. The reproposed guidelines largely reflect the same overall approach and level of detail as the 2001 proposal. We continue to believe that the trading program alternative provided by the regional haze rule can serve to reduce the administrative burden of the program while providing greater long-term environmental benefits. We discuss specific issues below.

Consistent with the regional haze rule, we propose that the guidelines continue to require participation by BART

sources and allow for the option of additional participation. We note that by enlarging the universe of sources affected, it will be more likely that more sources with relatively low-cost emission reduction potential will be included. Therefore broader participation in the program is likely to provide greater opportunities for emissions trading and cost savings. In addition, regional trading programs can potentially lower transaction costs and produce efficiencies by creating uniform requirements for firms which operate sources in multiple states. Therefore, we believe that States should consider whether it is appropriate to design and implement a trading program in conjunction with other States. Consistent with this overall approach, in the proposed Interstate Air Quality rule (IAQR) (69 FR 4566, January 30, 2004), we requested comment on whether compliance with the IAQR by affected EGUs in affected States would satisfy, for those sources, the BART requirements of the CAA, provided that a State imposes the full amount of SO2 and NOx emissions reductions on EGUs that the IAQR deemed highly cost effective. We are in the process of evaluating those comments. Based on our current evaluation, we believe the IAQR, as proposed, is clearly better than BART for those affected EGUs in the affected States which we propose to cover under the IAQR. We thus

expect that the final IAQR would satisfy the BART requirements for affected EGUs that are covered pursuant to the final IAQR.

We continue to believe that there are no legal or regulatory obstacles to expanding the WRAP trading program to other States in the WRAP area, provided that technical analyses support such a plan.[50] Consistent with the regional haze rule, such a program must demonstrate greater reasonable progress for the Class I areas affected by sources in those States. We continue to request comment on how greater reasonable progress could be demonstrated, including in particular on whether overall visibility improvements across Class I areas, on balance, would be sufficient to determine that such a trading program is "better than BART."

Finally, in 1980, we published regulations addressing visibility impairment from one or more sources close to a Class I area. This type of visibility impairment is referred to as "reasonably attributable" impairment under the 1980 regulations. These regulations included a requirement for BART to address reasonably attributable impairment in 40 CFR 51.302. Given that these requirements

[50] Letter from Lydia Wegman to Rick Sprott, Director, Utah Division of Air Quality, July 31, 2002.

remain in place even after publication of the regional haze rule, one issue needing clarification in the BART guidelines is the interface between these BART requirements established in 1980 and the requirements for BART under the regional haze program, and between the 1980 BART requirements and the provisions of a trading program alternative to BART.

We believe that the proposed guidelines appropriately clarify that the 1980 provisions for reasonably attributable impairment, including the BART requirement, remain in effect until the BART requirement is satisfied. We believe that it is relatively unlikely that many – if any – sources will be found to be subject to the 1980 BART requirement, given that Federal Land Managers(FLMs) have certified impairment on only a few occasions since 1980. Nonetheless, if evidence were to suggest that an individual source was causing localized visibility impairment, we believe that it would be improper to remove FLMs' and States' ability to craft a solution using the tools provided by our visibility regulations. We note that the regional haze rule includes provisions allowing "geographic enhancements" to trading programs that can address local visibility concerns up front. Accordingly, we continue to believe that States and FLMs have the ability to provide assurances to sources that any trading program established for regional haze will

satisfy all of the BART provisions in EPA's visibility regulations.

IV. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), EPA must determine whether the regulatory action is "significant" and, therefore, subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impacts of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action," thus EPA has submitted this rule to OMB for review. The drafts of the rules submitted to OMB, the documents accompanying such drafts, written comments thereon, written responses by EPA, and identification of the changes made in response to OMB suggestions or recommendations are available for public inspection at EPA's Air and Radiation Docket and Information Center (Docket Number OAR-2002-0076). The EPA has prepared the document entitled "Regulatory Impact Analysis of the Proposed Guidelines for Best Available Retrofit Technology Determinations Under the Regional Haze Regulations" (RIA) to address the requirements of this executive order.

The RIA presents estimates of the health and welfare benefits and the estimated costs of the BART reproposal in 2015 and the estimated benefits and costs of the recently signed IAQR proposal (69 FR 4566, January 30, 2004). Reviewing these results, it is important to recognize that the BART and IAQR proposals are likely to be overlapping actions that address many of the same power plants. However, IAQR as proposed will affect a 29 State and the District of Columbia region in the eastern U.S., and the BART rule is applicable nationwide. In the proposed IAQR,

we requested comment on whether compliance with the IAQR by affected EGUs in affected States would satisfy, for those sources, the BART requirements of the CAA, provided that a State imposes the full amount of SO2 and NOx emissions reductions on EGUs that the IAQR deemed highly cost effective. We are in the process of evaluating those comments. Based on our current evaluation, we believe the IAQR, as proposed, is clearly better than BART for those affected EGUs in the affected States which we propose to cover under the IAQR. We thus expect that the final IAQR would satisfy the BART requirements for affected EGUs that are covered pursuant to the final IAQR. EPA projects that both of these rules are likely to achieve significant health and welfare benefits. The BART analysis presented here is limited to the electric utility sector because of limitations in the data currently available on non-EGU sources. It is also important to note that States will make the ultimate decisions as to how the BART requirements are implemented. Thus, the analysis results reported reflect the EPA's best estimate of the benefits and costs of this State determined process.

Significant health and welfare benefits are likely to occur as a result of this rule. Based upon EPA estimates, thousands of premature deaths and other serious health

effects would be prevented each year. The EPA estimates monetized annual benefits of approximately $44 billion (assuming a 7 percent discount rate) or $47 billion (assuming a 3 percent discount rate) in 2015 (1999$). Table IV-1 presents the primary estimates of reduced incidence of PM health effects for 2015 for the source-specific BART proposal and the IAQR proposed rule. Specifically, the table lists the PM-related benefits associated with the reduction of ambient PM.

In interpreting the results, it is important to keep in mind the limited set of effects we are able to monetize. Thus, the benefits reported for this rule are understated due to the omissions listed in Table II-4.

Nonetheless, the benefits quantified and monetized are substantial both in incidence and dollar value. In 2015, we estimate that reduction in exposure to $PM_{2.5}$ from the BART rule will result in approximately 7,400 fewer premature deaths annually associated with $PM_{2.5}$, as well as 3,900 fewer cases of chronic bronchitis, 9,800 fewer nonfatal heart attacks (acute myocardial infarctions), 6,000 fewer hospitalizations (for respiratory and cardiovascular disease combined), and significant reductions in days of restricted activity due to respiratory illness (with an estimate of 4.4 million fewer cases). We also estimate substantial health

improvements for children from reductions in upper and lower respiratory illnesses, acute bronchitis, and asthma attacks.

Table IV-2 presents the estimated monetary value of reductions in the incidence of health and welfare effects. PM-related health benefits are estimated to be approximately $43 billion (assuming a 7 percent discount rate) or $46 billion (assuming a 3 percent discount rate) in 2015. Estimated annual visibility benefits in the U.S. brought about by the BART rule due to visibility improvements in federal Class I areas in the Southeast, Southwest, and California are estimated to be approximately $940 million in 2015. All monetized estimated values are stated in 1999$. Table IV-2 shows the total annual monetized benefits for the year 2015. This table also indicates with a "B" those additional health and environmental effects that we were unable to quantify or monetize. These effects are additive to the estimate of total benefits, and the EPA believes there is considerable value to the public of the benefits that could not be monetized.

Table IV-1. Estimated Reductions in Incidence of Health Effects of the BART Rule—in 2015

Endpoint	Constituent	BART	IAQR Proposal
Premature Mortality-adult	$PM_{2.5}$	7,400	13,000
Mortality-infant	$PM_{2.5}$	17	29
Chronic bronchitis	$PM_{2.5}$	3,900	6,900
Acute myocardial infarction-total	$PM_{2.5}$	9,800	18,000
Hospital admissions—respiratory	$PM_{2.5}$	3,200	8,100*
Hospital admissions —cardiovascular	$PM_{2.5}$	2,800	5,000
Emergency room visits, respiratory	$PM_{2.5}$	5,300	9,400*
Acute bronchitis	$PM_{2.5}$	9,000	16,000
Lower respiratory symptoms	$PM_{2.5}$	110,000	190,000
Upper respiratory symptoms	$PM_{2.5}$	350,000	620,000
Asthma exacerbation	$PM_{2.5}$	150,000	240,000
Acute respiratory symptoms (MRADs)	$PM_{2.5}$	4,400,000	8,500,000*
Work loss days	$PM_{2.5}$	740,000	1,300,000
School loss days	O^3	**	390,000

MRADs = minor restricted activity days.
* Includes estimates for ozone health effects. Although ozone health benefits occur with the BART proposal, ozone health effects are not estimated.
** School loss days are not estimated for BART.

A listing of the benefit categories that could not be quantified or monetized in our estimate is provided in Table IV-3. Major benefits not quantified for this proposed rule include ozone health benefits, the value of increases in yields of agricultural crops and commercial forests, the value of improvements in visibility in places where people live and work and recreational areas outside of federal

Class I areas, and the value of reductions in nitrogen and acid deposition and the resulting changes in ecosystem functions.

In summary, EPA's primary estimate of the annual benefits of the rule is approximately $44 + B billion (assuming a 7% discount rate) or $47 + B billion (assuming a 3 percent

Table IV-2. Results of Human Health and Welfare Benefits Valuation for the Proposed BART Rule (millions of 1999 dollars)[a,b]

Endpoint	BART	IAQR Proposal[f]
Premature mortality[c]		
Long-term exposure, (adults, >30yrs)		
3% discount rate	$43,000	$77,000
7% discount rate	$40,000	$72,000
Long-term exposure (child, <1yr)	$100	$180
Chronic bronchitis (adults, 26 and over)	$1,500	$2,700
Non-fatal myocardial infarctions		
3% discount rate	$810	$1,500
7% discount rate	$790	$1,400
Hospital Admissions from Respiratory Causes	$55	$130 [e]
Hospital Admissions from Cardiovascular Causes	$59	$110
Emergency Room Visits for Asthma	$1.5	$2.6 [e]
Acute bronchitis (children, 8-12)	$3.3	$5.7
Lower respiratory symptoms (children, 7-14)	$1.7	$3.0
Upper respiratory symptoms (asthmatic children, 9-11)	$16	$17
Asthma exacerbations	$5.8	$10
Work loss days (adults, 18-65)	$97	$170
Minor restricted activity days (adults, age 18-65)	$230	$440 [e]
School absence days (children, age 6-11)	e	$28
Worker productivity (outdoor workers, age 18-65)	e	$17
Recreational visibility (SE, SW, and CA Class I areas)	$940	$1,400
Monetized Total[d]		
Base estimate		
3% discount rate	$47,000+B	$84,000 [e]
7% discount rate	$44,000+B	$79,000 [e]

[a] Monetary benefits are rounded to two significant digits.
[b] Monetary benefits are adjusted to account for growth in real GDP per capita between 1990 and the analysis year (2015).

[c] Valuation assumes the 5 year distributed lag structure described earlier. Results reflect the use of two different discount rates; a 3 percent rate that is recommended by EPA's Guidelines for Preparing Economic Analyses (US EPA, 2000b) and OMB's Circular A-4 (OMB, 2003) and 7 percent which is also recommended by OMB's Circular A-4 (OMB, 2003).

[d] B represents the monetary value of the nonmonetized health and welfare benefits. A detailed listing of unquantified PM, ozone, and mercury related health effects is provided in Table IV-4.

[e] Results presented for the IAQR proposal include benefits associated with modeled ozone reductions. Ozone-related benefits are not generated for BART.

[f] The estimated benefits for the IAQR proposal are based upon a control scenario for EGU sources only in the 29 State + DC proposed IAQR region.

discount rate) in 2015. These estimates account for growth in the willingness to pay for reductions in environmental health risks due to growth in real gross domestic product (GDP) per capita between the present and 2015.

Costs of the Proposed BART Rule

EPA modeled the costs and economic impacts to the EGU sector anticipated to result from the source-specific BART requirements. Modeling assumptions for the SO_2 affected units included the choice of meeting a 0.1 lbs/mmBtu emission rate or achieving 90 percent reductions from base case emissions. Affected units were also required to meet a 0.2 lbs/mmBtu emission rate limit for NO_x. In the model, EPA required controls only on BART-eligible units, a subset representing 179 GW out of about 305 GW total coal-fired U.S. generation. BART-eligible units were defined as units greater than 250 MW that were online after August 7, 1962 and under construction prior to August 7, 1977. No

additional necessary controls were assumed for any units within the five WRAP 309 States of UT, AZ, WY, OR or NM that have existing agreements to achieve reduction goals. Also, because of modeling limitations, no additional reductions were assumed from units with existing scrubbers, even if they were performing at less than 90 percent removal. This assumption, the assumption of 90 percent removal rather than the proposed 95 percent removal rate, and an analysis that focuses on EGU sources only, are limitations of the analysis that would tend to understate the estimated costs, emission reductions, and benefits of the rule.

Based upon the foregoing modeling assumptions, the EPA estimates the annual costs of the BART rule to be $3.9 billion in 2015 (1999 dollars). The costs are estimated using a discount rate that approximates the cost of capital for firms in the EGU industry and ranges from 5.34 to 6.74 percent.

Benefit-Cost Comparison

The estimated annual social benefits of the BART rule are compared to the annual estimated cost to implement the proposed rule in Table IV-3.

Table IV-3. Summary of Annual Benefits, Costs, and Net Benefits of the BART Rule in 2015 (billions of 1999 dollars)

Description	BART	IAQR Proposal[e]
Social costs [a]	$3.9	$3.7

Social benefits [b,c]	$47 + B	$84 + B
Ozone-related benefits	f	$0.1[f]
PM-related health benefits	$46	$82.3
Visibility benefits	$0.9	$1.4
Net benefits (benefits-costs) [a,b,c,d,]	$43 + B	$80 + B
Net Benefits (benefits-costs) [a,c,d,g]	$40 + B	$75 + B

[a] Note that costs are the annual total costs of reducing pollutants including NO_x and SO_2. Costs of the rules are estimated using the Integrated Planning Model (IPM) assuming discount rates that approximate the cost of capital for firms operating EGUs ranging from 5.34 to 6.74 percent.

[b] As the table indicates, total benefits are driven primarily by PM-related health benefits. Benefits in this table are associated with NO_x and SO_2 reductions. Benefits presented assume a 3% discount rate for monetization.

[c] Not all possible benefits or disbenefits are quantified and monetized in this analysis. B is the sum of all unquantified benefits and disbenefits. Potential benefit categories that have not been quantified and monetized are listed in Table IV-4.

[d] Net benefits are rounded to the nearest billion. Columnar totals may not sum due to rounding.

[e] The estimated IAQR proposal benefits and costs relate to a control strategy for EGU sources only in the 29 + DC State IAQR proposed region.

[f] Ozone health benefits will result from the BART rule and IAQR proposal, but monetary benefits are estimated for the IAQR proposal only.

[g] Benefits presented assume a 7% discount rate for monetization.

EPA estimates the costs of implementing the rule at $ 3.9 billion in 2015. Thus, the annual quantified net benefits (social benefits minus social costs) of the program in 2015 are approximately $40 + B billion (assuming a 7 percent discount rate for benefits) or $43 + B billion (assuming a 3 percent discount rate for benefits). Therefore, implementation of the proposed rule is expected to provide society with a net gain in social welfare based on economic efficiency criteria.

Every benefit-cost analysis examining the potential effects of a change in environmental protection requirements is limited to some extent by data gaps, limitations in model capabilities (such as geographic coverage), and uncertainties in the underlying scientific and economic studies used to

Table IV-4. Additional Nonmonetized Benefits of the BART Rule

Pollutant	Unquantified Effects
Ozone Health	Premature mortality[a] Increased airway responsiveness to stimuli Inflammation in the lung Chronic respiratory damage Premature aging of the lungs Acute inflammation and respiratory cell damage Increased susceptibility to respiratory infection Non-asthma respiratory emergency room visits
Ozone Welfare	Decreased yields for commercial forests Decreased yields for fruits and vegetables Decreased yields for commercial and non-commercial crops Damage to urban ornamental plants Impacts on recreational demand from damaged forest aesthetics Damage to ecosystem functions
PM Health	Low birth weight Changes in pulmonary function Chronic respiratory diseases other than chronic bronchitis Morphological changes Altered host defense mechanisms Non-asthma respiratory emergency room visits
PM Welfare	Visibility in many Class I areas Residential and recreational visibility in non-Class I areas Soiling and materials damage Damage to ecosystem functions
Nitrogen and Sulfate Deposition Welfare	Impacts of acidic sulfate and nitrate deposition on commercial forests Impacts of acidic deposition to commercial freshwater fishing Impacts of acidic deposition to recreation in terrestrial ecosystems Reduced existence values for currently healthy ecosystems Impacts of nitrogen deposition on commercial fishing, agriculture, and forests Impacts of nitrogen deposition on recreation in estuarine ecosystems Damage to ecosystem functions
Mercury Health	Neurological disorders Learning disabilities Developmental delays Potential cardiovascular effects* Altered blood pressure regulation* Increased heart rate variability* Myocardial infarction* Potential reproductive effects*

Pollutant	Unquantified Effects
Mercury Deposition	Impact on birds and mammals (e.g., reproductive effects)
	Impacts to commercial, subsistence, and recreational fishing
Welfare	Reduced existence values for currently healthy ecosystems

[a] Premature mortality associated with ozone is not separately included in this analysis.
* These are potential effects as the literature is either contradictory or incomplete.

configure the benefit and cost models. Deficiencies in the scientific literature often result in the inability to estimate quantitative changes in health and environmental effects, such as potential increases in fish populations due to reductions in nitrogen loadings in sensitive estuaries. Deficiencies in the economics literature often result in the inability to assign economic values even to those health and environmental outcomes that can be quantified. Although these general uncertainties in the underlying scientific and economics literatures (that can cause the valuations to be higher or lower) are discussed in detail in the economic analyses and its supporting documents and references, the key uncertainties that have a bearing on the results of the benefit-cost analysis of this proposed rule include the following:

- the exclusion of potentially significant benefit categories (such as health and ecological benefits of ozone),
- errors in measurement and projection for variables such as population growth and baseline incidence rates,

- uncertainties in the estimation of future-year emissions inventories and air quality,
- variability in the estimated relationships of health and welfare effects to changes in pollutant concentrations,
- uncertainties in exposure estimation,
- uncertainties in the size of the effect estimates linking air pollution and health endpoints,
- uncertainties about relative toxicity of different components within the complex mixture,
- uncertainties in quantifying visibility benefits, and
- uncertainties associated with the effect of potential future actions to limit emissions.

Despite these uncertainties, we believe the benefit-cost analysis provides a reasonable indication of the expected economic benefits and costs of the proposed rulemaking in future years under a set of reasonable assumptions.

In addition, in valuing reductions in premature fatalities associated with PM, we used a value of $5.5 million per statistical life. This represents a central value consistent with a range of values from $1 to $10 million

suggested by recent meta-analyses of the wage-risk value of statistical life (VSL) literature.[51]

The benefits estimates generated for the proposed BART rule are subject to a number of assumptions and uncertainties, that are discussed throughout the RIA document. As Table IV-2 indicates, total benefits are driven primarily by the reduction in premature fatalities each year, that account for a significant portion of total benefits. For example, key assumptions underlying the primary estimate for the premature mortality category include the following:

(1) Inhalation of fine particles is causally associated with premature death at concentrations near those experienced by most Americans on a daily basis. Although biological mechanisms for this effect have not yet been definitively established, the weight of the available epidemiological evidence supports an assumption of causality.

(2) All fine particles, regardless of their chemical composition, are equally potent in causing premature mortality. This is an important assumption, because PM produced via transported precursors emitted from EGUs

[51] Mrozek, J.R. and L.O. Taylor, *What determines the value of a life? A Meta Analysis*, Journal of Policy Analysis and Management 21 (2), pp. 253-270.

may differ significantly from direct PM released from automotive engines and other industrial sources, but no clear scientific grounds exist for supporting differential effects estimates by particle type.

(3) The C-R function for fine particles is approximately linear within the range of ambient concentrations under consideration. Thus, the estimates include health benefits from reducing fine particles in areas with varied concentrations of PM, including both regions that are in attainment with fine particle standard and those that do not meet the standard.

Although recognizing the difficulties, assumptions, and inherent uncertainties in the overall enterprise, these analyses are based on peer-reviewed scientific literature and up-to-date assessment tools, and we believe the results are highly useful in assessing this proposal.

We were unable to quantify or monetize a number of health and environmental effects. A full appreciation of the overall economic consequences of today's action requires consideration of all benefits and costs expected to result from the proposed rule, not just those benefits and costs that could be expressed here in dollar terms. A listing of the benefit categories that could not be quantified or monetized in our estimate is provided in Table IV-4. These

effects are denoted by "B" in Table IV-3 above and are additive to the estimates of benefits.

The Regulatory Impact Analysis (RIA) supporting this proposal is subject to OMB's new Circular A-4, ***Guidelines for the Conduct of Regulatory Analysis***. These guidelines set forth a number of analytical requirements, most of which overlap with EPA's own Economic Guidelines. Because of the consent decree deadline for proposing this rule, the Agency has not yet completed all the analyses called for in EPA's and OMB's guidelines. Thus, the Agency will be conducting additional analytical work and including the results of this work in the public docket. We will publish a notice of data availability (NODA) to advise the public when these materials are available. In particular, the Agency plans to conduct and make available the following analyses:

(1) Quantitative Analysis of Uncertainty. This rule will have economic impacts (benefits plus costs) that total more than $1 billion per year. Circular A-4 calls for a formal quantitative analysis of the relevant uncertainties about benefits and costs for such rules.

(2) Cost-effectiveness analysis. In addition to the benefit-cost analysis, EPA will conduct a cost-effectiveness analysis because the primary benefits of this rule are improved public health.

(3) Analysis of all regulated entities. Because the Agency already has extensive data about electric generating units, the current RIA includes a detailed analysis of the power sector. The Agency intends to gather additional data about BART-eligible sources in other sectors and conduct a more complete analysis of the costs, benefits, and cost-effectiveness of controls on non-EGU sources covered by the rule.

(4) Options and incremental analysis. The proposed rule identifies the proposed IAQR as an additional regulation that will likely affect the number of EGUs that will be covered by this rule. We currently believe that the IAQR, as proposed, is "better than BART" for those affected EGUs in the affected States that we propose to cover under the IAQR. We thus expect that the final IAQR would satisfy this rule for affected EGUs that are covered pursuant to the final IAQR. EPA intends to assess the incremental costs and benefits of this rule, assuming that the IAQR, as proposed, is in place.

B. Paperwork Reduction Act

Today's proposal clarifies but does not modify the information collection requirements for BART. Therefore, this action does not impose any new information collection burden. However, the OMB has previously approved the

information collection requirements contained in the existing regulations [40 CFR Part 51] under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. and has assigned OMB control number 2060-0421, EPA ICR number 1813.04. A copy of the OMB approved Information Collection Request (ICR) may be obtained from Susan Auby, Collection Strategies Division; U.S. Environmental Protection Agency (2822T); 1200 Pennsylvania Ave., NW, Washington, DC 20460 or by calling (202) 566-1672.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute 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 organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's proposed rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administrations' 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.

In the July 1, 1999 regional haze rule (64 FR 35760) and in the July 20, 2001 BART guidelines proposal (66 FR 38110) the EPA determined that it was not necessary to prepare a regulatory flexibility analysis in connection with either action. The EPA also determined that the 1999 regional haze rule and the 2001 BART guidelines proposal would not have a significant economic impact on a substantial number of small entities because neither would establish requirements applicable to small entities. After considering the economic impacts of today's proposed rule on small entities, we certify that this action, proposing new regulations to address the BART requirements remanded by the D.C. Circuit and reproposing the 2001 BART guidelines proposal, will not have a significant economic impact on a substantial number of small entities.

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act (Public Law No. 104-121) (SBREFA), provides that whenever an agency is required to publish a general notice of proposed rulemaking, it must prepare and make available an initial regulatory flexibility analysis, unless it certifies that the rule, if promulgated, will not have "a significant economic impact on a substantial number of small entities." 5 U.S.C. 605(b). Courts have interpreted the

RFA to require a regulatory flexibility analysis only when small entities will be subject to the requirements of the rule. See *Motor and Equip. Mfrs. Ass'n* v. Nichols, 142 F. 3d 449 (D. C. Cir., 1998); *United Distribution Cos.* v. *FERC*, 88 F. 3d 1105, 1170 (D. C. Cir., 1996); *Mid-Tex Elec. Co-op, Inc.* v. *FERC*, 773 F . 2d 327, 342 (D.C. Cir., 1985) (agency's certification need only consider the rule's impact on entities subject to the rule).

Similar to the discussion in the proposed and final regional haze rules, today's reproposal of the BART rules and guidelines would not establish requirements applicable to small entities. The proposed rule would apply to States, not to small entities. The BART requirements in the regional haze rule require BART determinations for a select list of major stationary sources defined by section 169A(g)(7) of the CAA. However, as noted in the proposed and final regional haze rules, the State's determination of BART for regional haze involves some State discretion in considering a number of factors set forth in section 169A(g)(2), including the costs of compliance. Further, the final regional haze rule allows States to adopt alternative measures in lieu of requiring the installation and operation of BART at these major stationary sources. As a result, the potential consequences of the BART provisions of the

regional haze rule (as clarified in today's reproposal of the BART guidelines) at specific sources are speculative. Any requirements for BART will be established by State rulemakings. The States would accordingly exercise substantial intervening discretion in implementing the BART requirements of the regional haze rule and today's proposed guidelines. In addition, we note that most sources potentially affected by the BART requirements in section 169A of the CAA are large industrial plants. Of these, we would expect few, if any, to be considered small entities. We request comment on issues regarding small entities that States might encounter when implementing the BART provisions.

Although not required, a small business impact analysis was conducted for entities owning potentially affected BART-eligible EGUs. We found that 66 entities (companies or governments) currently own the EGU units subject to BART. Of these 66 entities, only two are considered small. One of the entities is a small government and the other an investor-owned company. The BART rule is not anticipated to have an impact on the government entity. The small business may experience a cost-to-sales impact of approximately 4 percent.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (Public Law 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, 2 U.S.C. 1532, EPA generally must prepare a written statement, including a cost-benefit analysis, for any proposed or final rule that "includes any Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more * * * in any one year." A "Federal mandate" is defined under section 421(6), 2 U.S.C. 658(6), to include a "Federal intergovernmental mandate." A "Federal intergovernmental mandate," in turn, is defined to include a regulation that "would impose an enforceable duty upon State, local, or tribal governments," section 421(5)(A)(I), 2 U.S.C. 658(5)(A)(I). A "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector," with certain exceptions, section 421(7)(A), 2 U.S.C. 658(7)(A).

Before promulgating an EPA rule for which a written statement is needed under section 202 of UMRA, section 205, 2 U.S.C. 1535, of UMRA generally requires EPA to identify

and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost effective, or least burdensome alternative that achieves the objectives of the rule.

The RIA prepared by EPA and placed in the docket for this rulemaking is consistent with the requirements of section 202 of the UMRA. Furthermore, EPA is not directly establishing any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments. Thus, EPA is not obligated to develop under section 203 of the UMRA a small government agency plan. Further, EPA carried out consultations with the governmental entities affected by this rule in a manner consistent with the intergovernmental consultation provisions of section 204 of the UMRA.

The EPA also believes that today's proposal meets the UMRA requirement in section 205 to select the least costly and burdensome alternative in light of the statutory mandate for BART. As explained above, we are proposing the BART rule and guideline following the D.C. Circuit's remand of the BART provisions in the 1999 regional haze rule. The 1999 regional haze rule provides substantial flexibility to the States, allowing them to adopt alternative measures such as a trading program in lieu of requiring the installation and

operation of BART. Today's reproposal does not restrict the ability of the States to adopt such alternatives measures. The regional haze rule accordingly already provides an alternative to BART that gives States the ability to chose the least costly and least burdensome alternative.

The EPA is not reaching a final conclusion as to the applicability of UMRA to today's rulemaking action. The reasons for this are discussed in the 1999 regional haze rule (64 FR 35762) and in the 2001 BART guidelines proposal (66 FR 38111-38112). Notwithstanding this, the discussion in chapter 8 of the RIA constitutes the UMRA statement that would be required by UMRA if its statutory provisions applied. Consequently, we continue to believe that it is not necessary to reach a conclusion as to the applicability of the UMRA requirements.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled Federalism (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications" are defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States,

or on the distribution of power and responsibilities among the various levels of government." Under Section 6 of Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation. The EPA also may not issue a regulation that has federalism implications and that preempts State law unless EPA consults with State and local officials early in the process of developing the proposed regulation.

We have concluded that today's action, reproposing the BART guidelines, will not have federalism implications, as specified in section 6 of the Executive Order 13132 (64 FR 43255, August 10, 1999), because it will not have substantial direct effects on the States, nor substantially alter the relationship or the distribution of power and responsibilities between the States and the Federal government. Nonetheless, we consulted with a wide scope of State and local officials, including the National Governors Association, National League of Cities, National Conference of State Legislatures, U. S. Conference of Mayors, National

Association of Counties, Council of State Governments, International City/County Management Association, and National Association of Towns and Townships, during the course of developing this rule.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by Tribal officials in the development of regulatory policies that have Tribal implications."

This proposed rule does not have Tribal implications as defined by Executive Order 13175. It does not have a substantial direct effect on one or more Indian Tribes. Furthermore, this proposed rule does not affect the relationship or distribution of power and responsibilities between the Federal government and Indian Tribes. The CAA and the TAR establish the relationship of the Federal government and Tribes in developing plans to attain the NAAQS, and this proposed rule does nothing to modify that relationship. Because this proposed rule does not have Tribal implications, Executive Order 13175 does not apply.

G. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, Section 5-501 of the Order directs the Agency to evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

The BART proposed rule and guideline are not subject to the Executive Order because it does not involve decisions on environmental health or safety risks that may disproportionately affect children. The EPA believes that the emissions reductions from the strategies proposed in this rulemaking will further improve air quality and will further improve children's health.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

We have conducted a Regulatory Impact Analysis for this reproposed rule, that includes an analysis of energy impacts and is contained in the docket (Docket No. OAR-2002-0076). According to Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use", this proposed rule is significant because it has a greater than a 1 percent impact on the cost of energy production. We are reproposing today's rule following the D.C. Circuit's remand of the BART provisions in the 1999 regional haze rule. The 1999 regional haze rule provides substantial flexibility to the States, allowing them to adopt alternative measures such as a trading program in lieu of requiring the installation and operation of BART. This rulemaking does not restrict the ability of the States to adopt alternative measures. The regional haze rule accordingly already provides an alternative to BART that reduces the overall cost of the regulation and its impact on the energy supply. The BART proposal itself offers flexibility by offering the choice of meeting SO2 requirements between an emission rate and a removal rate.

For a State that chooses to require case-by-case BART, today's rule would establish default levels of controls for SO2 and NOx for EGUs that the State finds are subject to BART. Based on its consideration of various factors set forth in the regulations, however, a State may conclude that a different level of control is appropriate. The States will accordingly exercise substantial intervening discretion in implementing the final rule. Additionally, we have assessed that the proposed compliance dates will provide adequate time for EGUs to install the required emission controls.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer Advancement Act of 1995 (NTTAA), Public Law No. 104-113, §12(d)(15 U.S.C. 272 note) directs EPA to use voluntary consensus standards (VCS) in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by VCS bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the EPA decides not to use VCS.

This action does not involve technical standards; thus, EPA did not consider the use of any VCS.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires federal agencies to consider the impact of programs, policies, and activities on minority populations and low-income populations. According to EPA guidance[52], agencies are to assess whether minority or low-income populations face risks or a rate of exposure to hazards that are significant and that "appreciably exceed or is likely to appreciably exceed the risk or rate to the general population or to the appropriate comparison group." (EPA, 1998)

In accordance with E.O. 12898, the Agency has considered whether this proposed rule may have disproportionate negative impacts on minority or low income populations. Because the Agency expects this proposed rule to lead to reductions in pollutant loadings and exposures generally,

[52] U.S. Environmental Protection Agency, 1998. Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses. Office of federal Activities, Washington, D.C., April, 1998.

negative impacts to these sub-populations that appreciably exceed similar impacts to the general population are not expected.

List of Subjects in 40 CFR Part 51

Environmental protection, Administrative practice and procedure, Air pollution control, Carbon monoxide, Nitrogen dioxide, Particulate matter, Sulfur oxides, Volatile organic compounds.

_____

Dated:

_____

Michael O. Leavitt,
Administrator.

For the reasons set forth in the preamble, part 51 of chapter I of title 40 of the Code of Federal Regulations is amended as follows:

PART 51--REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS

1. The authority citation for part 51 continues to read as follows:

Authority: 23 U.S.C. 101; 42 U.S.C. 7410-7671q.

2. Section 51.302 is amended by revising paragraph (c)(4)(iii) to read as follows:

§**51.302 Implementation control strategies for reasonably attributable visibility impairment.**

* * * * *

(c) * * *

(4) * * *

(iii) BART must be determined for fossil-fuel fired generating plants having a total generating capacity in excess of 750 megawatts pursuant to "Guidelines for Determining Best Available Retrofit Technology for Coal-fired Power Plants and Other Existing Stationary Facilities" (1980), which is incorporated by reference,

exclusive of appendix E, which was published in the Federal Register on February 6, 1980 (45 FR 8210), except that options more stringent than NSPS must be considered. Establishing a BART emission limitation equivalent to the NSPS level of control is not a sufficient basis to avoid the detailed analysis of control options required by the guidelines. It is EPA publication No. 450/3-80-009b and is for sale from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

* * * * *

3. Section 51.308 is amended by revising paragraphs (b)(2), (c), (e)(1)(ii), (e)(1)(ii)(A), (e)(1)(ii)(B) and deleting paragraphs (b)(1), (b)(2), (c)(1), (c)(1)(i) through (c)(1)(v), and (c)(2), to read as follows:

§51.308 Regional haze program requirements.

* * * * *

(b) *When are the first implementation plans due under the regional haze program?* Except as provided in §51.309(c), each State identified in §51.300(b)(3) must submit, for the entire State, an implementation plan for regional haze

meeting the requirements of paragraphs (d) and (e) of this section no later than 3 years after the date on which the Administrator promulgates for the State the designation for the $PM_{2.5}$ National Ambient Air Quality Standard at 40 CFR Part 81.

(c) In no event may the State's regional haze implementation plan be submitted later than January 31, 2008.

* * * * *

(e) * * *

(1) * * *

(ii) A determination of BART for each BART-eligible source in the State that emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area. All such sources are subject to BART.

(A) The determination of BART must be based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each BART-eligible source that is subject to BART within the State. In this analysis, the State must take into

consideration the technology available, the costs of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

(B) Appendix Y of this part provides guidelines for conducting the analyses under paragraphs (e)(1)(ii) and (e)(1)(ii)(A) of this section. All BART determinations that are required in paragraph (e)(1) of this section must be made pursuant to the guidelines in appendix Y of this part.

4. Section 51.309 is amended by revising paragraphs (d)(4)(v), (g)(2), and (g)(3) to read as follows:

§51.309 Requirements Related to the Grand Canyon Visibility Transport Commission

* * * * *

(d) * * *

(4) * * *

(v) Provisions for stationary source NO_x and PM. The plan submission must include a report which assesses emissions control strategies for stationary source NO_x and PM, and the degree of visibility improvement that would result from such strategies. In the report, the State must evaluate and discuss the need to establish emission milestones for NO_x and PM to avoid any net increase in these pollutants from stationary sources within the transport region, and to support potential future development and implementation of a multipollutant and possibly multisource market-based program. The plan submission must provide for an implementation plan revision, containing any necessary long-term strategies and BART requirements for stationary source PM and NO_x (including enforceable limitations, compliance schedules, and other measures) by no later than January 31, 2008.

* * * * *

(g) * * *

(2) In a plan submitted no later than January 31, 2008, provide a demonstration of expected visibility conditions for the most impaired and least impaired days at the additional mandatory Class I Federal area(s) based on

emissions projections from the long-term strategies in the implementation plan. This demonstration may be based on assessments conducted by the States and/or a regional planning body.

(3) In a plan submitted no later than January 31, 2008, provide revisions to the plan submitted under §51.309(c), including provisions to establish reasonable progress goals and implement any additional measures necessary to demonstrate reasonable progress for the additional mandatory Federal Class I areas. These revisions must comply with the provisions of §51.308(d)(1)-(4).

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5. Appendix Y is added as follows:

Appendix Y. Guidelines for BART Determinations Under the Regional Haze Rule

Table of Contents:

2. Step 2: Identify the start-up dates of the emission units

3. Step 3: Compare the potential emissions to the 250 ton/yr cutoff

4. Final step: Identify the emission units and pollutants that constitute the BART-eligible source.

III. How to Identify Sources "Subject to BART"

IV. The BART Determination: Analysis of BART Options

A. What factors must I address in the Engineering Analysis?

B. How does a BART engineering analysis compare to a BACT review under the PSD program?

C. Which pollutants must I address in the engineering review?

D. How does a BART review relate to maximum achievable control technology (MACT) standards under CAA section 112?

E. What are the five basic steps of a case-by-case BART engineering analysis?

1. Step 1: How do I identify all available retrofit emission control techniques?

2. Step 2: How do I determine whether the options identified in Step 1 are technically feasible?

3. Step 3: How do I develop a ranking of the technically feasible alternatives?

4. Step 4: For a BART engineering analysis, what impacts must I calculate and report? What methods does EPA recommend for the impacts analyses?

   a. Impact analysis part 1: how do I estimate the costs of control?

   b. How do I take into account a project's "remaining useful life" in calculating control costs?

   c. What do we mean by cost effectiveness?

   d. How do I calculate average cost effectiveness?

   e. How do I calculate baseline emissions?

   f. How do I calculate incremental cost effectiveness?

g. What other information should I provide in the cost impacts analysis?

h. Impact analysis part 2: How should I analyze and report energy impacts?

i. Impact analysis part 3: How do I analyze "non-air quality environmental impacts?"

j. What are examples of non-air quality environmental impacts?

5. Step 5: How should I consider visibility impacts in the BART determination?

F. How do I select the "best" alternative, using the results of Steps 1 through 5?

1. Summary of the impacts analysis

2. Selecting a "best" alternative

3. In selecting a "best" alternative, should I consider the affordability of controls?

4. SO_2 limits for utility boilers

5. NOx limits for utility boilers

V. Enforceable Limits / Compliance Date

VI. Emission Trading Program Overview

A. What are the general steps in developing an emission trading program?

B. What are emission budgets and allowances?

C. What criteria must be met in developing an emission trading program as an alternative to BART?

1. How do I identify sources subject to BART?

2. How do I calculate the emissions reductions that would be achieved if BART were installed and operated on these sources?

3. For a cap and trade program, how do I demonstrate that my emission budget results in emission levels that are equivalent to or less than the emissions levels that would result if BART were installed and operated?

4. How do I ensure that trading budgets achieve "greater reasonable progress?"

5. How do I allocate emissions to sources?

6. What provisions must I include in developing a system for tracking individual source emissions and allowances?

7. How would a regional haze trading program interface with the requirements for "reasonably attributable" BART under §51.302 of the regional haze rule?

I. INTRODUCTION AND OVERVIEW

A. What is the purpose of the guidelines?

The Clean Air Act (CAA), in sections 169A and 169B, contains requirements for the protection of visibility in 156 scenic areas across the United States. To meet the CAA's requirements, we published regulations to protect against a particular type of visibility impairment known as "regional haze." The regional haze rule is found in this part (40 CFR part 51), in §§ 51.300 through 51.309. These regulations require, in §51.308(e), that certain types of existing stationary sources of air pollutants install best available retrofit technology (BART). The guidelines are designed to help States and others (1) identify those sources that must comply with the BART requirement, and (2)

determine the level of control technology that represents BART for each source.

B. What does the CAA require generally for improving visibility?

Section 169A of the CAA, added to the CAA by the 1977 amendments, requires States to protect and improve visibility in certain scenic areas of national importance. The scenic areas protected by section 169A are called "mandatory Class I Federal Areas." In these guidelines, we refer to these as "Class I areas." There are 156 Class I areas, including 47 national parks (under the jurisdiction of the Department of Interior - National Park Service), 108 wilderness areas (under the jurisdiction of the Department of Interior - Fish and Wildlife Service or the Department of Agriculture – U.S. Forest Service), and one International Park (under the jurisdiction of the Roosevelt-Campobello International Commission). The Federal Agency with jurisdiction over a particular Class I area is referred to in the CAA as the Federal Land Manager. A complete list of the Class I areas is contained in 40 CFR part 81, §§ 81.401 through 81.437, and you can find a map of the Class I areas at the following internet site:

http://www.epa.gov/ttn/oarpg/t1/fr_notices/classimp.gif

The CAA establishes a national goal of eliminating man-made visibility impairment from all Class I areas. As part of the plan for achieving this goal, the visibility protection provisions in the CAA mandate that EPA issue regulations requiring that States adopt measures in their State Implementation Plans (SIPs), including long-term strategies, to provide for reasonable progress towards this national goal. The CAA also requires States to coordinate with the Federal Land Managers as they develop their strategies for addressing visibility.

C. What is the BART requirement in the CAA?

Under section 169A(b)(2)(A) of the CAA, States must require certain existing stationary sources to install BART. The BART requirement applies to "major stationary sources" from 26 identified source categories which have the potential to emit 250 tons per year or more of any air pollutant. The CAA requires only sources which were put in place during a specific 15-year time interval to install BART. The BART requirement applies to sources that existed as of the date of the 1977 CAA amendments (that is, August

7, 1977) but which had not been in operation for more than 15 years (that is, not in operation as of August 7, 1962).

The CAA requires BART when any source meeting the above description "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility" in any Class I area. In identifying a level of control as BART, States are required by section 169A(g) of the CAA to consider:

-- the costs of compliance,

-- the energy and non-air quality environmental impacts of compliance,

-- any existing pollution control technology in use at the source,

-- the remaining useful life of the source, and

-- the degree of visibility improvement which may reasonably be anticipated from the use of BART.

The CAA further requires States to make BART emission limitations part of their SIPs. As with any SIP revision, States must provide an opportunity for public comment on the

BART determinations, and EPA's action on any SIP revision will be subject to judicial review.

D. What types of visibility problems does EPA address in its regulations?

We addressed the problem of visibility in two phases. In 1980, we published regulations addressing what we termed "reasonably attributable" visibility impairment. Reasonably attributable visibility impairment is the result of emissions from one or a few sources that are generally located in close proximity to a specific Class I area. The regulations addressing reasonably attributable visibility impairment are published in §§ 51.300 through 51.307.

On July 1, 1999, we amended these regulations to address the second, more common, type of visibility impairment known as "regional haze." Regional haze is the result of the collective contribution of many sources over a broad region. The regional haze rule slightly modified 40 CFR 51.300 through 51.307, including the addition of a few definitions in § 51.301, and added new §§ 51.308 and 51.309.

E. What are the BART requirements in EPA's regional haze regulations?

In the July 1, 1999 rulemaking, we added a BART requirement for regional haze. You will find the BART requirements in 40 CFR 51.308(e). Definitions of terms used in 40 CFR 51.308(e)(1) are found in § 51.301.

As we discuss in detail in these guidelines, the regional haze rule codifies and clarifies the BART provisions in the CAA. The rule requires that States identify and list "BART-eligible sources," that is, that States identify and list those sources that fall within the 26 source categories, that were put in place during the 15-year window of time from 1962 to 1977, and that have potential emissions greater than 250 tons per year. Once the State has identified the BART-eligible sources, the next step is to identify those BART-eligible sources that may "emit any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility." Under the rule, a source which fits this description is "subject to BART." For each source subject to BART, States must identify the level of control representing BART based upon the following factors:

-- paragraph 308(e)(1)(ii)(A) provides that States must identify the best system of continuous emission control technology for each source subject to BART taking into account the technology available, the costs of compliance,

the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of visibility improvement that may be expected from available control technology.

After a State has identified the level of control representing BART (if any), it must establish an emission limit representing BART and must ensure compliance with that requirement no later than 5 years after EPA approves the SIP. States may establish design, equipment, work practice or other operational standards when limitations on measurement technologies make emission standards infeasible.

F. Do States have an alternative to requiring BART controls at specific facilities?

States are given the option under 40 CFR 51.308(e)(2) of adopting an alternative approach to requiring controls on a case-by-case basis for each source subject to BART. If a State chooses to adopt alternative measures, such as an emissions trading program, under 40 CFR 51.308(e)(2)(i) the State must demonstrate that any such alternative will achieve greater "reasonable progress" than would have

resulted from installation of BART from all sources subject to BART. Such a demonstration must include:

-- a list of all BART-eligible sources;

-- an analysis of the best system of continuous emission control technology available for all sources subject to BART, taking into account the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, and the remaining useful life of the source. Unlike the analysis for BART under 40 CFR 51.308(e)(1), which requires that these factors be considered on a case-by-case basis, States may consider these factors on a category-wide basis, as appropriate, in evaluating alternatives to BART;

--an analysis of the degree of visibility improvement that would result from the alternative program in each affected Class I area.

States must ensure that a trading program or other such measure includes all BART-eligible sources, unless a source has installed BART, or plans to install BART consistent with

51.308(e)(1).[53] A trading program also may include sources not subject to BART. A State may also work together with other States to develop a common trading program. Under 40 CFR 51.308(e)(2) States must also include in their SIPs details on how they would implement the emission trading program or other alternative measure. States must provide a detailed description of the program, including schedules for compliance, the emissions reductions that it will require, the administrative and technical procedures for implementing the program, rules for accounting and monitoring emissions, and procedures for enforcement.

G. What is included in the guidelines?

In the guidelines, we provide procedures States must use in implementing the regional haze BART requirements on a source-by-source basis, as provided in 40 CFR 51.308(e)(1). We address general topics related to development of a

[53] As noted in the preamble to the regional haze rule, States need not include a BART-eligible source in the trading program if the source already has installed BART-level pollution control technology and the emission limit is a federally enforceable requirement (64 FR 35742). We clarify in these guidelines that States may also elect to allow a source the option of installing BART-level controls within the 5-year period for compliance with the BART requirement [see section VI of these guidelines] rather than participating in a trading program.

trading program or other alternative allowed by 40 CFR 51.308(e)(2).

The BART analysis process, and the contents of these guidelines, are as follows:

- Identification of all BART-eligible sources. Section II of these guidelines outlines a step-by-step process for identifying BART-eligible sources.

- Identification of sources subject to BART. As noted above, sources "subject to BART" are those BART-eligible sources which "emit a pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I area." We discuss considerations for identifying sources subject to BART in section III of the guidance.

- The BART determination process. For each source subject to BART, the next step is to conduct an analysis of emissions control alternatives. This step requires the identification of available, technically feasible, retrofit technologies, and for each technology identified, analysis of the cost of compliance, and the energy and non-air quality environmental impacts, taking into account

the remaining useful life and existing control technology present at the source. This step also requires taking into account the degree of visibility improvement that would be achieved in each affected Class I area as a result of the emissions reductions achievable from sources subject to BART. The visibility impacts analysis must take into account the degree of improvement in visibility from the emissions reductions from the "best technologies" identified. For each source, a "best system of continuous emission reduction" will be selected based upon these analyses. Procedures for the BART determination step are described in section IV of these guidelines.

- Emissions limits. States must establish enforceable limits, including a deadline for compliance, for each source subject to BART. Considerations related to these limits are discussed in section VI of these guidelines.

- Considerations in establishing a trading program alternative. General guidance on how to develop an emissions trading program alternative is contained in section VII of these guidelines.

H. Who is the target audience for the guidelines?

The guidelines are written primarily for the benefit of State, local and Tribal agencies, and describe the requirements for including the BART determinations and emission limitations in their SIPs or Tribal implementation plans (TIPs). Throughout the guidelines, which are written in a question and answer format, we ask questions "How do I.....?" and answer with phrases "you should...., you must...." The "you" means a State, local or Tribal agency conducting the analysis.[54] We recognize, however, that agencies may prefer to require source owners to assume part of the analytical burden, and that there will be differences in how the supporting information is collected and documented. We also recognize that much of the data collection, analysis, and rule development may be performed by Regional Planning Organizations, for adoption within each SIP or TIP.

The preamble to the 1999 regional haze rule discussed at length the issue of Tribal implementation. As explained there, requirements related to visibility are among the programs for which Tribes may be determined eligible and

[54] In order to account for the possibility that BART-eligible sources could go unrecognized, we recommend that you adopt requirements placing a responsibility on source owners to self-identify if they meet the criteria for BART-eligible sources.

receive authorization to implement under the "Tribal Authority Rule" ("TAR") (40 CFR 49.1 -- 49.11). Tribes are not subject to implementation plan deadlines and may use a modular approach to CAA implementation. We believe there are very few BART-eligible sources located on Tribal lands. Where such sources exist, the affected Tribe may apply for delegation of implementation authority for this rule, following the process set forth in the TAR.

I. Do EPA regulations require the use of these guidelines?

Section 169A(b) requires us to issue these guidelines for States to follow in establishing BART emission limitations for fossil-fuel fired generating power plants having a capacity in excess of 750 megawatts. This document is intended to fulfill that requirement. These guidelines also establish procedures that States must follow in establishing BART emission limitations for all other BART sources. Under 40 CFR 308(e)(1)(ii)(B), we are requiring States to follow these guidelines in all BART determinations. We believe this approach will promote equitable application of the BART requirement to source owners with similar sources in different States.

II. HOW TO IDENTIFY BART-ELIGIBLE SOURCES

This section provides guidelines on how to identify BART-eligible sources. A BART-eligible source is an existing stationary source in any of 26 listed categories which meets criteria for startup dates and potential emissions.

A. What are the steps In identifying BART-eligible sources?

Figure 1 shows the steps for identifying whether the source is a "BART eligible source:"

Step 1: Identify the emission units in the BART categories,

Step 2: Identify the start-up dates of those emission units, and

Step 3: Compare the potential emissions to the 250 ton/yr cutoff.

Figure 1. How to determine whether a source is BART-eligible:

Step 1: Identify emission units in the BART categories

Does the plant contain emissions units in one or more of the 26 source categories? ➜ No ➜ Stop

➜ Yes ➜ Proceed to Step 2

Step 2: Identify the start-up dates of these emission units

Do any of these emissions units meet the following two tests?

In existence on

August 7, 1977

AND

Began operation after

August 7, 1962

➜ No ➜ Stop

➜ Yes ➜ Proceed to Step 3

Step 3: Compare the potential emissions from these emission units to the 250 ton/yr cutoff

Identify the "stationary source" that

includes the emission units you identified

in Step 2.

Add the current potential emissions from all the

emission units identified in Steps 1 and 2 that are included within the "stationary source" boundary.

Are the potential emissions from these units

250 tons per year or more for any

visibility-impairing pollutant?

➜ No ➜ Stop

➜ Yes ➜ These emissions units comprise the "BART-eligible source."

1. Step 1: Identify emission units in the BART categories

The BART requirement only applies to sources in specific categories listed in the CAA. The BART requirement does not apply to sources in other source categories, regardless of their emissions. The listed categories are:

(1) Fossil-fuel fired steam electric plants of more than 250 million British thermal units (BTU) per hour heat input,

(2) Coal cleaning plants (thermal dryers),

(3) Kraft pulp mills,

(4) Portland cement plants,

(5) Primary zinc smelters,

(6) Iron and steel mill plants,

(7) Primary aluminum ore reduction plants,

(8) Primary copper smelters,

(9) Municipal incinerators capable of charging more than 250 tons of refuse per day,

(10) Hydrofluoric, sulfuric, and nitric acid plants,

(11) Petroleum refineries,

(12) Lime plants,

(13) Phosphate rock processing plants,

(14) Coke oven batteries,

(15) Sulfur recovery plants,

(16) Carbon black plants (furnace process),

(17) Primary lead smelters,

(18) Fuel conversion plants,

(19) Sintering plants,

(20) Secondary metal production facilities,

(21) Chemical process plants,

(22) Fossil-fuel boilers of more than 250 million BTUs per hour heat input,

(23) Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels,

(24) Taconite ore processing facilities,

(25) Glass fiber processing plants, and

(26) Charcoal production facilities.

Some plants may have emission units from more than one category, and some emitting equipment may fit into more than one category. Examples of this situation are sulfur recovery plants at petroleum refineries, coke oven batteries and sintering plants at steel mills, and chemical process plants at refineries. For Step 1, you identify <u>all</u> of the emissions units at the plant that fit into one or more of the listed categories. You do not identify emission units in other categories.

<u>Example:</u> A mine is collocated with an electric steam generating plant and a coal cleaning plant. You would identify emission units associated with the electric steam generating plant and the coal cleaning plant, because they are listed categories, but not the mine, because coal mining is not a listed category.

The category titles are generally clear in describing the types of equipment to be listed. Most of the category titles are very broad descriptions that encompass all emission units associated with a plant site (for example, "petroleum refining" and "kraft pulp mills"). In addition, this same list of categories appears in the PSD regulations, for example in 40 CFR 52.21. States and source owners need not revisit any interpretations of the list made previously for purposes of the PSD program. We provide the following clarifications for a few of the category titles:

- "Steam electric plants of more than 250 million BTU/hr heat input." Because the category refers to "plants," boiler capacities must be aggregated to determine whether the 250 million BTU/hr threshold is reached. This definition also includes those plants that cogenerate steam and electricity. Also, consistent with other EPA rules, the definition only includes those plants that generate electricity for sale.

Example: A stationary source includes a steam electric plant with three 100 million BTU/hr boilers. Because the aggregate capacity exceeds 250 million BTU/hr for the "plant," these boilers would be identified in Step 2.

"Steam electric plants" includes combined cycle turbines because of their incorporation of heat recovery steam generators. Simple cycle turbines are not "steam electric plants" because they typically do not make steam.

– "Fossil-fuel boilers of more than 250 million BTU/hr heat input." We interpret this category title to cover only those boilers that are individually greater than 250 million BTU/hr. However, an individual boiler smaller than 250 million BTU/hr should be subject to BART if it is part of a process description at a plant that is in a different BART category – for example, a boiler at a chemical process plant.

Also, you should consider a multi-fuel boiler to be a fossil-fuel boiler if it burns at least 50 percent fossil fuels. You may take federally enforceable operational limits into account in determining whether a multi-fuel boiler's fossil fuel capacity exceeds 250 million Btu/hr.

– Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels. The 300,000 barrel cutoff refers to total facility-wide tank capacity for tanks that were put in place within the 1962-1977 time

period, and includes gasoline and other petroleum-derived liquids.

- "Phosphate rock processing plants." This category descriptor is broad, and includes all types of phosphate rock processing facilities, including elemental phosphorous plants as well as fertilizer production plants.

- "Charcoal production facilities." We interpret this category to include charcoal briquet manufacturing and activated carbon production.

- "Chemical process plants" and pharmaceutical manufacturing. Consistent with past policy, we interpret the category "chemical process plants" to include those facilities within 2-digit SIC 28. Accordingly, we interpret the term "chemical process plants" to include pharmaceutical manufacturing facilities.

- "Secondary metal production." We interpret this category to include nonferrous metal facilities included within SIC code 3341, and secondary ferrous metal facilities that we also consider to be included within the category "iron and steel mill plants."

2. Step 2: Identify the start-up dates of the emission units

Emissions units listed under Step 1 are BART-eligible only if they were "in existence" on August 7, 1977 but were not "in operation" before August 7, 1962.

What does "in existence on August 7, 1977" mean?

The regional haze rule defines "in existence" to mean that:

> "the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (1) begun, or caused to begin, a continuous program of physical on-site construction of the facility or (2) entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of construction of the facility to be completed in a reasonable time." See 40 CFR 51.301.

Thus, the term "in existence" means the same thing as the term "commence construction" as that term is used in the PSD

regulations. See 40 CFR 51.165(a)(1)(xvi) and 40 CFR 52.21(b)(9). Thus, an emissions unit could be "in existence" according to this test even if it did not begin operating until several years later.

Example: The owner or operator obtained necessary permits in early 1977 and entered into binding construction agreements in June 1977. Actual on-site construction began in late 1978, and construction was completed in mid-1979. The source began operating in September 1979. The emissions unit was "in existence" as of August 7, 1977.

Emissions units of this size for which construction commenced AFTER August 7, 1977 (i.e., were not "in existence" on August 7, 1977) were subject to major new source review (NSR) under the PSD program. Thus, the August 7, 1977 "in existence" test is essentially the same thing as the identification of emissions units that were grandfathered from the NSR review requirements of the 1977 CAA amendments.

Sources are not BART-eligible if the only change at the plant during the relevant time period was the addition of

pollution controls. For example, if the only change at a copper smelter during the 1962 through 1977 time period was the addition of acid plants for the reduction of SO_2 emissions, these emission controls would not by themselves trigger a BART review.

What does "in operation before August 7, 1962" mean?

An emissions unit that meets the August 7, 1977 "in existence" test is not BART-eligible if it was in operation before August 7, 1962. "In operation" is defined as "engaged in activity related to the primary design function of the source." This means that a source must have begun actual operations by August 7, 1962 to satisfy this test.

Example: The owner or operator entered into binding agreements in 1960. Actual on-site construction began in 1961, and construction was complete in mid-1962. The source began operating in September 1962. The emissions unit <u>was not</u> "in operation" before August 7, 1962 and is therefore subject to BART.

What is a "reconstructed source?"

Under a number of CAA programs, an existing source which is completely or substantially rebuilt is treated as a new source. Such "reconstructed" sources are treated as new sources as of the time of the reconstruction. Consistent with this overall approach to reconstructions, the definition of BART-eligible facility (reflected in detail in the definition of "existing stationary facility") includes consideration of sources that were in operation before August 7, 1962, but were reconstructed during the August 7, 1962 to August 7, 1977 time period.

Under the regulation, a reconstruction has taken place if "the fixed capital cost of the new component exceeds 50 percent of the fixed capital cost of a comparable entirely new source." The rule also states that "Any final decision as to whether reconstruction has occurred must be made in accordance with the provisions of §§ 60.15 (f)(1) through (3) of this title." [40 CFR 51.301]. "§§ 60.15(f)(1) through (3)" refers to the general provisions for New Source Performance Standards (NSPS). Thus, the same policies and procedures for identifying reconstructed "affected facilities" under the NSPS program must also be used to identify reconstructed "stationary sources" for purposes of the BART requirement.

You should identify reconstructions on an emissions unit basis, rather than on a plantwide basis. That is, you need to identify only the reconstructed emission units meeting the 50 percent cost criterion. You should include reconstructed emission units in the list of emission units you identified in Step 1. You need consider as possible reconstructions only those emissions units with the potential to emit more than 250 tons per year of any visibility-impairing pollutant.

The "in operation" and "in existence" tests apply to reconstructed sources. If an emissions unit was reconstructed and began actual operation before August 7, 1962, it is not BART-eligible. Similarly, any emissions unit for which a reconstruction "commenced" after August 7, 1977, is not BART-eligible.

How are modifications treated under the BART provision?

The NSPS program and the major source NSR program both contain the concept of modifications. In general, the term "modification" refers to any physical change or change in the method of operation of an emissions unit that leads to an increase in emissions.

The BART provision in the regional haze rule contains no explicit treatment of modifications. Accordingly, guidelines are needed on how modified emissions units, previously subject to best available control technology (BACT), lowest achievable emission rate (LAER) and/or NSPS, are treated under the rule. The BART requirements in the CAA do not appear to provide any exemption for sources which were modified since 1977. Therefore we believe that the best interpretation of the CAA visibility provisions is that a subsequent modification does not change a unit's construction date for the purpose of BART applicability. Accordingly, an emissions unit which began operation within the 1962-1977 time window, but was modified after August 7, 1977, is BART-eligible. However, if an emissions unit began operation before 1962, it is not BART-eligible if it is modified at a later date, so long as the modification is not also a "reconstruction." We note, however, that if such a modification was a major modification subject to the BACT, LAER, or NSPS levels of control, the review process will take into account the level of control that is already in place and may find that the level of controls are already consistent with BART.

3. Step 3: Compare the potential emissions to the 250 ton/yr cutoff

The result of Steps 1 and 2 will be a list of emissions units at a given plant site, including reconstructed emissions units, that are within one or more of the BART categories and that were placed into operation within the 1962-1977 time window. The third step is to determine whether the total emissions represent a current potential to emit that is greater than 250 tons per year of any single visibility impairing pollutant. In most cases, you will add the potential emissions from all emission units on the list resulting from Steps 1 and 2. In a few cases, you may need to determine whether the plant contains more than one "stationary source" as the regional haze rule defines that term, and as we explain further below.

What pollutants should I address?

Visibility-impairing pollutants include the following:

- Sulfur dioxide (SO_2),

- Nitrogen oxides (NO_x),

- Particulate matter. (You may use PM_{10} as the indicator for particulate matter. We do not recommend use of total suspended particulates (TSP). Emissions of PM_{10} include the components of $PM_{2.5}$ as a subset.

There is no need to have separate 250 ton thresholds for PM_{10} and $PM_{2.5}$, because 250 tons of PM_{10} represents at most 250 tons of $PM_{2.5}$, and at most 250 tons of any individual particulate species such as elemental carbon, crustal material, etc.), and

– Volatile organic compounds (VOC).

Can States establish de minimis levels of emissions for pollutants at BART-eligible sources?

In order to simplify BART determinations, States may choose to identify de minimis levels of pollutants at BART-eligible sources. De minimis values should be identified with the purpose of excluding only those emissions so minimial that they are unlikely to contribute to regional haze. Any de minimis values that States consider must not be higher than the PSD applicability levels: 40 tons/yr for SO_2, NO_X and VOC, and 15 tons/yr for $PM_{1\ 0}$.

What does the term "potential" emissions mean?

The regional haze rule defines potential to emit as follows:

"Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

This definition is identical to that in the PSD program [40 CFR 51.166 and 51.18]. This means that a source which actually emits less than 250 tons per year of a visibility-impairing pollutant is BART-eligible if its emissions would exceed 250 tons per year when operating at its maximum physical and operational design (and considering all federally enforceable permit limits).

Example: A source, while operating at one-fourth of its capacity, emits 75 tons per year of SO_2. If it were operating at 100 percent of its maximum capacity, the source would emit 300 tons per year. Because under the above

definition such a source would have "potential" emissions that exceed 250 tons per year, the source (if in a listed category and built during the 1962-1977 time window) would be BART-eligible.

How do I identify whether a plant has more than one "stationary source?"

The regional haze rule, in 40 CFR 51.301, defines a stationary source as a "building, structure, facility or installation which emits or may emit any air pollutant."[55] The rule further defines "building, structure or facility" as:

all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities must be considered as part of the same industrial grouping if they belong to

[55] Note: Most of these terms and definitions are the same for regional haze and the 1980 visibility regulations. For the regional haze rule we use the term "BART-eligible source" rather than "existing stationary facility" to clarify that only a limited subset of existing stationary sources are subject to BART.

the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1972 as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00176-0, respectively).

In applying this definition, it is necessary to determine which facilities are located on "contiguous or adjacent properties." Within this contiguous and adjacent area, it is also necessary to group those emission units that are under "common control." We note that these plant boundary issues and "common control" issues are very similar to those already addressed in implementation of the title V operating permits program and in NSR.

For emission units within the "contiguous or adjacent" boundary and under common control, you must group emission units that are within the same industrial grouping (that is, associated with the same 2-digit Standard Industrial Classification (SIC) code).[56] For most plants on the BART source category list, there will only be one 2-digit SIC that applies to the entire plant. For example, all

[56] We recognize that we are in a transition period from the use of the SIC system to a new system called the North American Industry Classification System (NAICS). For purposes of identifying BART-eligible sources, you may use either 2-digit SICS or the equivalent in the NAICS system.

emission units associated with kraft pulp mills are within SIC code 26, and chemical process plants will generally include emission units that are all within SIC code 28. The "2-digit SIC test" applies in the same way as the test is applied in the major source NSR programs.[57]

For purposes of the regional haze rule, you must group emissions from all emission units put in place within the 1962-1977 time period that are within the 2-digit SIC code, even if those emission units are in different categories on the BART category list.

Examples: A chemical plant which started operations within the 1962 to 1977 time period manufactures hydrochloric acid (within the category title "Hydrochloric, sulfuric, and nitric acid plants") and various organic chemicals (within the category title "chemical process plants"), and has onsite an

[57]Note: The concept of support facility used for the NSR program applies here as well. Support facilities, that is facilities that convey, store or otherwise assist in the production of the principal product, must be grouped with primary facilities even when the facilities fall within separate SIC codes. For purposes of BART reviews, however, such support facilities (a) must be within one of the 26 listed source categories and (b) must have been in existence as of August 7, 1977, and (c) must not have been in operation as of August 7, 1962.

industrial boiler greater than 250 million BTU/hour. All of the emission units are within SIC 28 and, therefore, all the emission units are considered in determining BART eligibility of the plant. You sum the emissions over all of these emission units to see whether there are more than 250 tons per year of potential emissions.

A steel mill which started operations within the 1962 to 1977 time period includes a sintering plant, a coke oven battery, and various other emission units. All of the emission units are within SIC 33. You sum the emissions over all of these emission units to see whether there are more than 250 tons per year of potential emissions.

4. Final Step: Identify the emissions units and pollutants that constitute the BART-eligible source

If the emissions from the list of emissions units at a stationary source exceed a potential to emit of 250 tons per year for any visibility-impairing pollutant, then that collection of emissions units is a BART-eligible source. A

BART analysis is required for **each** visibility-impairing pollutant emitted at each BART-eligible source.

Example: A stationary source comprises the following two emissions units, with the following potential emissions:

Emissions unit A	200 tons/yr SO_2
	150 tons/yr NO_X
	25 tons/yr PM
Emissions unit B	100 tons/yr SO_2
	75 tons/yr NO_X
	10 tons/yr PM

For this example, potential emissions of SO_2 are 300 tons/yr, which exceeds the 250 tons/yr threshold. Accordingly, the entire "stationary source", that is, emissions units A and B, are subject to a BART review for SO_2, NO_X, and PM, even though the potential emissions of PM and NO_x at each emissions unit are less than 250 tons/yr each.

Example: The total potential emissions, obtained by adding the potential emissions of all emission units in a listed category at a plant site, are as follows:

200 tons/yr SO_2

150 tons/yr NO_x

25 tons/yr PM

Even though total emissions exceed 250 tons/yr, no individual regulated pollutant exceeds 250 tons/yr and this source is not BART-eligible.

III. HOW TO IDENTIFY SOURCES "SUBJECT TO BART"

Once you have identified and compiled your list of BART-eligible sources, you need to determine which of those sources may cause or contribute to any visibility impairment in a Class I area (i.e., which of those sources should be subject to BART). First, you may choose to consider that all of the BART-eligible sources in your State are subject to BART (i.e., none are exempt). Alternatively, you may submit to EPA a demonstration, based on overall visibility impacts, that the sum of all emissions from BART-eligible sources in your State do not cause or contribute to any

visibility impairment in a Class I area (i.e., none of your BART-eligible sources are subject to BART; all are exempt).

However, if you cannot or choose not to demonstrate to EPA that the sum total of emissions from BART-eligible sources in your State do not cause or contribute to any visibility impairment in Class I areas, and if you also choose not to consider that all BART-eligible sources should automatically be subject to BART, you may use the third exemption option, individual source modeling. The individual source exemption process is presented below.

1. Individual Source Exemption Process (CALPUFF modeling)

You may elect to do the modeling or to require the source to do the modeling. If the source is making the visibility impact determination, you should review and approve or disapprove of the source's analysis before making the exemption determination. For each BART-eligible source:

a. Submit a modeling protocol to EPA.

If you are having your sources do the modeling, they should prepare a modeling protocol that is acceptable to you and the EPA. If modeling is to be conducted for

receptors greater than 200 km from the emission unit, a modeling protocol is required. Some critical items to include are meteorological and terrain data, as well as source-specific information (stack height, temperature, exit velocity, elevation, and allowable emission rate of applicable pollutants), and receptor data from appropriate Class I areas. Distances from the actual BART-eligible emission unit that is modeled to each Class I area should be measured from the nearest point in the Class I area. All receptors in the Class I area should be analyzed. The State should bear in mind that, for sources 50 km from a Class I area, some receptors within that Class I area may be less than 50 km from the source while other receptors within that same Class I area may be greater than 50 km from the same source; this situation may result in two different modeling approaches for the same Class I area and source, depending upon the State's chosen method for modeling sources less than 50 km.

b. Once the modeling methodology is approved, for each Class I area:

i. Run CALPUFF for receptors in the Class I area that are greater than or equal to 50 km from the source.

For CALPUFF setup (meteorological data and parameter settings), we recommend following EPA's *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts*.

(a) Tabulate Results --

Calculate 24-hr values for each receptor as the change in deciviews compared against natural visibility conditions.

(b) Make the exemption determination --

If the change in the maximum 24-hour value at any receptor is greater than 0.5 deciviews, the source is subject to BART.

ii. For sources not subject to BART under i. above and where the distance from the BART-eligible unit modeled to the nearest receptor at any Class I area is less than 50 km:

(1) You will need to determine whether or not to exempt the source.

Use your discretion for determining visibility impacts giving consideration to CALPUFF and to other EPA-approved methods.

Note that each of the modeling options may be supplemented with source apportionment data or source apportionment modeling that is acceptable to the State and the EPA regional office.

IV. THE BART DETERMINATION: ANALYSIS OF BART OPTIONS

This section describes the process for the engineering analysis of control options for sources subject to BART.

A. What Factors Must I Address in the Engineering Analysis?

The visibility regulations define BART as follows:

> Best Available Retrofit Technology (BART) means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by... [a BART -eligible source]. The emission

> limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

The BART analysis requirement in 40 CFR 51.308(e)(1)(ii)(A) has two parts: an engineering analysis and a visibility impacts analysis. This section of the guidelines addresses the requirements for the engineering analysis. Your engineering analysis identifies the best system of continuous emission reduction taking into account:

- the available retrofit control options,

- any pollution control equipment in use at the source (which affects the availability of options and their impacts),

- the costs of compliance with control options,

- the remaining useful life of the facility (which as we will discuss below, is an integral part of the cost analysis), and

– the energy and non-air quality environmental impacts of control options.

We discuss the requirement for a visibility impacts analysis below in section V.

B. How does a BART Engineering Analysis Compare to a BACT Review Under the PSD Program?

The process for a BART analysis is very similar to the BACT review as described in the New Source Review Workshop Manual (Draft, October 1990). Consistent with the Workshop Manual, the BART engineering analysis requires that all available control technologies be ranked in descending order of control effectiveness (i.e. percent control). You must examine the most stringent alternative first. That alternative is selected as the "best" unless you demonstrate and document that the alternative cannot be justified based upon the consideration of the five statutory factors discussed below. If you eliminate the most stringent

technology in this fashion, you then consider the next most stringent alternative, and so on.

Although very similar in process, BART reviews differ in several respects from the BACT review described in the NSR Draft Manual. First, because all BART reviews apply to existing sources, the available controls and the impacts of those controls may differ from source to source. Second, the CAA requires you to take slightly different factors into account in determining BART and BACT. In a BACT analysis, the permitting authority must consider the "energy, environmental and economic impacts and other costs" associated with a control technology in making its determination. In a BART analysis, on the other hand, the State must take into account the "cost of compliance, the remaining useful life of the source, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, and the degree of improvement in visibility from the use of such technology" in making its BART determination. Because of the differences in terminology, the BACT review process tends to encompass a broader range of factors. For example, the term "environmental impacts" in the BACT definition is more broad than the term "nonair quality environmental impacts" used in the BART definition. Accordingly, there is

no requirement in the BART engineering analysis to evaluate adverse air quality impacts of control alternatives such as the relative impacts on hazardous air pollutants, although you may wish to do so. Finally, for the BART analysis, there is no minimum level of control required, while any BACT emission limitation must be at least as stringent as any NSPS that applies to the source.

C. Which Pollutants Must I Address in the Engineering Review?

Once you determine that a source is subject to BART, then a BART review is required for each visibility-impairing pollutant emitted. In a BART review, for each affected emission unit, you must establish BART for each pollutant that can impair visibility. Consequently, the BART determination must address air pollution control measures for each emissions unit or pollutant emitting activity subject to review.

Example: Plantwide emissions from emission units within the listed categories that began operation within the "time window" for BART[58] are 300 tons/yr of NO_x, 200 tons/yr of SO_2, and 150 tons/yr of primary particulate.

[58] That is, emission units that were in existence on August 7, 1977 and which began actual operation on or after August 7, 1962.

Emissions unit A emits 200 tons/yr of NO_x, 100 tons/yr of SO_2, and 100 tons/yr of primary particulate. Other emission units, units B through H, which began operating in 1966, contribute lesser amounts of each pollutant. For this example, a BART review is required for NO_x, SO_2, and primary particulate, and control options must be analyzed for units B through H as well as unit A.

D. How Does a BACT Review Relate to Maximum Achievable Control Technology (MACT) Standards Under CAA Section 112?

For VOC and PM sources subject to MACT standards, States may streamline the analysis by including a discussion of the MACT controls and whether any major new technologies have been developed subsequent to the MACT standards. We believe that there are many VOC and PM sources that are well controlled because they are regulated by the MACT standards, which EPA developed under CAA section 112. For a few MACT standards, this may also be true for SO_2. Any source subject to MACT standards must meet a level that is as stringent as the best-controlled 12 percent of sources in the industry. Examples of these hazardous air pollutant sources which effectively control VOC and PM emissions include (among others) secondary lead facilities, organic chemical plants subject to the hazardous organic NESHAP (HON),

pharmaceutical production facilities, and equipment leaks and wastewater operations at petroleum refineries. We believe that, in many cases, it will be unlikely that States will identify emission controls more stringent than the MACT standards without identifying control options that would cost many thousands of dollars per ton. Unless there are new technologies subsequent to the MACT standards which would lead to cost-effective increases in the level of control, you may rely on the MACT standards for purposes of BART. We believe that the same rationale also holds true for emissions standards developed for municipal waste incinerators under CAA section 111(d).

Where you are relying on MACT standards to achieve a BART level of control, you must provide the public with a discussion of how you have reached the conclusion that it is appropriate to rely on MACT standards, and a discussion of whether any new technologies are available subsequent to the date the MACT standards were published.

E. What are the Five Basic Steps of a Case-by-Case BART Engineering Analysis?

The five steps are:

STEP 1 -- Identify All[59] Available Retrofit Control Technologies,

STEP 2-- Eliminate Technically Infeasible Options,

STEP 3-- Rank Remaining Control Technologies By Control Effectiveness,

STEP 4-- Evaluate Impacts and Document the Results, and

STEP 5 – Evaluate Visibility Impacts.

1. STEP 1: How do I identify all available retrofit emission control techniques?

Available retrofit control options are those air pollution control technologies with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. Air pollution control technologies can include a wide variety of available methods, systems, and techniques for control of the affected

[59] In identifying "all" options, you must identify the most stringent option and a reasonable set of options for analysis that reflects a comprehensive list of available technologies. It is not necessary to list all permutations of available control levels that exist for a given technology -- the list is complete if it includes the maximum level of control each technology is capable of achieving.

pollutant. Available air pollution control technologies can include technologies employed outside of the United States that have been successfully demonstrated in practice on full scale operations, particularly those that have been demonstrated as retrofits to existing sources. Technologies required as BACT or LAER are available for BART purposes and must be included as control alternatives. The control alternatives should include not only existing controls for the source category in question, but also take into account technology transfer of controls that have been applied to similar source categories and gas streams. Technologies which have not yet been applied to (or permitted for) full scale operations need not be considered as available; we do not expect the source owner to purchase or construct a process or control device that has not already been demonstrated in practice.

Where a NSPS exists for a source category (which is the case for most of the categories affected by BART), you should include a level of control equivalent to the NSPS as one of the control options.[60] The NSPS standards are

[60] In EPA's 1980 BART guidelines for reasonably attributable visibility impairment, we concluded that NSPS standards generally, at that time, represented the best level sources could install as BART, and we required no further demonstration if a NSPS level was selected. In the 20 year period since this guidance was developed, there have

codified in 40 CFR part 60. We note that there are situations where NSPS standards do not require the most stringent level of available control for all sources within a category. For example, post-combustion NO_x controls (the most stringent controls for stationary gas turbines) are not required under subpart GG of the NSPS for Stationary Gas Turbines. However, such controls must still be considered available technologies for the BART selection process.

Potentially applicable retrofit control alternatives can be categorized in three ways.

- Pollution prevention: use of inherently lower-emitting processes/practices, including the use of materials and production processes and work practices that prevent emissions and result in lower "production-specific" emissions,

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been advances in SO_2 control technologies as well as technologies for the control of other pollutants, confirmed by a number of recent retrofits at Western power plants. Accordingly, EPA no longer concludes that the NSPS level of controls automatically represents "the best these sources can install." While it is possible that a detailed analysis of the BART factors could result in the selection of a NSPS level of control, we believe that you should only reach this conclusion based upon an analysis of the full range of control options.

- Use of, (and where already in place, improvement in the performance of) add-on controls, such as scrubbers, fabric filters, thermal oxidizers and other devices that control and reduce emissions after they are produced, and

- Combinations of inherently lower-emitting processes and add-on controls. Example: for a gas-fired turbine, a combination of combustion controls (an inherently lower-emitting process) and post-combustion controls such as selective catalytic reduction (add-on) may be available to reduce NO_x emissions.

For the engineering analysis, you should consider potentially applicable control techniques from all three categories. You should consider lower-polluting processes based on demonstrations from facilities manufacturing identical or similar products using identical or similar raw materials or fuels. Add-on controls, on the other hand, should be considered based on the physical and chemical characteristics of the pollutant-bearing emission stream. Thus, candidate add-on controls may have been applied to a broad range of emission unit types that are similar, insofar as emissions characteristics, to the emissions unit undergoing BART review.

In the course of the BART engineering analysis, one or more of the available control options may be eliminated from consideration because they are demonstrated to be technically infeasible or to have unacceptable energy, cost, or non-air quality environmental impacts on a case-by-case (or site-specific) basis. However, at the outset, you should initially identify all control options with potential application to the emissions unit under review.

We do not consider BART as a requirement to redesign the source when considering available control alternatives. For example, where the source subject to BART is a coal-fired electric generator, we do not require the BART analysis to consider building a natural gas-fired electric turbine although the turbine may be inherently less polluting on a per unit basis.

In some cases, retrofit design changes may be available for making a given production process or emissions unit inherently less polluting.[61] (Example: use of low NO_X burners). In such cases, the ability of design

[61] Because BART applies to existing sources, we recognize that there will probably be far fewer opportunities to consider inherently lower-emitting processes than may be available for NSR.

considerations to make the process inherently less polluting must be considered as a control alternative for the source.

Combinations of inherently lower-polluting processes/practices (or a process made to be inherently less polluting) and add-on controls could possibly yield more effective means of emissions control than either approach alone. Therefore, the option to use an inherently lower-polluting process does not, in and of itself, mean that no additional add-on controls need to be included in the BART analysis. These combinations should be identified in Step 1 for evaluation in subsequent steps. (Example: use of low NO_X burner and add-on SCR for NO_X control).

For emission units subject to a BART engineering review, there will often be control measures or devices already in place. For such emission units, it is important to include control options that involve improvements to existing controls, and not to limit the control options only to those measures that involve a complete replacement of control devices.

Example: For a power plant with an existing wet scrubber, the current control efficiency is 66 percent. Part of the reason for the

relatively low control efficiency is that 22 percent of the gas stream bypasses the scrubber. An engineering review identifies options for improving the performance of the wet scrubber by redesigning the internal components of the scrubber and by eliminating or reducing the percentage of the gas stream that bypasses the scrubber. Four control options are identified: (1) 78 percent control based upon improved scrubber performance while maintaining the 22 percent bypass, (2) 83 percent control based upon improved scrubber performance while reducing the bypass to 15 percent, (3) 93 percent control based upon improving the scrubber performance while eliminating the bypass entirely, (this option results in a "wet stack" operation in which the gas leaving the stack is saturated with water) and (4) 93 percent as in option 3, with the addition of an indirect reheat system to reheat the stack gas above the saturation temperature. You must consider each of these four options in a BART analysis for this source.

You are expected to identify all demonstrated and potentially applicable retrofit control technology alternatives. Examples of general information sources to consider include:

- The EPA's Clean Air Technology Center, which includes the RACT/BACT/LAER Clearinghouse (RBLC);
- State and Local Best Available Control Technology Guidelines - many agencies have online information– for example South Coast Air Quality Management District, Bay Area Air Quality Management District, and Texas Natural Resources Conservation Commission;
- Control technology vendors;
- Federal/State/Local NSR permits and associated inspection/performance test reports;
- Environmental consultants;
- Technical journals, reports and newsletters, air pollution control seminars; and
- The EPA's NSR bulletin board-- http://www.epa.gov/ttn/nsr;

- Department of Energy's Clean Coal Program -- technical reports;

- The NO_x Control Technology "Cost Tool" - Clean Air Markets Division web page -- http://www.epa.gov/airmarkets/arp/nox/controltech.html;

- Performance of selective catalytic reduction on coal-fired steam generating units - final report. OAR/ARD, June 1997 (also available at http://www.epa.gov/airmarkets/arp/nox/controltech.html) ;

- Cost estimates for selected applications of NO_x control technologies on stationary combustion boilers. OAR/ARD June 1997. (Docket for NO_x SIP Call, A-96-56, item II-A-03);

- Investigation of performance and cost of NO_x controls as applied to group 2 boilers. OAR/ARD, August 1996. (Docket for Phase II NO_X rule, A-95-28, item IV-A-4);

- Controlling SO_2 Emissions: A Review of Technologies. EPA-600/R-00-093, USEPA/ORD/NRMRL, October 2000; and

- The OAQPS Control Cost Manual.

You should compile appropriate information from all available information sources, and you should ensure that the resulting list of control alternatives is complete and comprehensive.

2. STEP 2: How do I determine whether the options identified in Step 1 are technically feasible?

In Step 2, you evaluate the technical feasibility of the control options you identified in Step 1. You should clearly document a demonstration of technical infeasibility and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review. You may then eliminate such technically infeasible control options from further consideration in the BART analysis.

In general, what do we mean by technical feasibility?

Control technologies are technically feasible if either (1) they have been installed and operated successfully for the type of source under review, or (2) the technology could be applied to the source under review. Two key concepts are important in determining whether a technology

could be applied: "availability" and "applicability." As explained in more detail below, a technology is considered "available" if the source owner may obtain it through commercial channels, or it is otherwise available within the common sense meaning of the term. An available technology is "applicable" if it can reasonably be installed and operated on the source type under consideration. A technology that is available and applicable is technically feasible.

What do we mean by "available" technology?

The typical stages for bringing a control technology concept to reality as a commercial product are:

- concept stage;
- research and patenting;
- bench scale or laboratory testing;
- pilot scale testing;
- licensing and commercial demonstration; and
- commercial sales.

A control technique is considered available, within the context presented above, if it has reached the licensing and commercial sales stage of development. Similarly, we do not expect a source owner to conduct extended trials to learn how to apply a technology on a totally new and dissimilar source type. Consequently, you would not consider technologies in the pilot scale testing stages of development as "available" for purposes of BART review.

Commercial availability by itself, however, is not necessarily a sufficient basis for concluding a technology to be applicable and therefore technically feasible. Technical feasibility, as determined in Step 2, also means a control option may reasonably be deployed on or "applicable" to the source type under consideration.

Because a new technology may become available at various points in time during the BART analysis process, we believe that guidelines are needed on when a technology must be considered. For example, a technology may become available during the public comment period on the State's rule development process. Likewise, it is possible that new technologies may become available after the close of the State's public comment period and before submittal of the SIP to EPA, or during EPA's review process on the SIP

submittal. In order to provide certainty in the process, we propose that all technologies be considered if available before the close of the State's public comment period. You need not consider technologies that become available after this date. As part of your analysis, you should consider any technologies brought to your attention in public comments. If you disagree with public comments asserting that the technology is available, you should provide an explanation for the public record as to the basis for your conclusion.

What do we mean by "applicable" technology?

You need to exercise technical judgment in determining whether a control alternative is applicable to the source type under consideration. In general, a commercially available control option will be presumed applicable if it has been or is soon to be deployed (e.g., is specified in a permit) on the same or a similar source type. Absent a showing of this type, you evaluate technical feasibility by examining the physical and chemical characteristics of the pollutant-bearing gas stream, and comparing them to the gas stream characteristics of the source types to which the technology had been applied previously. Deployment of the control technology on a new or existing source with similar

gas stream characteristics is generally a sufficient basis for concluding the technology is technically feasible barring a demonstration to the contrary as described below.

What type of demonstration is required if I conclude that an option is not technically feasible?

Where you assert that a control option identified in Step 1 is technically infeasible, you should make a factual demonstration that the option is commercially unavailable, or that unusual circumstances preclude its application to a particular emission unit. Generally, such a demonstration involves an evaluation of the characteristics of the pollutant-bearing gas stream and the capabilities of the technology. Alternatively, a demonstration of technical infeasibility may involve a showing that there are unresolvable technical difficulties with applying the control to the source (e.g., size of the unit, location of the proposed site, or operating problems related to specific circumstances of the source). Where the resolution of technical difficulties is a matter of cost, you should consider the technology to be technically feasible. The cost of a control alternative is considered later in the process.

The determination of technical feasibility is sometimes influenced by recent air quality permits. In some cases, an air quality permit may require a certain level of control, but the level of control in a permit is not expected to be achieved in practice (e.g., a source has received a permit but the project was canceled, or every operating source at that permitted level has been physically unable to achieve compliance with the limit). Where this is the case, you should provide supporting documentation showing why such limits are not technically feasible, and, therefore, why the level of control (but not necessarily the technology) may be eliminated from further consideration. However, if there is a permit requiring the application of a certain technology or emission limit to be achieved for such technology (especially as a retrofit for an existing emission unit), this usually is sufficient justification for you to assume the technical feasibility of that technology or emission limit.

Physical modifications needed to resolve technical obstacles do not, in and of themselves, provide a justification for eliminating the control technique on the basis of technical infeasibility. However, you may consider the cost of such modifications in estimating costs. This,

in turn, may form the basis for eliminating a control technology (see later discussion).

Vendor guarantees may provide an indication of commercial availability and the technical feasibility of a control technique and could contribute to a determination of technical feasibility or technical infeasibility, depending on circumstances. However, we do not consider a vendor guarantee alone to be sufficient justification that a control option will work. Conversely, lack of a vendor guarantee by itself does not present sufficient justification that a control option or an emissions limit is technically infeasible. Generally, you should make decisions about technical feasibility based on chemical, and engineering analyses (as discussed above), in conjunction with information about vendor guarantees.

A possible outcome of the BART procedures discussed in these guidelines is the evaluation of multiple control technology alternatives which result in essentially equivalent emissions. It is not our intent to encourage evaluation of unnecessarily large numbers of control alternatives for every emissions unit. Consequently, you should use judgment in deciding on those alternatives for which you will conduct the detailed impacts analysis (Step 4

below). For example, if two or more control techniques result in control levels that are essentially identical, considering the uncertainties of emissions factors and other parameters pertinent to estimating performance, you may evaluate only the less costly of these options. You should narrow the scope of the BART analysis in this way, only if there is a negligible difference in emissions and energy and non-air quality environmental impacts between control alternatives.

3. STEP 3: How do I develop a ranking of the technically feasible alternatives?

Step 3 involves ranking all the technically feasible control alternatives identified in Step 2. For the pollutant and emissions unit under review, you rank the control alternatives from the most to the least effective in terms of emission reduction potential.

Two key issues that must be addressed in this process include:

(1) Making sure that you express the degree of control using a metric that ensures an "apples to apples"

comparison of emissions performance levels among options, and

(2) Giving appropriate treatment and consideration of control techniques that can operate over a wide range of emission performance levels.

What are the appropriate metrics for comparison?

This issue is especially important when you compare inherently lower-polluting processes to one another or to add-on controls. In such cases, it is generally most effective to express emissions performance as an average steady state emissions level per unit of product produced or processed.

Examples of common metrics:

- pounds of SO_2 emissions per million Btu heat input, and
- pounds of NO_x emissions per ton of cement produced.

How do I evaluate control techniques with a wide range of emission performance levels?

Many control techniques, including both add-on controls and inherently lower polluting processes, can perform at a wide range of levels. Scrubbers and high and low efficiency electrostatic precipitators (ESPs) are two of the many examples of such control techniques that can perform at a wide range of levels. It is not our intent to require analysis of each possible level of efficiency for a control technique, as such an analysis would result in a large number of options. It is important, however, that in analyzing the technology you take into account the most stringent emission control level that the technology is capable of achieving. You should use the most recent regulatory decisions and performance data (e.g., manufacturer's data, engineering estimates and the experience of other sources) to identify an emissions performance level or levels to evaluate.

In assessing the capability of the control alternative, latitude exists to consider any special circumstances pertinent to the specific source under review, or regarding the prior application of the control alternative. However, you must document the basis for choosing the alternate level (or range) of control in the BART analysis. Without a showing of differences between the source and other sources that have achieved more

stringent emissions limits, you should conclude that the level being achieved by those other sources is representative of the achievable level for the source being analyzed.

You may encounter cases where you may wish to evaluate other levels of control in addition to the most stringent level for a given device. While you must consider the most stringent level as one of the control options, you may consider less stringent levels of control as additional options. This would be useful, particularly in cases where the selection of additional options would have widely varying costs and other impacts.

Finally, we note that for retrofitting existing sources in addressing BART, you should consider ways to improve the performance of existing control devices, particularly when a control device is not achieving the level of control that other similar sources are achieving in practice with the same device.

How do I rank the control options?

After determining the emissions performance levels (using appropriate metrics of comparison) for each control

technology option identified in Step 2, you establish a list that identifies the most stringent control technology option. Each other control option is then placed after this alternative in a ranking according to its respective emissions performance level, ranked from lowest emissions to highest emissions (most effective to least stringent effective emissions control alternative). You should do this for each pollutant and for each emissions unit (or grouping of similar units) subject to a BART analysis.

4. STEP 4: For a BART engineering analysis, what impacts must I calculate and report? What methods does EPA recommend for the impacts analysis?

After you identify and rank the available and technically feasible control technology options, you must then conduct three types of impacts analyses when you make a BART determination:

Impact analysis part 1:	costs of compliance, (taking into account the remaining useful life of the facility)
Impact analysis part 2:	energy impacts, and

Impact analysis part 3: non-air quality environmental impacts.

In this section, we describe how to conduct each of these three analyses. You are responsible for presenting an evaluation of each impact along with appropriate supporting information. You should discuss and, where possible, quantify both beneficial and adverse impacts. In general, the analysis should focus on the direct impact of the control alternative.

a. *Impact analysis part 1: How do I estimate the costs of control?*

To conduct a cost analysis, you:

-- identify the emissions units being controlled,

-- identify design parameters for emission controls, and

-- develop cost estimates based upon those design parameters.

It is important to identify clearly the emission units being controlled, that is, to specify a well-defined area or process segment within the plant. In some cases,

multiple emission units can be controlled jointly. However, in other cases, it may be appropriate in the cost analysis to consider whether multiple units will be required to install separate and/or different control devices. The engineering analysis should provide a clear summary list of equipment and the associated control costs. Inadequate documentation of the equipment whose emissions are being controlled is a potential cause for confusion in comparison of costs of the same controls applied to similar sources.

You then specify the control system design parameters. Potential sources of these design parameters include equipment vendors, background information documents used to support NSPS development, control technique guidelines documents, cost manuals developed by EPA, control data in trade publications, and engineering and performance test data. The following are a few examples of design parameters for two example control measures:

Control Device	**Examples of Design Parameters**
Wet Scrubbers	Type of sorbent used (lime, limestone, etc.) Gas pressure drop Liquid/gas ratio
Selective Catalytic Reduction	Ammonia to NO_x molar ratio Pressure drop Catalyst life

The value selected for the design parameter should ensure that the control option will achieve the level of emission control being evaluated. You should include in your analysis, documentation of your assumptions regarding design parameters. Examples of supporting references would include the Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual (see below) and background information documents used for NSPS and hazardous pollutant emission standards. If the design parameters you specified differ from typical designs, you should document the difference by supplying performance

test data for the control technology in question applied to the same source or a similar source.

Once the control technology alternatives and achievable emissions performance levels have been identified, you then develop estimates of capital and annual costs. The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS Control Cost Manual, Fifth Edition, February 1996, EPA 453/B-96-001).[62] In order to maintain and improve consistency, cost estimates should be based on the EPA/OAQPS Control Cost Manual, where possible.[63] The Control Cost Manual addresses most control technologies in sufficient detail for a BART analysis. While the types of site-specific analyses contained in the

[62] The Control Cost Manual is updated periodically. While this citation refers to the latest version at the time this guidance was written, you should use the version that is current as of when you conduct your impact analysis. This document is available at the following Web site: http://www.epa.gov/ttn/catc/dir1/chpt2acr.pdf

[63] You should include documentation for any additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the Control Cost Manual.

Control Cost Manual are less precise than those based upon a detailed engineering design, normally the estimates provide results that are plus or minus 30 percent, which is generally sufficient for the BART review. The cost analysis should take into account site-specific conditions that are out of the ordinary (e.g., use of a more expensive fuel or additional waste disposal costs) that may affect the cost of a particular BART technology option.

b. How do I take into account a project's "remaining useful life" in calculating control costs?

You treat the requirement to consider the source's "remaining useful life" of the source for BART determinations as one element of the overall cost analysis. 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 Control Cost Manual require the use 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.

For purposes of these guidelines, the remaining useful life is the difference between:

(1) January 1 of the year you are conducting the BART analysis (but not later than January 1, 2007)[64]; and

(2) the date the facility permanently stops operations. Where this affects the BART determination, this date must be assured by a federally-enforceable restriction preventing further operation. A projected closure date, without such a federally-enforceable restriction, is not sufficient.

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

[64] The reason for the year 2007 is that the year 2007 is the latest year for which a BART analysis will be conducted in order to be included in a regional haze SIP.

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. If the reduced time period does change the level of BART controls, you may identify, and include as part of the BART emission limitation, the more stringent level of control that would be required as BART if there were no assumption that reduced the remaining useful life. You may incorporate into the BART emission limit this more stringent level, which would serve as a contingency should the source continue operating more than 5 years after the date EPA approves the relevant SIP. The source would not be allowed to operate after the 5-year mark without such controls. If a source does operate after the 5-year mark without BART in place, the source is considered to be in violation of the BART emissions limit for each day of operation.

c. What do we mean by cost effectiveness?

Cost effectiveness, in general, is a criterion used to assess the potential for achieving an objective in the most economical way. For purposes of air pollutant

analysis, "effectiveness" is measured in terms of tons of pollutant emissions removed, and "cost" is measured in terms of annualized control costs. We recommend two types of cost-effectiveness calculations -- average cost effectiveness, and incremental cost effectiveness.

In the cost analysis, you should take care to not focus on incomplete results or partial calculations. For example, large capital costs for a control option alone would not preclude selection of a control measure if large emissions reductions are projected. In such a case, low or reasonable cost effectiveness numbers may validate the option as an appropriate BART alternative irrespective of the large capital costs. Similarly, projects with relatively low capital costs may not be cost effective if there are few emissions reduced.

d. How do I calculate average cost effectiveness?

Average cost effectiveness means the total annualized costs of control divided by annual emissions reductions (the difference between baseline annual emissions and the estimate of emissions after controls), using the following formula:

Average cost effectiveness (dollars per ton removed) =

$$\frac{\text{Control option annualized cost}[65]}{\text{Baseline annual emissions - Annual emissions with Control option}}$$

Because you calculate costs in (annualized) dollars per year ($/yr) and because you calculate emissions rates in tons per year (tons/yr), the result is an average cost-effectiveness number in (annualized) dollars per ton ($/ton) of pollutant removed.

e. *How do I calculate baseline emissions*?

The baseline emissions rate should represent a realistic depiction of anticipated annual emissions for the source. In general, for the existing sources subject to BART, you will estimate the anticipated annual emissions based upon actual emissions from a baseline period.

When you project that future operating parameters (e.g., limited hours of operation or capacity utilization, type

[65] Whenever you calculate or report annual costs, you should indicate the year for which the costs are estimated. For example, if you use the year 2000 as the basis for cost comparisons, you would report that an annualized cost of $20 million would be: $20 million (year 2000 dollars).

of fuel, raw materials or product mix or type) will differ from past practice, and if this projection has a deciding effect in the BART determination, then you must make these parameters or assumptions into enforceable limitations. In the absence of enforceable limitations, you calculate baseline emissions based upon continuation of past practice.

For example, the baseline emissions calculation for an emergency standby generator may consider the fact that the source owner would not operate more than past practice of 2 weeks a year. On the other hand, baseline emissions associated with a base-loaded turbine should be based on its past practice which would indicate a large number of hours of operation. This produces a significantly higher level of baseline emissions than in the case of the emergency/standby unit and results in more cost-effective controls. As a consequence of the dissimilar baseline emissions, BART for the two cases could be very different.

f. *How do I calculate incremental cost effectiveness?*

In addition to the average cost effectiveness of a control option, you should also calculate incremental cost effectiveness. You should consider the incremental cost

effectiveness in combination with the total cost effectiveness in order to justify elimination of a control option. The incremental cost effectiveness calculation compares the costs and emissions performance level of a control option to those of the next most stringent option, as shown in the following formula:

Incremental Cost Effectiveness (dollars per incremental ton removed)

=

(Total annualized costs of control option) - (Total annualized costs of next control option)

÷

(Next control option annual emissions) - (Control option annual emissions)

Example 1: Assume that Option F on Figure 2 has total annualized costs of $1 million to reduce 2000 tons of a pollutant, and that Option D on Figure 2 has total annualized costs of $500,000 to reduce 1000 tons of the same pollutant. The incremental cost effectiveness of Option F relative to Option D is ($1 million - $500,000) divided by (2000 tons - 1000 tons), or $500,000 divided by 1000 tons, which is $500/ton.

Example 2: Assume that two control options exist: Option 1 and Option 2. Option 1 achieves a 1,000 ton/yr reduction at an annual cost of $1,900,000. This

represents an average cost of ($1,900,000 / 1,000 tons) = $1,900/ton. Option 2 achieves a 980 tons/yr reduction at an annual cost of $1,500,000. This represents an average cost of ($1,500,000 / 980 tons) = $1,531/ton. The incremental cost effectiveness of Option 1 relative to Option 2 is ($1,900,000 - $1,500,000) divided by (1,000 tons - 980 tons). The adoption of Option 1 instead of Option 2 results in an incremental emission reduction of 20 tons per year at an additional cost of $400,000 per year. The incremental cost of Option 1, then, is $20,000 per ton – 11 times the average cost of $1,900 per ton. While $1,900 per ton may still be deemed reasonable, it is useful to consider both the average and incremental cost in making an overall cost-effectiveness finding. Of course, there may be other differences between these options, such as, energy or water use, or non-air environmental effects, which also should be considered in selecting a BART technology.

You should exercise care in deriving incremental costs of candidate control options. Incremental cost-effectiveness comparisons should focus on annualized cost and emission

reduction differences between “dominant” alternatives. To identify dominant alternatives, you generate a graphical plot of total annualized costs for total emissions reductions for all control alternatives identified in the BART analysis, and by identifying a “least-cost envelope” as shown in Figure 2. (A “least-cost envelope” represents the set of options that should be dominant in the choice of a specific option.)

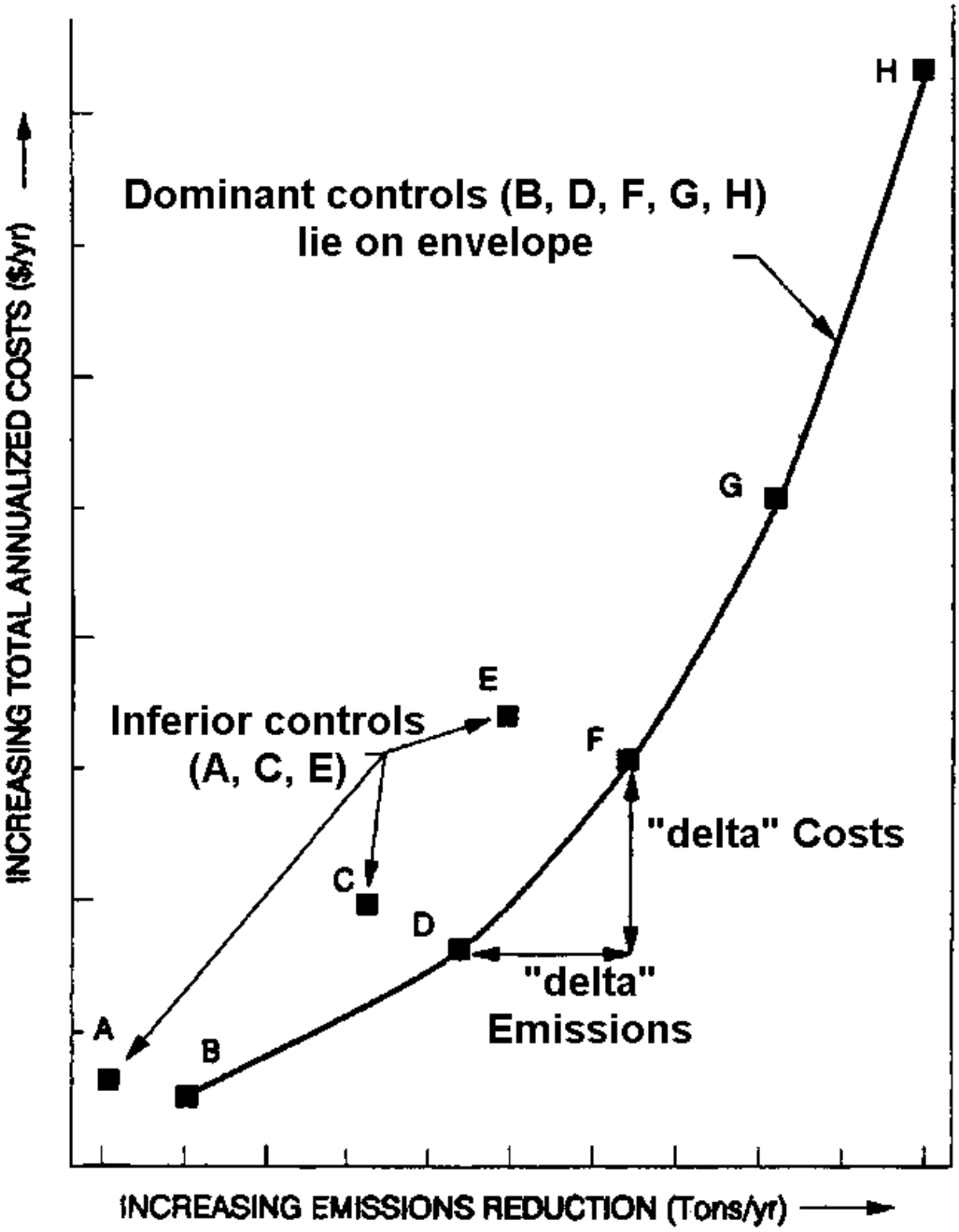
INCREASING TOTAL ANNUALIZED COSTS ($/yr)
Dominant controls (B, D, F, G, H)
lie on envelope
H
G
E
Inferior controls
(A, C, E)
F
"delta" Costs
C
D
"delta"
Emissions
A
B
INCREASING EMISSIONS REDUCTION (Tons/yr)

Figure 2. Least-cost Envelope.

Example: Eight technically feasible control options for analysis are listed in the BART ranking. These are represented as A through H in Figure 2. The dominant set of control options, B, D, F, G, and H, represent the least-cost envelope, as we depict by the cost curve connecting them. Points A, C and E are inferior options, and you should not use them in calculating incremental cost effectiveness. Points A, C and E represent inferior controls because B will buy more emissions reductions for less money than A; and similarly, D and F will buy more reductions for less money than C and E, respectively.

In calculating incremental costs, you:

(1) Rank the control options in ascending order of annualized total costs,

(2) Develop a graph of the most reasonable smooth curve of the control options, as shown in Figure 2. This is to show the "least-cost envelope" discussed above; and

(3) Calculate the incremental cost effectiveness for each dominant option, which is the difference in total annual costs between that option and the next most stringent option, divided by the difference in emissions reductions between those two options. For example, using Figure 2, you would calculate incremental cost effectiveness for the difference between options B and D, options D and F, options F and G, and options G and H.

A comparison of incremental costs can also be useful in evaluating the viability of a specific control option over a range of efficiencies. For example, depending on the capital and operational cost of a control device, total and incremental cost may vary significantly (either increasing or decreasing) over the operational range of a control device. Also, the greater the number of possible control options that exist, the more weight should be given to the incremental costs vs. average costs.

In addition, when you evaluate the average or incremental cost effectiveness of a control alternative, you should make reasonable and supportable assumptions regarding control efficiencies. An unrealistically low assessment of the emission reduction potential of a certain

technology could result in inflated cost-effectiveness figures.

g. *What other information should I provide in the cost impacts analysis?*

You should provide documentation of any unusual circumstances that exist for the source that would lead to cost-effectiveness estimates that would exceed that for recent retrofits. This is especially important in cases where recent retrofits have cost-effectiveness values that are within what has been considered a reasonable range, but your analysis concludes that costs for the source being analyzed are not considered reasonable. (A reasonable range would be a range that is consistent with the range of cost effectiveness values used in other similar permit decisions over a period of time.)

Example: In an arid region, large amounts of water are needed for a scrubbing system. Acquiring water from a distant location could greatly increase the cost effectiveness of wet scrubbing as a control option.

h. Impact analysis part 2: How should I analyze and report energy impacts?

You should examine the energy requirements of the control technology and determine whether the use of that technology results in any significant or unusual energy penalties or benefits. A source owner may, for example, benefit from the combustion of a concentrated gas stream rich in volatile organic compounds; on the other hand, more often extra fuel or electricity is required to power a control device or incinerate a dilute gas stream. If such benefits or penalties exist, they should be quantified and included in the cost analysis. Because energy penalties or benefits can usually be quantified in terms of additional cost or income to the source, the energy impacts analysis can, in most cases, simply be factored into the cost impacts analysis. However, certain types of control technologies have inherent energy penalties associated with their use. While you should quantify these penalties, so long as they are within the normal range for the technology in question, you should not consider such penalties to be an adequate justification for eliminating that technology from consideration.

Your energy impact analysis should consider only direct energy consumption and not indirect energy impacts. For example, you could estimate the direct energy impacts of the control alternative in units of energy consumption at the source (e.g., BTU, kWh, barrels of oil, tons of coal). The energy requirements of the control options should be shown in terms of total (and in certain cases, also incremental) energy costs per ton of pollutant removed. You can then convert these units into dollar costs and, where appropriate, factor these costs into the control cost analysis.

You generally do not consider indirect energy impacts (such as energy to produce raw materials for construction of control equipment). However, if you determine, either independently or based on a showing by the source owner, that the indirect energy impact is unusual or significant and that the impact can be well quantified, you may consider the indirect impact.

The energy impact analysis may also address concerns over the use of locally scarce fuels. The designation of a scarce fuel may vary from region to region. However, in general, a scarce fuel is one which is in short supply locally and can be better used for alternative purposes,

or one which may not be reasonably available to the source either at the present time or in the near future.

Finally, the energy impacts analysis may consider whether there are relative differences between alternatives regarding the use of locally or regionally available coal, and whether a given alternative would result in significant economic disruption or unemployment. For example, where two options are equally cost effective and achieve equivalent or similar emissions reductions, one option may be preferred if the other alternative results in significant disruption or unemployment.

i. Impact analysis part 3: How do I analyze "non-air quality environmental impacts?"

In the non-air quality related environmental impacts portion of the BART analysis, you address environmental impacts other than air quality due to emissions of the pollutant in question. 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 emissions 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 procedure for conducting an analysis of non- air quality environmental impacts should be made based on a consideration of site-specific circumstances. It is not necessary to perform this analysis of environmental impacts for the entire list of technologies you ranked in Step 3, if you propose to adopt the most stringent alternative. In general, the analysis need only address those control alternatives with any significant or unusual environmental impacts that have the potential to affect the selection of a control alternative, or elimination of a more stringent control alternative. Thus, any important relative environmental impacts (both positive and negative) of alternatives can be compared with each other.

In general, the analysis of impacts starts with the identification and quantification of the solid, liquid, and gaseous discharges from the control device or devices under review. Initially, you should perform a qualitative or semi-quantitative screening to narrow the analysis to discharges with potential for causing adverse environmental effects. Next, you should assess the mass and composition of any such discharges and quantify them

to the extent possible, based on readily- available information. You should also assemble pertinent information about the public or environmental consequences of releasing these materials.

j. What are examples of non-air quality environmental impacts?

The following are examples of how to conduct non-air quality environmental impacts:

- Water Impact

You should identify the relative quantities of water used and water pollutants produced and discharged as a result of the use of each alternative emission control system relative to the most stringent alternative. Where possible, you should assess the effect on ground water and such local surface water quality parameters as ph, turbidity, dissolved oxygen, salinity, toxic chemical levels, temperature, and any other important considerations. The analysis should consider whether applicable water quality standards will be met and the availability and effectiveness of various techniques to reduce potential adverse effects.

- Solid Waste Disposal Impact

You should compare the quality and quantity of solid waste (e.g., sludges, solids) that must be stored and disposed of or recycled as a result of the application of each alternative emission control system with the quality and quantity of wastes created with the most stringent emission control system. You should consider the composition and various other characteristics of the solid waste (such as permeability, water retention, rewatering of dried material, compression strength, leachability of dissolved ions, bulk density, ability to support vegetation growth and hazardous characteristics) which are significant with regard to potential surface water pollution or transport into and contamination of subsurface waters or aquifers.

- Irreversible or Irretrievable Commitment of Resources

You may consider the extent to which the alternative emission control systems may involve a trade-off between short-term environmental gains at the expense of long-term environmental losses and the extent to which the alternative systems may result in irreversible or

irretrievable commitment of resources (for example, use of scarce water resources).

- Other Adverse Environmental Impacts

You may consider significant differences in noise levels, radiant heat, or dissipated static electrical energy. Other examples of non-air quality environmental impacts would include hazardous waste discharges such as spent catalysts or contaminated carbon. Generally, these types of environmental concerns become important when the plant is located in an area that is particularly sensitive to environmental degradation and when the incremental emissions reductions potential of the most stringent control option is only marginally greater than the next most-effective option, but the environmental impact is of greater concern.

- Benefits to the Environment

It is important to consider relative differences between options regarding their beneficial impacts to non-air quality-related environmental media. For example, you may consider whether a given control option results in less deposition of pollutants, in particular nitrogen

compounds, to nearby sensitive water bodies (lakes, rivers, coastal waters). You may also consider effects which may be unique to high elevation ecosystems. In some eastern Class I areas with elevations above 1000 meters, there may be direct deposition of acid and nitrogen compounds on vegetation and soil from cloud impacts. Growth rates and competition between alien and native species might be affected by pollution loadings as well. As part of the consultation requirement between States and the Federal Land Managers in 40 CFR 51.308(i)(2), we expect the Federal Land Managers to provide information on non-air quality indicators to be considered in determining BART and other implementation strategies. The States should also consider such information available from other sources, such as public comments.

5. Step 5: How should I determine visibility impacts in the BART determination?

The following is the approach to determine visibility impacts (the degree of visibility improvement for each source subject to BART) in the BART determination. You may elect to conduct the modeling or require the source to conduct the modeling. If modeling is to be conducted for receptors greater than 200 km from the emission unit, a

modeling protocol is required. If the source is conducting the modeling, you should review and approve or disapprove of the source's analysis. Note that distances from the actual BART-eligible emission unit that is modeled to each Class I area should be measured from the nearest point in the Class I area. All receptors in the Class I area should be analyzed. The State should bear in mind that, for sources 50 km from a Class I area, some receptors within that Class I area may be less than 50 km from the source while other receptors within that same Class I area may be greater than 50 km from the same source; this situation may result in two different modeling approaches for the same Class I area and source, depending upon the State's chosen method for modeling sources less than 50 km.

1. For receptors in the Class I area that are greater than or equal to 50 km from the emission unit:

(1) Run CALPUFF, at pre-control allowable emission rates and post-control allowable emission rates.

For CALPUFF setup (meteorological data and parameter settings), we recommend following EPA's *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations*

for Modeling Long Range Transport Impacts. Choose an emission control level representing the most stringent control option available for the post-control scenario.

(2) Tabulate Results

(i) Calculate 24-hr values for each receptor as the change in deciviews compared against natural visibility conditions (conditions that are estimated to exist in a given Class I area in the absence of human-caused impairment). Tabulate pre-control and post-control results.

(b) Make the net visibility improvement determination

(i) Assess the visibility improvement based on the change in visibility impact of the average 20% worst modeled days between the pre-control and post-control emission rates. For example, if average impact from the 20% worst days for a source's pre-control emission rates for

a particular receptor is a change of 1.0 deciviews, and its post-control impact is 0.4 deciviews, the net visibility improvement is 0.6 deciviews (60%). All receptors in the Class I area should be analyzed.

2. **For sources that have not determined their degree of visibility improvement under 1. above and where all receptors at a Class I area are less than 50 km from the BART-eligible unit:**

   (1) Estimate visibility impacts for pre-control and post-control emissions.

   Give consideration to CALPUFF or other EPA-approved methods or local scale models for determining visibility impacts for pre-controlled and post-controlled emissions.

   (2) Estimate the degree of visibility improvement expected.

Note that each of the modeling options may be supplemented with source apportionment data or source apportionment

modeling that is acceptable to the State and the EPA regional office.

F. How do I select the "best" alternative, using the results of Steps 1 through 5?

1. Summary of the Impacts Analysis

From the alternatives you ranked in Step 3, you should develop a chart (or charts) displaying for each of the ranked alternatives:

- expected emission rate (tons per year, pounds per hour);
- emissions performance level (e.g., percent pollutant removed, emissions per unit product, lb/MMbtu, ppm);
- expected emissions reductions (tons per year);
- costs of compliance -- total annualized costs ($), cost effectiveness ($/ton), and incremental cost effectiveness ($/ton);
- energy impacts (indicate any significant energy benefits or disadvantages);

- non-air quality environmental impacts (includes any significant or unusual other media impacts, e.g., water or solid waste), both positive and negative; and

- modeled visibility impacts.

2. Selecting a "best" alternative

As discussed above, we are seeking comment on two alternative approaches for evaluating control options for BART. The first involves a sequential process for conducting the impacts analysis that begins with a complete evaluation of the most stringent control option. Under this approach, you determine that the most stringent alternative in the ranking does not impose unreasonable costs of compliance, taking into account both average and incremental costs, then the analysis begins with a presumption that this level is selected. You then proceed to considering whether energy and non-air quality environmental impacts would justify selection of an alternative control option. If there are no outstanding issues regarding energy and non-air quality environmental impacts, the analysis is ended and the most stringent alternative is identified as the "best system of continuous emission reduction."

If you determine that the most stringent alternative is unacceptable due to such impacts, you need to document the rationale for this finding for the public record. Then, the next most-effective alternative in the listing becomes the new control candidate and is similarly evaluated. This process continues until you identify a technology which does not pose unacceptable costs of compliance, energy and/or non-air quality environmental impacts.

We also request comment on an alternative decision-making approach that would not begin with an evaluation of the most stringent control option. For example, you could choose to begin the BART determination process by evaluating the least stringent, technically feasible control option or by evaluating an intermediate control option drawn from the range of technically feasible control alternatives. Under this approach, you would then consider the additional emissions reductions, costs, and other effects (if any) of successively more stringent control options. Under such an approach, you would still be required to (1) display and rank all of the options in order of control effectiveness and to identify the average and incremental costs of each option; (2) consider the energy and non-air quality environmental impacts of each option; and (3) provide a justification for adopting the

technology that you select as the "best" level of control, including an explanation as to why you rejected other more stringent control technologies.

In the case where you are conducting a BART determination for two regulated pollutants on the same source, if the result is two different BART technologies that do not work well together, you could then substitute a different technology or combination of technologies, provided that they achieve at least the same emissions reductions for each pollutant.

3. In selecting a "best" alternative, should I consider the affordability of controls?

Even if the control technology is cost effective, there may be cases where the installation of controls would affect the viability of continued plant operations.

As a general matter, for plants that are essentially uncontrolled at present, and emit at much greater levels per unit of production than other plants in the category, we are unlikely to accept as BART any analysis that preserves a source's uncontrolled status. While this result may predict the shutdown of some facilities, we

believe that the flexibility provided in the regional haze rule for an alternative reduction approach, such as an emissions trading program, will minimize the likelihood of forced shutdowns.

Nonetheless, we recognize there may be unusual circumstances that justify taking into consideration the conditions of the plant and the economic effects of requiring the use of a given control technology. These effects would include effects on product prices, the market share, and profitability of the source. We do not intend, for example, that the most stringent alternative must always be selected, if that level would cause a plant to shut down, while a slightly lesser degree of control would not have this effect. Where there are such unusual circumstances that are judged to have a severe effect on plant operations, you may take into consideration the conditions of the plant and the economic effects of requiring the use of a control technology. Where these effects are judged to have a severe impact on plant operations you may consider them in the selection process, so long as you provide an economic analysis that demonstrates, in sufficient detail for a meaningful public review, the specific economic effects, parameters, and reasoning. (We recognize that this review process must

preserve the confidentiality of sensitive business information). Any analysis should consider whether other competing plants in the same industry may also be required to install BART controls.

4. Sulfur dioxide limits for utility boilers

You must require 750 MW power plants to meet specific control levels of either 95% control, or controls in the range of .1 to .15 lbs/MMBtu, for each EGU greater than 250 MW, unless you determine that an alternative control level is clearly justified based on a careful consideration of the statutory factors. Thus, for example, if the source convincingly demonstrates unique circumstances affecting its ability to cost-effectively reduce its emissions, you should take that into account in determining whether the presumptive levels of control are appropriate for that facility. For an EGU greater than 250 MW in size, but located at a power plant smaller than 750 MW in size, you should similarly find that such controls are cost-effective as a general matter when taking into consideration the costs of compliance in your BART analysis. You should consider these control levels as the minimum that may be required. While these levels may represent current control capabilities, we expect that

scrubber technology will continue to improve and control costs continue to decline. You should be sure to consider the level of control that is currently best achievable at the time that you are conducting your BART analysis.

5. Nitrogen oxide limits for utility boilers

You should establish specific numerical limits for NOx control for each BART determination. For sources currently using selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) for part of the year, you should presume that use of those same controls year-round is highly cost-effective.

For all other utility boilers, you should also presume that a NOx emission limit of 0.2 lbs/MMBtu is cost-effective. Most utility boilers can achieve a degree of removal of 0.2 lbs/MMBtu with relatively inexpensive controls such as low NOx burners and combustion control. For those sources who cannot achieve this control level without SCR, you may find SCR to be appropriate if you finds visibility impacts that are of high enough concern to warrant the additional capital cost.

V. ENFORCEABLE LIMITS/COMPLIANCE DATE

To complete the BART process, you must establish enforceable emission limits and require compliance within a given period of time. In particular, you must establish an enforceable emission limit for each subject emission unit at the source and for each pollutant subject to review that is emitted from the source. In addition, you must require compliance with the BART emission limitations no later than 5 years after EPA approves your regional haze SIP. If technological or economic limitations in the application of a measurement methodology to a particular emission unit would make an emissions limit infeasible, you may prescribe a design, equipment, work practice, operation standard, or combination of these types of standards. You should ensure that any BART requirements are written in a way that clearly specifies the individual emission unit(s) subject to BART review. Because the BART requirements are "applicable" requirements of the CAA, they must be included as title V permit conditions according to the procedures established in 40 CFR part 70 or 40 CFR part 71.

Section 302(k) of the CAA requires emissions limits such as BART to be met on a continuous basis. Although this provision does not necessarily require the use of continuous

emissions monitoring (CEMs), it is important that sources employ techniques that ensure compliance on a continuous basis. Monitoring requirements generally applicable to sources, including those that are subject to BART, are governed by other regulations. See, e.g., 40 CFR part 64 (compliance assurance monitoring); 40 CFR 70.6(a)(3) (periodic monitoring); 40 CFR 70.6(c)(1) (sufficiency monitoring). Note also that while we do not believe that CEMs would necessarily be required for all BART sources, the vast majority of electric generating units already employ CEM technology for other programs, such as the acid rain program. In addition, emissions limits must be enforceable as a practical matter (contain appropriate averaging times, compliance verification procedures and recordkeeping requirements). In light of the above, the permit must:

- be sufficient to show compliance or noncompliance (i.e., through monitoring times of operation, fuel input, or other indices of operating conditions and practices); and

- specify a reasonable averaging time consistent with established reference methods, contain reference methods for determining compliance, and provide for adequate reporting and recordkeeping so that air

quality agency personnel can determine the compliance status of the source.

VI. EMISSION TRADING PROGRAM OVERVIEW

40 CFR 51.308(e)(2) allows States the option of implementing an emissions trading program or other alternative measure instead of requiring BART. This option provides the opportunity for achieving better environmental results at a lower cost than under a source-by-source BART requirement. A trading program must include participation by BART sources, but may also include sources that are not subject to BART. The program would allow for implementation during the first implementation period of the regional haze rule (that is, by the year 2018) instead of the 5-year compliance period noted above. In this section of the guidance, we provide an overview of the steps in developing a trading program[66] consistent with 40 CFR 51.308(e)(2).

A. What are the general steps in developing an emission trading program?

[66] We focus in this section on emission cap and trade programs which we believe will be the most common type of economic incentive program developed as an alternative to BART.

The basic steps are to:

(1) Develop emission budgets;

(2) Allocate emission allowances to individual sources; and

(3) Develop a system for tracking individual source emissions and allowances. (For example, procedures for transactions, monitoring, compliance and other means of ensuring program accountability).

A good example of an emissions trading program is the acid rain program under title IV of the CAA. The acid rain program is a national program -- it establishes a national emissions cap, allocates allowances to individual sources, and allows trading of allowances between all covered sources in the United States. The Ozone Transport Commission's NO_x Memorandum of Understanding, and the NO_x SIP call both provide for regional trading programs. The recently proposed Interstate Air Quality Rule (69 FR 4566, January 30, 2004) would establish statewide emissions budgets and allows for trading programs to achieve the budgets. Other trading programs generally have applied only to sources within a single State. In the proposed Interstate Air

Quality rule (IAQR) (69 FR 4566, January 30, 2004), we requested comment on whether compliance with the IAQR by affected EGUs in affected States would satisfy, for those sources, the BART requirements of the CAA, provided that a State imposes the full amount of SO2 and NOx emissions reductions on EGUs that the IAQR deemed highly cost effective. We are in the process of evaluating those comments. Based on our current evaluation, we believe the IAQR, as proposed, is clearly better than BART for those affected EGUs in the affected States which we propose to cover under the IAQR. We thus expect that the final IAQR would satisfy the BART requirements for affected EGUs that are covered pursuant to the final IAQR.

In creating a trading program as an alternative to source-specific BART, a State may wish to work with other States through a regional planning organization to develop a regional, multi-state program. Such a program would provide greater opportunities for emission trading. Coordination through the Regional Planning Organization (RPO) would ensure compatibility of the core elements of the trading program – budgets, allocations, tracking, etc. – between the SIPs and TIPs of participating States and Tribes. The WRAP has adopted such a regional market trading program as a backstop to its overall emission reduction program for SO_2.

Although regional trading programs require more interstate coordination, we have expertise that we can offer to States wishing to pursue such a program.

B. What are emission budgets and allowances?

An emissions budget is a limit, for a given source population, on the total emissions amount[67] that may be emitted by those sources over a State or region. An emission budget is also referred to as an "emission cap."

In general, the emission budget is subdivided into source-specific amounts that we refer to as "allowances." Generally, each allowance equals one ton of emissions. Sources must hold allowances for all emissions of the pollutant covered by the program that they emit. Once you allocate the allowances, source owners have flexibility in determining how they will meet their emissions limit. Source owners have the options of:

[67] An emission budget generally represents a total emission amount for a single pollutant such as SO_2. As noted in the preamble to the regional haze rule (64 FR 35743, July 1, 1999) we believe that unresolved technical difficulties preclude inter-pollutant trading at this time.

-- emitting at the level of allowances they are allocated (for example, by controlling emissions or curtailing operations),

-- emitting at amounts less than the allowance level, thus freeing up allowances that may be used by other sources owned by the same owner, or sold to another source owner, or

-- emitting at amounts greater than the allowance level, and purchasing allowances from other sources or using excess allowances from another plant under the same ownership.

C. What criteria must be met in developing an emission trading program as an alternative to BART?

Under the regional haze rule, an emission trading program must achieve "greater reasonable progress" (that is, greater visibility improvement) than would be achieved through the installation and operation of source-specific BART. The "greater reasonable progress" demonstration involves the following steps, which are discussed in more detail below:

-- identify the sources that are subject to BART,

-- calculate the emissions reductions that would be achieved if BART were installed and operated on sources subject to BART,

-- demonstrate whether your emission budget achieves emission levels that are equivalent to or less than the emissions levels that would result if BART were installed and operated,

-- analyze whether implementing a trading program in lieu of BART would likely lead to differences in the geographic distribution of emissions within a region, and

-- demonstrate that the emission levels will achieve greater progress in visibility than would be achieved if BART were installed and operated on sources subject to BART.

1. How do I identify sources subject to BART?

For a trading program, you would identify sources subject to BART in the same way as we described in sections II and III of these guidelines.

2. How do I calculate the emissions reductions that would be achieved if BART were installed and operated on these sources?

For a trading program under 51.308(e)(2), you may identify these emissions reductions by:

-- conducting a case-by-case analysis for each of the sources, using the procedures described above in these guidelines in sections II through V;

-- conducting an analysis for each source category that takes into account the available technologies, the costs of compliance, the energy impacts, the non-air quality environmental impacts, the pollution control equipment in use, and the remaining useful life, on a category-wide basis; or

-- conducting an analysis that combines considerations on both source-specific and category-wide information.

For a category-wide analysis of available control options, you develop cost estimates and estimates of energy and non-air quality environmental impacts that you judge representative of the sources subject to BART for a source category as a whole, rather than analyze each source that is

subject to BART. The basic steps of a category-wide analysis are the same as for a source-specific analysis. You identify technically feasible control options and rank them according to control stringency. Next, you calculate the costs and cost effectiveness for each control option, beginning with the most stringent option. Likely, the category-wide estimate will represent a range of cost and cost-effectiveness values rather than a single number. Next, you evaluate the expected energy and non-air quality impacts (both positive and negative impacts) to determine whether these impacts preclude selection of a given alternative.

We note that States and RPOs have the flexibility to adopt an approach to the category-wide analysis of BART that would involve the evaluation of different levels of BART control options (e.g., all measures less than $1000/ton vs. all measures less than $2000/ton vs. all measures less than $3000/ton) through an iterative process of assessing relative changes in cumulative visibility impairment. For example, States or regional planning organizations could use $1000 or $2000/ton as an initial cutoff for selecting reasonable control options. The States or regional planning organizations could then compare the across-the-board regional emissions and visibility changes resulting from the

implementation of the initial control option and that resulting from the implementation of control options with a $3000/ton cutoff (or $1500/ton, etc). This approach would allow States and other stakeholders to understand the visibility differences among BART control options achieving less cost-effective or more cost-effective levels of overall control.

3. For a cap and trade program, how do I demonstrate that my emission budget results in emission levels that are equivalent to or less than the emissions levels that would result if BART were installed and operated?

Emissions budgets must address two criteria. First, you must develop an emissions budget for a future year[68] which ensures reductions in actual emissions that achieve greater reasonable visibility progress than BART. This will generally necessitate development of a "baseline forecast" of emissions for the population of sources included within the budget. A baseline forecast is a prediction of the future emissions for that source population in absence of either BART or the alternative trading program. Second, you

[68] As required by 40 CFR 51.308(e)(2)(iii), emissions reductions must take place during the period of the first long-term strategy for regional haze. This means the reductions must take place no later than the year 2018.

must take into consideration the timing of the emission budget relative to the timetable for BART. If the implementation timetable for the emission trading program is a significantly longer period than the 5-year time period for BART implementation, you should establish budgets for interim years that ensure steady and continuing progress in emissions reductions.

In evaluating whether the program milestone for the year 2018 provides for a BART-equivalent or better emission inventory total, you conduct the following steps:

-- Identify the source population included within the budget, which must include all BART sources and may include other sources,

-- For sources included within the budget, develop a base year[69] emissions inventory for stationary sources included within the budget, using the most current available emission inventory,

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[69] See *2002 Base Year Emission Inventory SIP Planning: 8-hr Ozone, PM2.5 and Regional Haze Programs.* Memorandum of November 18, 2002, from Lydia Wegman and Peter Tsirigotis, This document is available at the following web site: http://www.epa.gov/ttn/oarpg/t1/memoranda/2002bye_gm.pdf.

-- Develop a future emissions inventory for the milestone year (in most cases, the year 2018), that is, an inventory of projected emissions for the milestone year in the absence of BART or a trading program,

-- Calculate the reductions from the forecasted emissions if BART were installed on all sources subject to BART,

-- Subtract this amount from the forecasted total, and

-- Compare the budget you have selected and confirm that it does not exceed this level of emissions.

Example:

For a given region for which a budget is being developed for SO_2, the most recent inventory is for the year 2002. The budget you propose for the trading program is 1.2 million tons. The projected emissions inventory total for the year 2018, using the year 2002 inventory and growth projections, is 4 million tons per year. Application of BART controls on the population of sources subject to BART would achieve 2.5 million tons per year of reductions. Subtracting this amount from the project inventory yields a value of 1.5 million tons. Because your selected budget

of 1.2 million tons is less than this value, it achieves a better than a BART-equivalent emission total.

4. How do I ensure that trading budgets achieve "greater reasonable progress?"

In some cases, you may be able to demonstrate that a trading program that achieves greater emissions progress may also achieve greater visibility progress without necessarily conducting a detailed dispersion modeling analysis. This could be done, for example, if you can demonstrate, using economic models, that the likely distribution of emissions when the trading program is implemented would not be significantly different than the distribution of emissions if BART was in place. If distribution of emissions is not substantially different than under BART, and greater emissions reductions are achieved, then the trading program would presumptively achieve "greater reasonable progress."

If the distribution of emissions is different under the two approaches, then the possibility exists that the trading program, even though it achieves greater emissions reductions, may not achieve better visibility improvement. Where this is the case, then you must conduct dispersion modeling to determine the visibility impact of the trading

alternative. The dispersion modeling should determine differences in visibility between BART and the trading program for each impacted Class I area, for the worst and best 20 percent of days. The modeling should identify:

-- the estimated difference in visibility conditions under the two approaches for each Class I area,

-- the average difference in visibility over all Class I areas impacted by the region's emissions. [For example, if six Class I areas are in the region impacted, you would take the average of the improvement in deciviews over those six areas].

The modeling study would demonstrate "greater reasonable progress" if both of the following two criteria are met:

-- visibility does not decline in any Class I area, and

-- overall improvement in visibility, determined by comparing the average differences over all affected Class I areas.

Example: Assume that ten Class I areas are affected. You would take the average deciview improvement from BART for each of the ten Class I areas – one value for each Class I

area - and average them together. If the ten values are 2.5, 3.9, 4.1, 1.7, 3.3, 4.5, 3.1, 3.6, 3.8 and 4.5, then the average deciview improvement from BART for the ten Class I areas is 3.5 deciviews. Therefore, the average of the ten deciview values for the trading program must be 3.5 deciviews or more.

5. How do I allocate emissions to sources?

Emission allocations must be consistent with the overall budget that you provide to us. We believe it is not appropriate for us to require a particular process and criteria for individual source allocations, and thus we will not dictate how to allocate allowances. When developing an allocation methodology, the State or regional planning organization should consult with any Indian Tribes located within the trading area, regardless of whether BART-eligible sources are currently on Tribal lands. We will provide information on allocation processes to State, Tribal, and local agencies, and to RPOs.

6. What provisions must I include in developing a system for tracking individual source emissions and allowances?

In general, we expect regional haze trading programs to contain the same degree of rigor as trading programs for

criteria pollutants. In terms of ensuring the overall integrity and enforceability of a trading program, we expect that you will generally follow the guidance already being developed for other economic incentive programs (EIPs) in establishing a trading program for regional haze. In addition, we expect that any future trading programs developed by States and/or regional planning organizations will be developed in consultation with a broad range of stakeholders.

There are two EPA-administered emission trading programs that we believe provide good examples of the features of a well-run trading program. These two programs provide considerable information that would be useful to the development of regional haze trading programs as an alternative to BART.

The first example is our acid rain program under title IV of the CAA. Phase I of the acid rain reduction program began in 1995. Under phase I, reductions in the overall SO_2 emissions were required from large coal-burning boilers in 110 power plants in 21 midwest, Appalachian, southeastern and northeastern States. Phase II of the acid rain program began in 2000, and required further reductions in the SO_2 emissions from coal-burning power plants. Phase II also

extended the program to cover other lesser-emitting sources. Allowance trading is the centerpiece of EPA's acid rain program for SO_2. You will find information on this program in:

- Title IV of the CAA Amendments (1990),

- 40 CFR part 73 at 58 FR 3687 (January 1993),

- EPA's acid rain website, at www.epa.gov/acidrain/trading.html.

The second example is the rule for reducing regional transport of ground-level ozone (NO_x SIP Call). The NO_x SIP Call requires a number of eastern, midwestern, and southeastern States and the District of Columbia to submit SIPs that address the regional transport of ground-level ozone through reductions in NO_x. States may meet the requirements of the rule by participating in an EPA-administered trading program. To participate in the program, the States must submit rules sufficiently similar to a model trading rule promulgated by the Agency (40 CFR part 96). More information on this program is available in:

- the preamble and rule in the Federal Register at 63 FR 57356 (October 1998),

- the NO_x compliance guide, available at www.epa.gov/acidrain/modlrule/main.html#126,

- fact sheets for the rule, available at www.epa.gov/ttn/rto/sip/related.html#prop,

- additional information available on EPA's web site, at www.epa.gov/acidrain/modlrule/main.html.

A third program that provides a good example of trading programs is the Ozone Transport Commission (OTC) NO_x budget program. The OTC NO_x budget program was created to reduce summertime NO_x emissions in the northeast United States. The program caps NO_x emissions for the affected States at less than half of the 1990 baseline emission level of 490,000 tons, and uses trading to achieve cost-effective compliance. For more information on the trading provisions of the program, see:

- Memorandum of Understanding (MOU), available at www.sso.org/otc/att2.HTM,

- Fact sheets available at www.sso.org/otc/Publications/327facts.htm,

- Additional information, available at www.epa.gov/acidrain/otc/otcmain.html.

We are including in the docket for this rulemaking a detailed presentation that has been used by EPA's Clean Air Markets Division to explain the provisions of NO_x trading programs with State and local officials. This presentation provides considerable information on EPA's views on sound trading programs.

We recognize that it is desirable to minimize administrative burdens for sources that may be subject to the provisions of several different emission trading programs. We believe that it is desirable for any emission trading program for BART to use existing tracking systems to the extent possible. We believe that any trading program established by States for BART should be fully consistent with the recently proposed No_x/SO_x Transport rule. Should the transport rule not be in effect for the same time period or in the same States as any BART trading program, we recommend that States and/or regional planning organizations should conduct additional technical analyses to determine whether the time periods for tracking of allowances under other existing programs (i.e., annual allowances for SO_2 for the acid rain program, and allowances for the ozone season

for NO_x) are appropriate for purposes of demonstrating greater reasonable regional progress vis a vis BART. Further, we recommend that you conduct any such analysis in conjunction with the timelines for development of SIPs for regional haze.

7. How would a regional haze trading program interface with the requirements for "reasonably attributable" BART under §51.302 of the regional haze rule?

If a State elects to impose case-by-case BART emission limitations according to 40 CFR 51.308(e)(1) of the regional haze rule, then there should be no difficulties arising from the implementation of requirement for "reasonably attributable" BART under 40 CFR 51.302. However, if a State chooses an alternative measure, such as an emissions trading program, in lieu of requiring BART emissions limitation on specific sources, then the requirement for BART is not satisfied until alternative measures reduce emissions sufficient to make "more reasonable progress than BART." Thus, in that period between implementation of an emissions trading program and the satisfaction of the overall BART requirement, an individual source could be required to install BART for reasonably attributable impairment under 40 CFR 51.302. Because such an overlay of the requirements

under 40 CFR 51.302 on a trading program under 40 CFR 51.308 might affect the economic and other considerations that were used in developing the emissions trading program, the regional haze rule allows for a "geographic enhancement" under 40 CFR 51.308. This provision addresses the interface between a regional trading program and the requirement under 40 CFR 51.302 regarding BART for reasonably attributable visibility impairment. (See 40 CFR 51.308(e)(2)(v)).

We recognize the desirability of addressing any such issues at the outset of developing an emissions trading program to address regional haze. We note that the WRAP, the planning organization for the nine western States considering a trading program under 40 CFR 51.309 (which contains a similar geographic enhancement provision), has adopted policies which target use of the 51.302 provisions by the Federal Land Managers (FLMs). In this case, for the nine WRAP States, the FLMs have agreed that they will certify reasonable attributable impairment only under certain specific conditions. Under this approach, the FLMs would certify under 40 CFR 51.302 only if the regional trading program is not decreasing sulfate concentrations in a Class I area within the region. Moreover, the FLMs will certify impairment under 40 CFR 51.302 only where: (1) BART-eligible sources are located "near" that class I area and

(2) those sources have not implemented BART controls. In addition, the WRAP is investigating other procedures for States to follow in responding to a certification of "reasonably attributable" impairment if an emissions trading approach is adopted to address the BART requirement based on the sources' impact on regional haze.

The specific pollutants and the magnitude of impacts under the regional haze rule and at specific Class I areas may vary in different regions of the country. We expect that each State through its associated regional planning organization will evaluate the need for geographic enhancement procedures within any adopted regional emissions trading program.