

Note: This document was referenced in the MPCA's notice of a proposed BART strategy published in the State Register on September 6, 2005. The comment period for the notice ended Oct. 21, 2005.

PROPOSED BEST AVAILABLE RETROFIT TECHNOLOGY STRATEGY FOR MINNESOTA

Background

To meet the Clean Air Act's requirements, the U.S. Environmental Protection Agency (U.S. EPA) published regulations to address visibility impairment in our nation's largest national parks and wilderness ("Class I") areas in July 1999. This rule is commonly known as the "Regional Haze Rule" [64 Fed. Reg. 35714 (July, 1999)] and is found in 40 CFR part 51, in §§ 51.300 through 51.309. Under U.S. EPA's 1999 Regional Haze Rule, certain emission sources "that may reasonably be anticipated to cause or contribute" to visibility impairment in downwind Class I areas are required to install Best Available Retrofit Technology (BART). On July 6, 2005, U.S. EPA published a revised final rule, including Appendix Y to 40 CFR part 51 "Guidelines for BART Determinations Under the Regional Haze Rule" (Guidelines).

Within its boundary, Minnesota has two Class I areas – the Boundary Water Canoe Area Wilderness and Voyageurs National Park. In addition, emissions from Minnesota may contribute to visibility impairment in other states' Class I areas, such as Michigan's Isle Royale National Park and Seney Wilderness Area. By December 2007, Minnesota must submit to U.S. EPA a Regional Haze State Implementation Plan (SIP) that identifies sources that cause or contribute to visibility impairment in these areas. The Regional Haze SIP must also include a demonstration of reasonable progress toward reaching the 2018 visibility goal for each of the state's Class I areas. In order to achieve reasonable progress, Minnesota may need to implement control measures in addition to BART. BART applies to a relatively small subset of Minnesota sources. Additional reductions may also be required in nearby states that contribute to visibility impairment in Minnesota's Class I areas.

The BART requirements in the regional haze plan are intended to reduce emissions specifically from large sources that, due to age, were exempted from other control requirements of the Clean Air Act (CAA). For an emissions source to be considered eligible for BART, it must fall into one of 26 specified categories, must have the potential to emit at least 250 tons per year of certain haze-forming pollutants, and must have been in existence on August 7, 1977, but not in operation before August 7, 1962.

This proposed strategy outlines the MPCA's intent to implement U.S. EPA's Guidelines for BART for qualifying sources in Minnesota. U.S. EPA's BART Guidelines provide each state with discretion in the application of BART. The proposed "BART Strategy for Minnesota" outlines the MPCA's intent in each area of the Guidelines where a state is offered options. The MPCA asks for comment on the three primary options:

- A) Alternatives to BART,
- B) BART Implementation Strategy Steps, and
- C) Substituting the Clean Air Interstate Rule for BART.

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A. Alternatives to BART

Under 40 CFR 51.308 (e)(3), a state may opt to implement an alternative measure to BART, such as a regional trading program among states with BART-eligible sources provided they yield greater visibility improvement and emissions reductions than would be expected through emission controls on each facility. If a state decides to pursue this alternative, they will have an additional few years for implementation compared to the BART process.

On July 20, 2005, U.S. EPA proposed a new regulation that would give states the option to develop an emissions trading program as an alternative to BART implementation. U.S. EPA does not intend to issue the final regulation on alternatives to BART until November 2008.

The MPCA does not intend to pursue an alternative approach to BART at this time, but will continue to evaluate the viability of this approach as additional information becomes available. The relatively small number of facilities (less than a dozen) expected to be subject to BART makes an emissions trading program less attractive, if it only includes sources built in a certain timeframe and excludes other sources that may have greater impact on visibility impairment.

B. BART Implementation Strategy Steps

The application of the BART Guidelines to sources other than Electric Generating Units (EGU) at 750 MW or greater plants is optional for a state. The MPCA believes the BART Guidelines provide a reasonable and practical approach for the state to implementing BART for all BART sources. Thus, the MPCA plans to use the BART guidelines for all BART sources.

Listed below are the steps in implementing BART and the MPCA's specific plans to implement each of the BART steps in the state of Minnesota. For more information and background about the U.S. EPA's Guidelines go to U.S. EPA's internet site at www.epa.gov/oar/visibility/actions.html .

1. Identify BART-eligible Sources

On July 28, 2005, the MPCA sent out a Request for Information to about 140 facilities that are major for New Source Review (NSR). Major NSR sources are those on a list of 26 categories with potential emissions at least 100 tons per year, and if not on the list, with potential emissions at least 250 tons per year of certain pollutants regulated under the Clean Air Act. These facilities were asked to identify any BART-eligible units at their facilities. Responses are due back by the end of August 2005. Based on results of a similar preliminary survey in 2001, and a review of its permit databases, the MPCA expects about two dozen Minnesota facilities will have BART-eligible units.

The Guidelines recommend addressing these visibility-impairing pollutants: sulfur dioxide (SO₂), nitrogen oxides (NO_x), and Particulate Matter. The MPCA intends to address these three pollutants and use particulate matter less than 10 microns in diameter (PM₁₀) as an indicator for particulate matter in this first step, as the guidance suggests.

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Consistent with the Guidelines, the MPCA does not plan to evaluate emissions of Volatile Organic Compounds (VOCs) and ammonia in BART determinations for the following reasons:

- ◆ Ammonia. In its guidelines, U.S. EPA suggests that states consider ammonia as a precursor to PM_{2.5} formation on a case-by-case basis. They make the point that “States are required to make BART determinations only for stationary sources that fall within certain industrial categories.” A perusal of the specific industrial categories in Minnesota indicates that these sources do not emit ammonia in a “significant” (potential to emit 250 tons per year or more) amount. Thus, the inclusion of ammonia—while a potential contributor to visibility impairment—would not impact the MPCA’s BART-eligibility determination. Ammonia from sources that may contribute to visibility impairment will be included in the regional scale modeling, conducted by regional planning organizations, for the Regional Haze SIP. If deemed necessary, ammonia controls could be part of the Regional Haze SIP.
- ◆ VOCs. In its guidelines, U.S. EPA suggests that states consider VOCs as a precursor to PM_{2.5} formation on a case-by-case basis. Only specific VOC compounds form secondary organic aerosols that affect visibility. These compounds are a fraction of the total VOCs reported in the emissions inventory. For the BART analysis, MPCA does not have the breakdown of VOC emissions necessary to model those that only impair visibility. Although not included in BART, VOCs—both anthropogenic and biogenic—will be included in the regional scale modeling, conducted by regional planning organizations, for the Regional Haze SIP. If deemed necessary, VOC controls on anthropogenic sources could be part of the Regional Haze SIP.

For simplification purposes, the state can choose to establish de minimis levels for 1) the identification of BART-eligible sources, 2) the analysis to determine whether the BART emission units cause or contribute to visibility impairment, and 3) for BART determinations. According to the Guidelines, these de minimis levels are to be applied on a plant-wide basis. The Guidelines allow states to use de minimis levels up to the Prevention of Significant Deterioration (PSD) significance levels of 40 tons/year for SO₂ and NO_x and 15 tons/year for PM₁₀. The MPCA intends to use the de minimis levels of 40 tons/year for SO₂ and NO_x and 15 tons/year for PM₁₀ for steps 2 and 3. The MPCA does not believe that establishing de minimis levels for step 1 is practical, since the MPCA permitting database contains few, if any, potential BART sources that would be able to use the de minimis levels for step 1. Step 1 relies on potential emissions, which are greater than actual emissions.

2. Identify Sources “Subject to BART”

Once a state has compiled a list of BART-eligible sources, the state must decide to a) make BART determinations for all of them or b) consider exempting some of them from BART because they may not cause significant visibility impairment in a Class I area. The MPCA intends to perform the source-specific analysis under option b. If a

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state chooses option b, then U.S. EPA suggests three suboptions for determining that certain sources need not be subject to BART:

(1) *Individual source attribution approach (dispersion modeling).* Perform source-specific analysis to determine which sources cause or contribute to visibility impairment using CALPUFF or another U.S. EPA-approved model. U.S. EPA suggests that the 98th percentile modeling results be compared to natural background and that a source may be considered to “contribute” to visibility impairment if the impact is 0.5 deciview or greater. This means that if a facility’s BART-eligible units are predicted to exceed 0.5 deciviews more than 7 days per year, it would be subject to BART and would perform a BART determination. A state has the option to set a lower deciview threshold than that in the BART guidelines, however, at this time the MPCA intends to use the 0.5 deciview threshold. The MPCA intends to pursue the individual source attribution approach using the CALPUFF model and the information collected in the July 2005 Request for Information. The MPCA expects to develop a draft modeling protocol in September 2005. Persons wishing to review the draft modeling protocol should provide their name and address to the contact person for this notice.

(2) *Use of model plants to exempt sources with common characteristics.* Under this option, U.S. EPA suggests that states may perform extensive analyses to develop criteria for exempting model plants. Model plants are plants with common characteristics. In its guidelines, U.S. EPA seems to imply that states have an option of exempting sources at certain specified distance and emissions combinations, however, further clarification from U.S. EPA indicates that “the exemption levels from the BART guidelines were for illustrative purposes only. A state choosing to develop model plants should use its own meteorology, terrain and receptor data as (their) example was merely hypothetical and the exemption levels may not be representative.” Because the analysis required to develop the data to exempt model plants under this option would be at least as resource intensive—and less facility specific—as option (1), the MPCA does not intend to pursue this option.

(3) *Cumulative modeling to show that no sources in a state are subject to BART.* A state may submit to U.S. EPA a demonstration based on an analysis of overall visibility impacts that emissions from BART-eligible sources are not reasonably anticipated to cause or contribute to visibility impairment in any Class I area. This can be done on a pollutant-by-pollutant basis. The MPCA does not intend to pursue this option because preliminary information indicates that potential BART eligible sources are likely to contribute to visibility impairment in the Class I areas.

The MPCA intends to notify those facilities it determines—by option 1, above—are subject to BART. Those facilities will be required to perform a BART determination subject to MPCA approval. Based on screening-level analyses, the MPCA anticipates that less than ten facilities with BART-eligible units will be shown to reasonably contribute to visibility impairment and be required to perform a BART determination.

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3. Perform a BART Determination

BART is defined in the CAA regulations as “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 limit 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,
- the remaining useful life of the source, and
- the degree of improvement in visibility, which may reasonably be anticipated from the use of such technology. [*bullets and formatting added*]

The MPCA plans to require BART determinations from qualifying facilities by April 1, 2006. The MPCA will review the facility's BART determinations and the final BART emission limit will be included in the facility's title V permit through a permit amendment process which allows for public comment.

Compliance with BART emission limitations is required no later than 5 years after U.S. EPA approves Minnesota's regional haze SIP (due to U.S. EPA by December, 2007).

The MPCA intends to implement the BART determination process as suggested by U.S. EPA in its Guidelines. In several areas of the Guidelines, U.S. EPA does not recommend a specific course of action, but leaves it up to the state to decide. Here is a list of those specific items and the MPCA's proposed strategy:

Consideration of Maximum Achievable Control Technology (MACT) standards under CAA section 112 and other emission limitations required under the CAA.

The MPCA intends to streamline the analysis of PM and VOC sources subject to MACT standards in a BART determination. The MPCA agrees with U.S. EPA's assertion that it is unlikely that states will identify controls more stringent than the MACT standards without incurring much higher costs. Therefore, the MPCA intends to rely on MACT standards to represent BART level of control for those visibility-impairing pollutants addressed by the MACT standard unless there are new technologies subsequent to the MACT standards, which would lead to cost-effective increases in the level of control. For example, if a BART-eligible emissions unit emits PM₁₀ and NO_x and the unit is subject to a MACT limit for PM₁₀, then a full BART analysis need only address NO_x.

Assessment of visibility improvements due to BART controls

The state has the ability to choose among several methods for the determination of the net visibility improvement resulting from controls. At a minimum, the MPCA intends to request that facilities compare the 98th percent days for the pre- and post- control runs. Additional assessment methods may also be requested for the net visibility improvement determination. The MPCA intends to use the same modeling protocol and the same CALPUFF model inputs—excluding the changes in emissions and stack parameters due to BART controls—to assess visibility improvements due to BART controls.

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Selecting the order for evaluating control options for BART

The Guidelines give states the discretion to evaluate control options in whatever order they choose, as long as the state explains its analysis of the CAA factors. The MPCA would like a consistent approach among the various facilities for the evaluation of the control options. Therefore, the MPCA plans to use a sequential process for conducting the impacts analysis, beginning with a complete evaluation of the most stringent control option. This top-down approach is consistent with New Source Review's Best Available Control Technology (BACT) evaluation procedures, with which facilities and air permit engineers are already familiar. The factors evaluated in a BART determination are similar to a BACT determination, except that consideration of the remaining useful life and degree of visibility improvement are unique to the BART determination. The MPCA plans to adopt the following control option evaluation approach described in the Guidelines:

“If a State determines that the most stringent alternative in the ranking does not impose unreasonable costs of compliance, taking into account both average and incremental costs, the analysis begins with the presumption that this level is selected. Under this, the State would then proceed to consider 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 reduction.” If a State determines that the most stringent alternative is unacceptable due to such impacts, this approach would require them 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 the State identifies a technology which does not pose unacceptable costs of compliance, energy and/or non-air quality environmental impacts.”

Determining the weight and significance to be assigned to each factor.

Under the Guidelines, the state is free to determine the weight and significance assigned to each CAA factor. U.S. EPA uses as an example that a 0.3 deciview improvement may merit a stronger weighting in one case versus another. The MPCA plans to evaluate and weigh the significant CAA factors on a case-by-case basis in making the BART determination.

Averaging Emissions

The MPCA intends to allow sources to “average” emissions across any set of BART-eligible emission units within a fence line, so long as emission reductions from each pollutant being controlled for BART would be equal to those reductions expected to be obtained by simply controlling each of the BART-eligible units that constitute a BART-eligible source.

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C. Substituting the Clean Air Interstate Rule (CAIR) for BART

Beginning in 2009, CAIR will cap emissions of SO₂ and NO_x from EGU's in 28 eastern states. The state of Minnesota expects to participate in the CAIR cap-and-trade program. U.S. EPA has found that, as a whole, CAIR improves visibility more than implementing BART in states affected by CAIR. If CAIR is determined to substitute for BART, then BART-eligible EGU's are not required to install, operate and maintain BART.

40 CFR 51.308 (e)(4) states:

“A State that opts to participate in the Clean Air Interstate Rule cap-and-trade program under part 96 AAA-EEE need not require affected BART-eligible EGU's to install, operate, and maintain BART. A State that chooses this option may also include provisions for geographic enhancement to this program to address the requirement under 51.302 (c) related to BART for reasonably attributable impairment from the pollutants covered by the CAIR cap-and-trade program.”

The preamble states “The CAIR cap and trade program does not include geographic enhancements to accommodate the situation where BART is required based on reasonable attribution at a source which participates in the trading program, but States retain the discretion to include such enhancements in their SIPs.”

The MPCA asks for comment on the options listed below and invites ideas for options other than those listed here.

- 1) The MPCA accepts CAIR as substituting for BART. Utilities would not be required to submit BART determinations (an engineering analyses of the control options and the degree of visibility improvement achieved from those controls) nor would they be required to install BART. The MPCA could still require reductions at BART-eligible EGU's (and other sources) if it finds that it is necessary to do so to make reasonable progress in meeting the 2018 visibility goal.
- 2) The MPCA postpones making the decision of CAIR as substituting for BART until after evaluating information received in BART determinations from utilities with BART-eligible units. This decision would be made in summer 2006.
- 3) The MPCA does not accept CAIR as substituting for BART. Utilities subject to CAIR with BART-eligible units would be required to submit BART determinations and install BART.

Any comments related to this proposed BART strategy should be addressed to:

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