United States Department of the Interior
NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225

IN REPLY REFER TO:

N3615 (2350)

February 2, 2012

Mr. David Thornton, Assistant Commissioner
Air Policy
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Dear Mr. Thornton:

Thank you for the opportunity to review Minnesota's proposed Regional Haze State Implementation Plan Supplement (Supplement). The Supplement sets emission limits intended to reflect the application of best available retrofit technology (BART) determinations made in the December 2009 Regional Haze Plan submittal for the electrical generating units (EGUs) and taconite plants.

We share the concerns expressed by the US Forest Service (USFS) in its January 13, 2012, comments to you. The methodology used by MPCA results in emissions limits that are too high, and we ask that you reconsider them. In many cases, MPCA's proposed BART emission limits are higher than current actual emissions and could lead to emission increases instead of the decreases needed to improve visibility. Our technical analysis is attached to this letter.

As the Federal Land Manager (FLM) of Voyageurs National Park (NP) and Isle Royale NP, the Department of the Interior (DOI) has an "affirmative responsibility" to protect air quality related values (e.g., visibility) of these areas. DOI and the National Park Service (NPS) have taken a very active role in the implementation of the Regional Haze Program; we have interacted with your staff for several years and sent formal comment letters regarding regional haze on April 4, 2008, May 8, 2008, and September 3, 2009 (September 3, 2009 letters enclosed for your reference).

We are concerned that MPCA's proposed BART limits will not make the progress envisioned by Congress. In the case of the EGUs, we and EPA found that some of the source-specific BART limits MPCA previously proposed were too lenient (see our 2008 and 2009 letters and EPA's September 3, 2009 and June 6, 2011 letters). We also

disagree with MPCA's alternate proposal of allowing the EGU cap and trade program (the Cross-State Air Pollution Rule, CSAPR) to be substituted for source-specific BART. For Minnesota, we find CSAPR is more lenient than both MPCA's original, and our recommended lower-emitting, source-specific BART limits. It is clear that the source-specific BART limits provide the greatest visibility improvement, and we request that MPCA use the values that the FLMs proposed in 2009. The uncertain federal regulatory landscape (as evidenced by the recent stay of CSAPR) gives an additional urgency to choose the source-specific BART limits. We ask that you choose source-specific BART limits that provide the certainty of lower emissions and can be readily implemented, as opposed to the higher emission that might be allowed if CSAPR is upheld.

Minnesota and Michigan have significant responsibility to oversee the taconite industry in the United States, are these facilities are major causes of visibility impairment in several Class I areas in and near those states. In the past, we understood that there were economic and technological reasons why environmental improvements could not be made in this industry. We are encouraged, however, by the leadership shown by US Steel (USS) to comprehensively address these issues. USS has installed modern emission monitoring systems and has proposed to install, or has already installed, modern air emission controls for sulfur dioxide, nitrogen oxides, and mercury. After some difficult years, the industry appears to have returned to profitability, and new pollution control technologies provide the promise of dramatically reducing emissions at reasonable costs. We encourage MPCA to help EPA level the playing field across the industry and thereby improve visibility, environmental quality and public health.

For further information regarding our comments, please contact Don Shepherd at (303) 969-2075.

Again, we appreciate the opportunity to work closely with the State of Minnesota to improve visibility in our Class I areas.

Sincerely,

Susan Johnson
Acting Chief, Policy, Planning and Permit Review Branch

Enclosures

cc:
John Summerhays
U.S. EPA Region 5
77 W. Jackson Blvd.
Chicago, Illinois 60604

NPS Technical Comments on MPCA BART Supplement
February 2, 2012

Electrical Generating Units - EGUs
In our letter dated September 3, 2009 (attached), we commented on the source-specific EGU BART determinations proposed in MPCA's 2009 draft regional haze plan. In general, we found that the BART emission limits for some of the facilities should have been lower, resulting in lower emissions (see the previous letter for details). As was done in the 2008 draft of the regional haze plan, the transport rule (now known as the Cross-State Air Pollution Rule, CSAPR) is being substituted as BART for the source-specific EGU BART determinations.

We do not agree that CSAPR is better than source-specific BART in Minnesota. No state-specific demonstration has been made that we are aware of. In the Supplement, the emissions budget under the Clean Air Interstate Rule (the previous transport rule) is compared to CSAPR. We believe the relevant comparison that is required is a comparison of controls under CSAPR with controls under fully implemented BART.

US Forest Service (USFS) analysis[1] shows that the IPM prediction of the affect of CSAPR in 2014 is an increase in emissions over current (2010) actual emissions and above both what was proposed as source-specific BART by MPCA and what we and the other Federal Land Managers (FLMs) proposed as source-specific BART. Without any other information specific to Minnesota, we find source-specific BART to be far superior to CSAPR.

We strongly encourage the MPCA to reject using CSAPR as a replacement and believe the source-specific BART limit approach should be maintained. The MPCA should also re-evaluate the limits determined for Xcel Energy's Sherburne County and Northshore Mining's Power House and consider the comments made by EPA (in letters dated September 3, 2009 and June 6, 2011) and NPS (in our September 3, 2009 letter).

With regional haze plans overdue already, and the recent stay of CSAPR putting CSAPR's future in doubt, we are concerned with further delays in the plan and visibility improvement, and that Minnesota's Regional Haze Plan tied to rules that would provide less pollution reduction than those tailored specifically to Minnesota's needs. Instead, we ask that MPCA use source-specific BART limits that have already been evaluated and can be readily implemented in this plan.

Taconite Facilities
In their 2009 regional haze plan submittal, the MPCA proposed for the taconite facilities that primarily used natural gas as a fuel:

> For the taconite furnaces, BART for NO_X is an operating standard of *good combustion practices in combination with some proposed process changes*, while BART for PM is equivalent to the taconite Maximum Available Control Technology (MACT) standard, and BART for SO_2 is generally *existing particulate scrubbers optimized for SO_2 removal*. The MPCA is also requiring application of better emission measurement systems to set a NO_X BART emission limit, SO_2 limits at lines that burn high sulfur fuels, and determine compliance.

[1] USFS January 13, 2012 comments to MPCA

In the *italicized* portions above it can be seen that the MPCA proposed BART controls for this group of taconite units. The taconite facilities have to take actions during operations to optimize scrubbers and follow good combustions practices. The MPCA was unclear as to the specifics of each BART control option, but they were clear that BART was *not* "no control."

Due to a lack of emissions data, limits could not be set at the time the Regional Haze SIP was submitted. Most of the facilities now have continuous emission measurement systems (CEMS) and data from some of these were used to develop the proposed BART limits. We have repeatedly advocated that all facilities install these systems, and encourage the MPCA to take this opportunity to level the playing field by requiring the last few facilities to follow suit. As illustrated in a recent report[2] by Minntac on their successes at reducing NO_X: "In order to reduce NO_X emissions it is necessary to know what the emissions are on a short term basis. This enables real time data to be used when testing and tuning the equipment to better understand and evaluate how the changes are affecting NO_X performance." In order to reduce NO_X through use of combustion controls, NO_X CEMS must be installed.

The Supplement says the MPCA felt that at least one year of emissions data was needed from each facility in order to determine the appropriate BART limits. It then goes on to say that only 150 hours of data were used to set the limits for most facilities, which is less than 2% of the data originally said to be needed, and no explanation is given as to why such a small data set was chosen. To compensate for this lack of data, the Supplement discusses how the goal of the testing was to collect:

> a minimum of 150 one-hour data points under the range of [furnace] operating parameters that influence NOx emissions. The range of each operating parameter during testing should be representative of furnace's operating range for the parameters in the 12 months previous to testing.

MPCA does not explain how it determined that such a small data set was representative of 12 months of operation. Furthermore, testing should have been done under operating conditions that represent BART, as determined previously by MPCA to be good combustion parameters and scrubber optimization. Instead, the incentive for the companies was to operate at the highest emitting levels during the testing. There is no other documentation in the Supplement regarding whether BART operating practices were being followed during the tests.

A further concern is the use of a 99% confidence interval; in other recent permit-related work, the MPCA has used 95%. The MPCA chose a 99% value:

> due to the need for limits to be met during all operating conditions, including during times of startup, shutdown, and malfunction.

Other technology-based limits, such as best available control technology (BACT) limits, are not set this way. The correct way is to set a separate limit for startup, shutdown, and malfunction (SSM) conditions and one for regular operations. Otherwise, if an overall limit were set to encompass all possible emission scenarios (normal operations and SSM), the resulting limit would be inflated and not represent the capabilities of BACT. We believe a similar approach should be taken for BART.

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[2] US Steel Minntac Line 6 Low NOx Burner Final Report and Facility NOx Management, 12/1/11

In addition to our concern about the confidence level chosen for its statistical analyses, MPCA did not use a valid statistical approach in setting its limits. For example, most of the data distributions were skewed, and some were not close to "normal" in the statistical sense. We saw no explanation of any adjustments made to the data to yield distributions to which conventional statistical procedures could be correctly applied. We therefore have serious concerns about the validity of these statistical analyses.

Our greatest concern is how the limits derived from the statistical analyses were used. MPCA used a (sometimes very small) set of **hourly** data to estimate an emission rate that could be met 99% of the operating **hours**. MPCA then assumed that this **hourly** maximum emission was an appropriate limit to be met on a **30-day rolling average basis**. In effect, **MPCA is allowing sources to emit at their almost-maximum one-hour emission rate every hour of every 30-day period.** Combined with the use of the 99% level derived from an invalid analysis of a limited data set, the MPCA process artificially inflates the emission limits, which, in the end, do not require the facilities to operate according to BART.

United Taconite (United)
The BART determination for United Taconite is not consistent with the factors required to be considered under the Clean Air Act nor does it follow the conditions in its permit. United has two taconite lines. Previously, it fired primarily natural gas in Line 1 and coal/coke in Line 2, and this was the operating scenario under consideration when the original BART proposal was made by MPCA. For both lines NO_X BART was proposed as good combustion practices. For SO_2 BART, scrubber optimization was proposed for Line 1, and a limit of 1.7 pounds of SO_2 per million BTUs (lb/mmBtu) was proposed for Line 2 (that could be met with a scrubber and/or fuel blending).

Mike Ward, the Superintendent of Voyageurs National Park personally testified at your June 22, 2010 Board meeting:

> Today, we are discussing a permit which, if approved, would take future emissions reductions promised by the Minnesota Regional Haze Plan and use them to allow a separate planned increase in emissions as a way of avoiding scrutiny under the PSD program. This scheme would effectively negate the intended benefits of both programs.
>
> As we have stated in our written comments, the Park Service doesn't believe such an emissions netting arrangement is legal. Even if EPA determines that this "double-counting" of emissions *is* allowed under a temporary loophole, the NPS believes that it flies in the face of Minnesota's Regional Haze Plan and is poor public policy.
>
> About eight months ago, many of us were here in this same room, before this Board, discussing Minnesota's Regional Haze Plan. That plan was developed specifically to reduce the impacts of regional haze on areas such as Voyageurs and Isle Royale National Parks.
>
> In December of 2009 this Board found the following conclusions of law to be evident enough to approve the RHSIP:
> * The Board concluded that the plan contained reasonable progress goals, calculations of baseline and natural visibility conditions, long term strategies for regional haze, and monitoring strategies, as required under 40 CFR.

*The Board concluded that the reasonable progress goals provide for reasonable progress towards natural visibility conditions and an improvement in visibility for the most impaired days while ensuring no degradation in visibility for the least impaired days.
*The Board concluded that the plan contained appropriate Bart determinations and emissions limitations, as required under 40 CFR, that will achieve emission reductions that contribute to visibility impairment in the three Class I areas impacted by Minnesota facilities.

These conclusions then led to an "order" by the Chair that stated the MPCA hereby "adopts", and directs the commission to submit the plan to the EPA for approval. Today all of these conclusions of law and the order to "adopt" the RHSIP are being placed in a position in which they are no longer conclusions of law nor are they adopted by the MPCA as ordered by the chair.

Not all of us approved of every provision of that plan, and some of us believed it was not aggressive enough in reducing pollution, but we all agreed it was an important step in improving visibility in our parks and wilderness areas. That plan was approved by this Board and is currently under EPA review. Based on the permit proposed today, we are left wondering what that approval meant. We are especially concerned that we were not advised at that time that Utac had submitted a complete application in July 2008 for this major modification of its operation. We find it inconceivable that emissions reductions promised under the Minnesota Regional Haze Plan may be used as a "get out of regulation free" card.

We provided compelling evidence that the MPCA's own analysis showed the Line 2 SO_2 limit should be 0.68 lb/mmBtu.

Despite the concerns we publicly expressed to you, in August 2010, MPCA issued United a permit for a plant expansion that also allowed Line 1 to burn coal. United used the BART-required emission reductions at Line 2 to avoid Federal New Source permitting requirements for the expansion. The MPCA included a condition to address BART on the now coal-fired Line 1:

Within 120 days of being notified by the MPCA in writing of the final proposed NOx BART limits for Lines 1 and 2 (EU 040 and EU 042), the Permittee shall submit an application for a permit amendment to incorporate into its air emissions permit either (1) NOx and SO2 BART emission limits as proposed or (2) a BART alternative as described in the December 2009 Regional Haze State Implementation Plan submittal.

Alternatively, the Permittee may submit, within 120 days of the written notification, an updated BART analysis based on the modified Lines 1 and 2 for the facility with an appropriate permit amendment application to incorporate proposed NOx and SO2 BART limits into its air emissions permit

The Supplement states "On December 8, 2011, United Taconite proposed that the NO_X and SO_2 limits set as part of the abovementioned permit amendment be incorporated as the BART limits for the facility." It appears that the option chosen by United is not one of the three included in their permit. Nonetheless MPCA proposes to accept these limits "because these limits provided greater annual reductions of NO_X and SO_2 than would be provided by the MPCA's initial BART limits."

We share the concerns expressed by the USFS in its January 13, 2012 comments to you:

- It is unclear how United's proposal complies with its permit requirement.
- The "reductions" in United's proposal were calculated from an inflated baseline.
- The combination of these factors results in paper emission reductions.

We support the USFS request that MPCA submit a full BART analysis for coal-fired Line 1 and correct both the SO_2 and NO_X BART analysis for Line 2. The BART proposal in the Supplement does not include a consideration of the Clean Air Act factors for BART. It is irrelevant that the emission limit chosen is less than both an inflated baseline value, and an inflated, initial BART determination. Instead, the emission limit should be selected as an outcome of a proper analysis of the BART factors.

United States Department of the Interior
NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225

TAKE PRIDE IN AMERICA

IN REPLY REFER TO

September 3, 2009

N3615 (2350)

Ms. Catherine Neuschler
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Dear Ms. Neuschler:

Following are our general comments on the Minnesota Pollution Control Agency's (MPCA's) current Best Available Retrofit Technology (BART) proposals for the Electric Generating Units (EGUs) located in Minnesota that are subject to BART. These comments update and supplement the comments that we provided on June 26, 2009. While we recognize that many of the MN EGUs (especially MN Power) are making large investments toward reducing their emissions, we believe that significant additional reductions can be achieved and are warranted under the BART program. We have enclosed detailed comments that further support our position on the specific BART proposals.

Purpose of the BART Program

The core purpose of the BART program is to improve visibility in our Class I areas. BART is not necessarily the most cost-effective solution but instead, BART represents a broad consideration of technical, economic, energy, and environmental (including visibility improvement) factors. We believe that it is essential to consider both the degree of visibility improvement in a given Class I area as well as the cumulative effects of improving visibility across all of the Class I areas affected. Voyageurs National Park (NP) in Minnesota and Isle Royale NP in Michigan are two Class I areas administered by the National Park Service that are currently impacted by MN EGUs.

Level Playing Field

It is important that regulatory agencies provide a level playing field and that they treat similar emission sources in a similar manner, unless exceptions are properly documented and justified. It is also generally accepted, given economies of scale, that the large EGUs should be more-stringently-controlled than the smaller EGUs. (We suggest that the MN EGUs can be divided into two categories—above 370 MW capacity and below 80 MW capacity.) Instead, within the large EGU category, there appears to be a trend of declining stringency as the size of the EGU increases, and some of the smaller EGUs would actually be required to meet tighter limits than some of the larger EGUs. This is

especially apparent when one compares the higher limits proposed for Units #1 and #2 at Xcel's 1,400 MW Sherco facility to the lower limits proposed by Minnesota Power for its 375 MW Boswell #3 (see table below). While we are pleased that the citizens of the Twin-Cities metropolitan area would receive some relief from Xcel's emissions, Xcel and the other EGUs still must address their impacts in Voyageurs and Isle Royale NPs. In the smaller EGU category, where the EGUs are virtually identical in size, we see that Minnesota Power has proposed the lowest Nitrogen Oxide (NO_X) limits for its Taconite Harbor #3.

Proposed NO_x Limits

Operating Company	Plant	Unit	Boiler Type	Fuel	Rating	Proposed Control	Proposed Limit (lb/mmBtu)
Xcel Energy	Sherburne County Generating Station	Unit #1	tangential	sub-bituminous	690	LNB+SOFA	0.15
Xcel Energy	Sherburne County Generating Station	Unit #2	tangential	sub-bituminous	683	Combustion Optimization	0.15
Xcel Energy	Allen S. King Generating Plant	Unit #1	cyclone	sub-bituminous	550	SCR	0.10
Minnesota Power	Boswell Energy Center	Unit #3	tangential	sub-bituminous	375	LNB+OFA+SCR	0.07
Northshore Mining	Silver Bay Power Plant	Unit #2	wall-fired	sub-bituminous	75	LNB+OFA	0.41
Minnesota Power	Taconite Harbor	Unit #3	tangential	bit/sub-bituminous	75	ROFA/Rotamix	0.13
Rochester Public Utilities	Silver Lake Plant	Unit #4	wall-fired	bituminous	60	ROFA/Rotamix	0.25

Proposed SO_2 Limits

Operating Company	Plant	Unit	Fuel	Rating (MW)	Proposed Control	Proposed Limit (lb/mmBtu)
Xcel Energy	Sherburne County Generating Station	Unit #1	sub-bituminous	690	FGD upgrade	0.12
Xcel Energy	Sherburne County Generating Station	Unit #2	sub-bituminous	683	FGD upgrade	0.12
Xcel Energy	Allen S. King Generating Plant	Unit #1	sub-bituminous	550	FGD upgrade	0.12
Minnesota Power	Boswell Energy Center	Unit #3	sub-bituminous	375	wet FGD	0.09
Northshore Mining	Silver Bay Power Plant	Unit #2	sub-bituminous	75	LSD+FF	0.06*
Minnesota Power	Taconite Harbor	Unit #3	bit/sub-bituminous	75	FSI and new FF	0.32
Rochester Public Utilities	Silver Lake Plant	Unit #4	bituminous	60	dry FGD	0.60

*MPCA has proposed an alternate limit for SO_2 at 0.48 lb/mmBtu at Northshore.

Proposed Total PM_{10} Limits

Operating Company	Plant	Unit	Fuel	Rating (MW)	Proposed Control	Proposed Limit (lb/mmBtu)
Xcel Energy	Sherburne County Generating Station	Unit #1	sub-bituminous	690	existing wet ESP	0.090
Xcel Energy	Sherburne County Generating Station	Unit #2	sub-bituminous	683	existing wet ESP	0.090
Xcel Energy	Allen S. King Generating Plant	Unit #1	sub-bituminous	550	FF	0.030
Minnesota Power	Boswell Energy Center	Unit #3	sub-bituminous	375	FF	0.035
Northshore Mining	Silver Bay Power Plant	Unit #2	sub-bituminous	75	existing FF	0.094*
Minnesota Power	Taconite Harbor	Unit #3	bit/sub-bituminous	75	FSI and new FF	0.012
Rochester Public Utilities	Silver Lake Plant	Unit #4	bituminous	60	dry FGD w FF	0.400

*0.046 gr/dscf

Five-step BART Process

It appears that MPCA has attempted to "re-brand" control programs already adopted by the EGUs to meet other requirements and take advantage of state rate recovery allowances, as satisfying BART, without conducting the required five-step BART analyses for Boswell #3.[1] Even when the five-step analysis is not a requirement, MPCA must still show (as it tried to do in its analysis for Northshore Mining) that it achieved an equivalent result.[2] While we understand that MPCA has been forced to quickly react to recent EPA decisions affecting the status of the MN EGUs, MPCA has effectively pre-empted the five-step BART analysis (or its equivalent) by saying that BART is equivalent to BACT, or to whatever the EGU has already committed to installing.[3] This approach is only allowed if MPCA demonstrates that the source has in place, or is committing to, federally-enforceable limits that represent the **most stringent level of control.**[4] None of the sources exempted by MPCA from the five-step BART process (or

[1] The five-step process is required for EGUs at facilities with a total capacity of 750 MW or more (e.g., Boswell, Sherburne County).

[2] Even though the five-step process is not required for the taconite plants reviewed by MPCA, that process was used by MPCA in its BART determinations for the taconite industry.

[3] MPCA repeatedly contends that, because a source has "existing" controls, they must be considered in its BART analysis. While this would be true for controls that truly were existing as of the 2005 publication of the BART Guidelines, to cite controls installed after the BART guidelines became known as reasons for requiring less than BART is not appropriate.

[4] According to the BART Guidelines, "If you find that a BART source has controls already in place which are the most stringent controls available (note that this means that all possible improvements to any control devices have been made), then it is not necessary to comprehensively complete each following step of the BART analysis in this section. As long as these most stringent controls available are made federally enforceable for the purpose of implementing BART for that source, you may skip the remaining analyses in this section, including the visibility analysis in step 5. Likewise, if a source commits to a BART

its equivalent) meet that criterion. Without a five-factor analysis (or its equivalent) from the company or MPCA, it is difficult for us to fully evaluate whatever reasoning went into the MPCA proposal. Although we agree with MPCA that "different facilities may end up with different controls or emission limits due to site-specific factors," MPCA should explain how those site-specific factors influenced its decisions. Therefore, we recommend that MPCA either adopt limits that really are the most-stringent, or move quickly to complete the five-step, or equivalent, BART process.

In general, Steps #1 (Identify all available retrofit options) and #2 (Eliminate technically infeasible options) of the BART process were adequately addressed, so we shall begin at:

Step 3 - Evaluate Control Effectiveness

On page 370 of its responses to comments, MPCA states that, "The MPCA has chosen in general, to accept each facility's determination of how effective a given control technology will be at that facility." As a result, MPCA and the BART sources have consistently underestimated the abilities of established pollution control technologies (e.g., wet scrubbers and Selective Catalytic Reduction) to reduce emissions. MPCA should also evaluate potential upgrades to the existing control equipment.

MPCA's estimates of control effectiveness appear inconsistent. For example, MPCA has determined that a spray dryer/fabric filter system can meet 0.06 lb SO_2/mmBtu at Northshore Mining's Unit 2, but the same system would only be required to meet a limit ten-times higher at Rochester Public Utilities' Silver Lake Unit #4. And, even for the inherently more-efficient wet scrubbing systems at the larger EGU, the SO_2 limits would be 50% to 100% higher than SO_2 BART at Northshore. MPCA should explain these inconsistencies.

Step 4 - Evaluate Impacts and Document Results

MPCA has accepted at face value cost estimates presented by the EGUs.[5] In the case of the Northshore Unit 2, those overestimates were so egregious that MPCA conducted its own analysis, and we commend MPCA for that. However, Xcel submitted estimates that consistently exceeded national norms without the supporting documentation or analyses required by the EPA BART Guidelines.

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determination that consists of the most stringent controls available, then there is no need to complete the remaining analyses in this section."

[5] On page 376 of its responses to comments, MPCA states that, "The MPCA relies on its permittees to understand their facilities, as well as the engineering, financing, construction and air pollution control equipment markets well enough to properly estimate project costs."

While it is appropriate to consider incremental costs in addition to average costs, we have a concern with the over-emphasis placed by MPCA upon this factor and with the way in which the incremental cost analysis was conducted.[6] Because, in most cases, the cost of pollution control rises exponentially with control efficiency, the slope of the cost-versus-efficiency curve will also increase. For this reason, rigid use of incremental cost effectiveness will always result in the choice of the cheapest option if carried to this extent. (For example, if this approach were used to evaluate particulate controls, it is likely that all controls more expensive than a multiple cyclone would be rejected.) According to the NSR Workshop manual, "As a precaution, the difference in incremental costs among dominant alternatives cannot be used by itself to argue one dominant alternative is preferred to another." Instead, it should be used to compare closely performing options.

Step 5 - Evaluate Visibility Impacts

MPCA repeatedly states that, "Because [a given unit's] emission reductions were included in the overall SIP modeling (see Tables 8.1 and 8.4 of the SIP), the visibility impact of the reductions at [the given unit] were considered." Only for Sherco and Northshore were the visibility impacts of any of the BART options specifically evaluated.[7] This fifth-step of the BART process is essential for assessing the ability of a potential control strategy to address the fundamental purpose of the BART program. And, this fifth-step can provide information critical to determining the true cost-effectiveness of a visibility-improvement strategy. This analysis can also provide useful information on the relative importance of, for example, reducing NO_X versus SO_2 emissions from a given source. Based upon the limited data provided, it appears that, on a per-ton basis, reducing NO_X provides greater visibility benefits than reducing SO_2 in the cool, moist climate of northern MN.

We believe that it is appropriate to consider both the degree of visibility improvement in a given Class I area as well as the cumulative effects of improving visibility across all of the Class I areas affected. It simply does not make sense to use the same metric to evaluate the effects of reducing emissions from a BART source that impacts only one Class I area as for a BART source that impacts multiple Class I areas. And, it does not make sense to evaluate impacts at one Class I area, while ignoring others that are similarly significantly impaired. If we look at only the most-impacted Class I area, we ignore that the other Class I areas are all suffering from impairment to visibility "caused"[8] by the BART source. It follows that, if emission from the BART source are reduced, the benefits will be spread well beyond only the most impacted Class I area, and this must be accounted for.

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[6]EPA BART Guideline: "You should consider the incremental cost effectiveness in combination with the average cost effectiveness when considering whether to eliminate a control option."... "You should exercise caution not to misuse these [average and incremental cost effectiveness] techniques... [but consider them in situations where an option shows]...slightly greater emission reductions..,"

[7] Even though Northshore did provide some visibility modeling results, no analysis was provided for the critical comparison of the alternative BART options, as explained in our comments specific to that facility.

[8] EPA defines a source with an impact greater than one deciview as "causing" impairment.

The BART Guidelines represent an attempt to create a workable approach to estimating visibility impairment. As such, they require several assumptions, simplifications, and shortcuts about when visibility is impaired in a Class I area, and how much impairment is occurring. The Guidelines do not attempt to address the geographic extent of the impairment, but assume that all Class I areas are created equal, and that there is no difference between widespread impacts in a large Class I area and isolated impacts in a small Class I area. To address the problem of geographic extent, we have been looking at the cumulative impacts of a source on all Class I areas affected, as well as the cumulative benefits from reducing emissions. While there are certainly more sophisticated approaches to this problem, we believe that this is the most practical, especially when considering the modeling techniques and information available.

Compared to the typical control cost analysis in which estimates fall into the range of $2,000 - $10,000 per ton of pollutant removed, spending millions of dollars per deciview (dV) to improve visibility may appear extraordinarily expensive. However, our compilation[9] of BART analyses across the U.S. reveals that **the average cost per dV proposed by either a state or a BART source is $9 - $19 million,**[10] with a maximum of almost $50 million per dV proposed by Colorado at the Martin Drake power plant in Colorado Springs.

BART Determinations

We are confused by these apparently contradictory statements on page 371 of MPCA's responses to comments:

- The MPCA's position is that cost-effective controls should be installed, even if they result in limited improvement in visibility, and technically infeasible or not cost-effective controls are not required under BART, even if they result in significant visibility improvement.
- Because of the small visibility impact that would result from controls, the MPCA deemed existing controls and emission limits to be BART.

We believe that it is the intent of the Regional Haze program to make visibility improvement a prominent factor in the BART determination process. Therefore, even if only a small visibility improvement would result from revisiting existing controls, MPCA should require any cost effective and technically feasible alternatives.

Reasonable Progress

Even if an EGU is exempt from BART, it may still be subject to review under the Reasonable Progress requirements of the Regional Haze Rule. MPCA may wish to consider additional emission reductions under that aspect of the Regional Haze program.

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[9] http://www.wrapair.org/forums/ssjf/bart.html

[10] For example, PacifiCorp has stated in its BART analysis for its Bridger Unit #2 that "The incremental cost effectiveness for Scenario 1 compared with the baseline for the Bridger WA, for example, is reasonable at $580,000 per day and $18.5 million per deciview."

In conclusion, we appreciate MPCA's efforts to date regarding the BART process, but we believe that significant additional reductions can be achieved and are warranted. We look forward to working with the MPCA as this process advances. We believe that good communication and sharing of information will help expedite this process, and suggest that you contact Don Shepherd (don_shepherd@nps.gov, 303-969-2075) if you have any questions or comments about this document.

Sincerely,

John Bunyak
Chief, Policy, Planning and Permit Review Branch

Enclosures

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September 3, 2009

N3615 (2350)

Ms. Catherine Neuschler
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Dear Ms. Neuschler:

Following are our general comments on the Minnesota Pollution Control Agency's (MPCA's) current Best Available Retrofit Technology (BART) proposals for the taconite plants located in Minnesota that are subject to BART. Due to their similarity, for the most part, the taconite BART determinations will be addressed as a group. (Certain issues related to United and Keetac will be addressed in separate enclosures.) We will focus our review on the indurating furnaces, due to the dominance of their impact over the other BART-eligible units at the taconite facilities.

The recently promulgated Taconite Maximum Achievable Control Technology (MACT) standard represents a BART level of control for particulates from the furnaces; that leaves sulfur dioxide (SO_2) and nitrogen oxide (NO_X) as the remaining visibility-impairing pollutants to be addressed from the furnaces.

Five-step BART Process

We commend MPCA for requiring that the taconite plants follow EPA's recommended five-step BART process. However, we have concerns about how those five steps were implemented.

Steps #1 (Identify all available retrofit options) and #2 (Eliminate technically infeasible options)

A couple of key quotes from the EPA BART guidelines are important to keep in mind: "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, operating problems related to specific circumstances of the source, space constraints, reliability, and adverse side effects on the rest of the facility). *Where the resolution of technical difficulties is merely a matter of increased cost, you should consider the technology to be technically feasible."* FR 7/6/05 pg 39165, emphasis added.

"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." FR 7/6/05 pg. 39165.

Common Control Options Rejected as Technically Infeasible

Rejected Sulfur Dioxide Controls

The option of modifying the existing scrubbers was dismissed in the BART report from every facility as not being available and therefore not being technically feasible. The reasons stated included corrosion of the process water handling system and the creation of solid wastes. Sulfur scrubbing technology has been in existence since the 1960's. The issues described above are not new, unique, or insurmountable. In addition, these issues are not technical-feasibility issues but are economic-feasibility issues. The BART proposals did not provide the cost data for this option, so how economically infeasible they may, or may not be, is unknown.

The dry scrubbing options (Dry Sorbent Injection and Spray Dry Absorption) were deemed technically infeasible because the high moisture content of the gas stream would cause blinding of the baghouse typically used downstream of the lime injection. However, these facilities should investigate the application of a wet electrostatic precipitator (ESP) downstream of the lime injection point, instead of a baghouse. Or, these facilities could investigate injection of lime upstream of the wet ESP that they have deemed technically feasible.

Coal Processing was eliminated because these facilities do not consider it to be commercially available.

Alternate Fuels were rejected on the premise that EPA did not intend to promote fuel-switching. However, this does not preclude evaluation of lower sulfur fuels. In its BART preamble, EPA states, "Our economic analysis suggests that switching to low sulfur fuel oil is a cost effective method in reducing SO_2 emissions from oil fired units."[1] EPA's BART Guidelines recommend that, "...for oil-fired units, regardless of size, you should evaluate limiting the sulfur content of the fuel oil burned to 1 percent or less by weight."[2] We believe that evaluation of lower sulfur oil, coal, and petroleum coke is also appropriate for those taconite facilities that already burn any of those fuels.

Rejected Nitrogen Oxides Controls

All facilities rejected Low Temperature Oxidation (LoTOx) on the basis that it is not technically feasible because it has not been used on an indurating furnace.

The issue of control of NO_x from taconite furnaces has been approached in the past within the context of two Prevention of Significant Deterioration (PSD) permits: Minntac

[1] P 159 of the BART Preamble
[2] P 363 of the BART Guidelines

backwards PSD permit and the PSD permit for Minnesota Steel. Minntac is a grate-kiln furnace and Minnesota Steel is a straight grate furnace. This discussion initially focused on the application of selective catalytic reduction (SCR) and more recently has looked at LoTOx.

- In the Minntac case, in a letter dated October 22, 2003, the MPCA determined that SCR was technically feasible but not economically feasible. This configuration assumed reheating of the waste gas. The cost per ton calculated was sensitive to the assumed cost of natural gas and was "at or above the upper range of economic feasibility," and was rejected as best available control technology (BACT).
- In a letter dated August 18, 2006, the MPCA assessed the applicability of LoTOx at 90% control efficiency to Minntac and concluded that LoTOx was technically and economically feasible, and therefore BACT. Minntac is now required to test LoTOx.
- In their PSD permit, Minnesota Steel and MPCA proposed LoTOx on the waste gas stack at 90% control efficiency for their taconite furnace.

In summary, MPCA has declared that LoTOx is BACT for one type of taconite furnace (straight grate) and will soon require testing on the other (grate kiln). The technical feasibility issues brought up in the BART proposals for each facility have been addressed by the developer of the technology and in the analyses above. This supports MPCA's conclusion that LoTOx is a viable candidate for BACT, and that LoTOx can be applied to both types of indurating furnaces. In order to avoid further analysis of LoTOx, the other taconite plants must show why their indurating furnaces are so different from those at Minntac and MN Steel as to preclude its application. Otherwise, they must evaluate LoTOx by applying the remaining BART factors.

All facilities eliminated Regenerative Selective Catalytic reduction (RSCR) on the basis that it was technically infeasible, citing several reasons:

- Taconite dust is different from boiler ash. (True, but SCRs have been successfully located in "high-dust" areas downstream of coal-fired boilers and upstream of particulate control equipment.)
- Taconite dust is erosive. (True, but so is flyash.)
- RSCR has not been applied downstream of a wet scrubber. (Why is this a problem for RSCR but not for SCR?)
- SCR catalyst may oxidize mercury. (That is a positive benefit of SCR.)

We would like to see a response to these comments by a reputable vendor of RSCR. Furthermore, it is generally assumed that converting mercury to its oxidized state is a desirable co-benefit of SCR, which presents the opportunity to more easily capture it with a wet scrubber. Considering that all taconite facilities determined that conventional SCR is technically feasible, even though it has never been applied to a taconite furnace either, it appears that the taconite industry approach is biasing the analysis away from a potentially viable alternative (RSCR) and toward an alternative (SCR) that can be easily rejected later. (See the "Straw Man" discussion below.)

Common Control Options Accepted as Technically Feasible

All but Northshore depend upon Venturi-rod wet scrubbers for particulate removal and assume that these scrubbers also remove 15% - 30% of the uncontrolled SO_2. (Northshore uses a wet ESP which it assumes removes 90% of the uncontrolled SO_2.)

Step 3 - Evaluate Control Effectiveness

SO_2: Addition of a Wet-Wall Electrostatic Precipitator (WESP) was assumed to remove 80% of the remaining SO_2 in the gas stream, regardless of the degree of SO_2 removal already achieved. The facilities assume that an additional Wet Scrubber would remove 60% of the remaining SO_2 regardless of the degree of SO_2 removal already achieved. These facilities contend that the low scrubber efficiency estimate is due to the more dilute concentration of SO_2 in the exhaust gas stream due to much greater excess air in the indurating furnaces than in a boiler. However, we do not understand why a wet scrubber specifically designed for SO_2 removal would be less effective than a WESP which is more typically used to remove PM. We suggest that the wet scrubber would be able to achieve at least the same 80% additional SO_2 control as the WESP.[3] The facilities should provide documentation to show why they cannot achieve a similar level of control with a wet scrubber. We also do not understand why the efficiency of the add-on controls would be independent of the degree of removal of the existing controls.

NOx: Even though it has never been applied to a taconite furnace, all facilities assumed that addition of conventional SCR would reduce NO_x emissions by 80%, regardless of the type of indurating process to which it would be applied. We understand that SCR can reduce 90% of the NO_x in a given gas stream, but that it is most effective when applied to gas streams with relatively high NO_x concentrations, such as the grate/kiln exhausts and the waste gas exhausts from the straight-grate kilns. We believe that a valid evaluation of SCR would consider these factors.

Step 4 - Evaluate Impacts and Document Results

<u>BART Cost Ceilings for SO_2 and NO_x Control</u>

All facilities presented a BART cost range for SO_2 and NO_x of $1,000 - $1,300 per ton as a firm guideline that became the basis for deeming technically feasible control options as having unacceptable costs. All facilities postulated these ranges from information found in the Clean Air Interstate Rule (CAIR) and a few court cases.

All facilities appear to be confusing the costs incurred in BART versus costs incurred in trading programs such as CAIR. Any cost ranges derived from CAIR proceedings might be considered as relevant, but certainly not definitive. Any use of the value of a CAIR emission trading allowance to establish a BART cost range is erroneous, because the basis for the CAIR rule is reduction of SO_2 and NO_x emissions more cheaply than similar

[3] In its March 2007 permit application, Minnesota Steel estimated that a wet scrubber could remove 90% of the SO_2 from both the hood exhaust and the waste gas exhausts on its straight-grate indurating furnace.

reductions achieved on a technology basis. Again, court verdicts regarding a specific set of circumstances should not be relied upon to set a particular cost range, because many differences in relevant facts may exist between the BART source and the litigant.

We reject the adoption by a BART-eligible source of a specific BART cost range above which technically feasible control options are arbitrarily deemed to be unacceptable. All of the above-named references to cost are relevant considerations, but the particular circumstance of the source (financially and with respect to the magnitude of necessary visibility improvements to be achieved now and in the future) bears heavily on acceptable cost ranges.

"Universal" Retrofit Cost

The taconite consultant should describe its "experience with similar projects" that allowed it to estimate a 60% retrofit factor for all of the retrofit technologies evaluated at every facility. We doubt that each situation presents the same degree of difficulty and warrants the same assumption.

BART "Straw Man"

Each BART analysis appears to bias the analysis toward the option that is most expensive (e.g., WESP, conventional SCR), and away from the option that is most cost-effective (lower sulfur fuels, caustic reagent, dedicated wet scrubbers, LoTOx, RSCR). For example, RSCR, with its 90% - 95% thermal efficiency was rejected as technically infeasible, while conventional SCR with its 60% - 70% thermal efficiency was accepted, even though neither has ever been applied to a taconite furnace. This essentially diverts attention from the option that might actually be chosen by an unbiased analysis.

Step 5 - Evaluate Visibility Impacts

Multiple Class I Areas

One of the factors comprising the BART evaluation is the resulting "degree of improvement in visibility..." In their analyses, the taconite facilities presented only the visibility improvements that were predicted to occur at the nearest Class I area. Because it is likely that reduced emissions from any of these facilities will result in improved visibility at more than one of the four Class I areas[4] for which they are significant contributors to impairment,[5] any analysis of visibility improvement should consider these multiple benefits. And, the facilities should model the impacts of their final BART proposals to increase emissions upon visibility at the four Class I areas.

[4] Boundary Waters Canoe Area (BWCA), Isle Royale National Park (NP), Seney National Wildlife Refuge (Seney), and Voyageurs NP

[5] The six taconite facilities cause or significantly contribute to impaired visibility in a total of 17 cases across the four Class I areas.

We believe that it is appropriate to consider both the degree of visibility improvement in a given Class I area as well as the cumulative effects of improving visibility across all of the Class I areas affected. It simply does not make sense to use the same metric to evaluate the effects of reducing emissions from a BART source that impacts only one Class I area as for a BART source that impacts multiple Class I areas. And, it does not make sense to evaluate impacts at one Class I area, while ignoring others that are similarly significantly impaired. If we look at only the most-impacted Class I area, we ignore that the other Class I areas are all suffering from impairment to visibility "caused"[6] by the BART source. It follows that, if emission from the BART source are reduced, the benefits will be spread well beyond only the most impacted Class I area, and this must be accounted for.

The BART Guidelines represent an attempt to create a workable approach to estimating visibility impairment. As such, they require several assumptions, simplifications, and shortcuts about when visibility is impaired in a Class I area, and how much impairment is occurring. The Guidelines do not attempt to address the geographic extent of the impairment, but assume that all Class I areas are created equal, and that there is no difference between widespread impacts in a large Class I area and isolated impacts in a small Class I area. To address the problem of geographic extent, we have been looking at the cumulative impacts of a source on all Class I areas affected, as well as the cumulative benefits from reducing emissions. While there are certainly more sophisticated approaches to this problem, we believe that this is the most practical, especially when considering the modeling techniques and information available.

Compared to the typical control cost analysis in which estimates fall into the range of $2,000 - $10,000 per ton of pollutant removed, spending millions of dollars per deciview (dV) to improve visibility may appear extraordinarily expensive. However, our compilation[7] of BART analyses across the U.S. reveals that the **average cost per dV proposed by either a state or a BART source for an Electric Generating Unit (EGU) is $9 - $19 million,**[8] with a maximum of almost $50 million per dV proposed by Colorado at the Martin Drake power plant in Colorado Springs.

BART Determinations

Although the taconite industry, which is already responsible for very large impacts on visibility in the northern Class I areas, is actually proposing to increase emissions and impacts, MPCA has proposed limits which would keep those increases to a minimum, and, in some cases (as discussed in separate enclosures) reduce emissions. Nevertheless, we believe that the taconite facilities should bear a similar share of the burden as the EGUs which are proposing to reduce emissions significantly.

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[6] EPA defines a source with an impact greater than one deciview as "causing" impairment.

[7] http://www.wrapair.org/forums/ssjf/bart.html

[8] For example, PacifiCorp has stated in its BART analysis for its Bridger Unit #2 that "The incremental cost effectiveness for Scenario 1 compared with the baseline for the Bridger WA, for example, is reasonable at $580,000 per day and $18.5 million per deciview."

We commend MPCA for asserting that (p613) "United Taconite may choose to propose a BART Alternative project that is equivalent or better than BART. The BART Alternative must result in equivalent or greater emissions reductions and visibility benefits from the facility when compared to the MPCA's BART determination." We ask that MPCA apply this same "greater emissions reductions and visibility benefits" standard to all of its BART alternatives.

Reasonable Progress

Even if a source is exempt from BART, it may still be subject to review under the Reasonable Progress requirements of the Regional Haze Rule. MPCA may wish to consider additional emission reductions under that aspect of the Regional Haze program. One component of MPCA's Reasonable Progress strategy is the Northeastern Minnesota Plan, discussed below.

While MPCA is correct in saying (p64) that "all the estimated future visibility conditions are moving in the desired downward direction toward natural conditions," they fall significantly short of the Uniform Rate of Progress (URP) needed to achieve that goal by the national target date of 2064. Instead, MPCA's proposed Reasonable Progress Goal (RPG) represents 35% of the URP at Voyageurs NP (and 67% at BWCA. Because it is generally understood that maintaining the URP will become more difficult as the "low hanging fruit" is controlled, it will likely become even more difficult in the future to attain the URP unless MPCA increases the stringency and expands the scope of its emission reduction efforts. For example, as discussed below, MPCA could reduce its BART-exemption threshold to a value lower than the maximum 0.5 dv allowed by the BART Guidelines.

We ask that MPCA reconcile the following statements:

- p369: "The MPCA agrees with the commenter that imperceptible visibility improvement is not a justification for rejecting otherwise feasible and cost-effective controls.
- p371: "The MPCA's position is that cost-effective controls should be installed, even if they result in limited improvement in visibility..."
- p67: "Although the MPCA could set the contribution threshold lower than 0.5 deciviews and is cognizant of a number of existing sources in close proximity to Class I areas, the modeling showed no sources causing impacts at levels just slightly below 0.5 deciviews. The 98th percentile deciview values for those subject-to-BART range from 0.6 – 4.4 deciviews, while the 98th percentile deciview values for those not subject-to-BART range from 0.0 – 0.4 deciviews."

MPCA goes on to say that:

A total of 15 facilities with BART-eligible sources were determined not subject-to-BART based on the 0.5 deciview threshold. Of those 15 facilities, three are subject to the Northeast Minnesota Plan [Boise White Paper, Hibbing Public Utilities, Virginia Public Utilities] and three are EGUs [Austin Public Utilities, Xcel—A.S. King, Otter Tail Power-Hoot Lake] that were initially subject to CAIR. Minnesota was initially included in CAIR, leading many utilities to install controls in anticipation of CAIR compliance.

EPA has recently published a proposed stay of CAIR in Minnesota until there is a re-promulgated CAIR rule. Should Minnesota not be included in a re-promulgated rule, two of the three EGUs that showed modeling results closest to the BART threshold (Austin Public Utilities and Otter Tail Power Hoot Lake) will be re-evaluated for reasonable progress controls at the time of the Five Year SIP Assessment.

Based on these facts, the application of BART would likely have little impact on the emission reductions expected from these facilities. Of the remaining nine facilities not subject to the Northeast Minnesota Plan or initially subject to CAIR, all have 98th percentile deciview values of 0.2 deciviews or less. Therefore, MPCA did not readjust the contribution threshold chosen for exempting sources from BART.

NPS believes that, in view of MPCA's failure to meet URP and its own commitment to require installation of cost-effective controls, "even if they result in limited improvement in visibility," MPCA should expand its BART or Reasonable Progress (RP) analyses to at least include sources (Boise White Paper, Hibbing Public Utilities, Virginia Public Utilities) with impacts between 0.2 and 0.5 dv. Inclusion in the Northeast Minnesota Plan does not guarantee that these sources will reduce emissions. Analysis of potential emission reduction strategies under the BART or RP provisions of the Regional Haze Rule could yield additional and needed emission reductions.

The Northeastern MN Plan

While we agree with the concept inherent in the Northeastern MN Plan, we have serious concerns about the validity of the 2002 emission estimates upon which the Plan is based. Although we have sufficient confidence in the emission data collected from the Electric Generating Units, that is far from the case with the taconite emission estimates. For example, in its taconite BART analyses, MPCA repeatedly states that, "Due to the lack of sufficient emissions data representing the range of operating conditions that influence emissions, the MPCA is unable at this time to set an emission limit that corresponds to BART for [the source's] indurating furnace." If the emissions data are not good enough for MPCA, then we question its use as a basis for determining the success of the NE MN Plan over the next nine years.

Our concerns are further illustrated by a closer inspection MPCA's "Northeast Minnesota Plan Emission Tracking Spreadsheet." For all practical purposes, if the 2002 NO_x emission estimates for Minntac are correct, then the NE MN Plan target is met with no additional reductions from the taconite industry. If the Minntac 2002 NO_x emissions are not correct, then the 2018 target is not met. We request an explanation from MPCA for the reduction in Minntac's NO_x emissions from 2002 to 2012 and to 2018.

One of the key elements of the NE MN Plan is that emissions must be accurately estimated and tracked. We understood that MPCA would require installation of Continuous Emission Monitors on all taconite lines to facilitate that process. We are very concerned that MPCA has not done so, and has allowed the taconite plants an option which we do not believe will provide equivalent results.

Continuous Emission Monitors (CEMs)

We understand that CEMs or an equivalent alternative were to have been installed or implemented at each of the taconite plants in 2008. However, that process has been delayed due to economic conditions and that "the MPCA is placing the revised SIP, including Administrative Orders for both CEMs and Alternative Methods, on public notice." (p366) However, at the same time, MPCA has rejected the concerns of the U. S. Forest Service that the alternative method to CEMs that will be used by several of the taconite facilities will not provide accurate enough data to achieve the aims of the Regional Haze SIP and will not allow facilities to identify operating scenarios that could result in lower emissions. The Forest Service requested that EPA performance specifications for predictive emission systems be used by the MPCA to evaluate the alternate systems. In rejecting that request, the MPCA responded that:

> The EPA's performance specification was finalized on March 25, 2009. The latest deadlines for any of the facilities to submit an alternative method proposal was March 1, 2009. **The MPCA committed to approve or disapprove that alternate method within 30 days of submittal.** Therefore, it was not feasible for the MPCA to evaluate the alternate method against EPA's promulgated performance specification. However, the MPCA acknowledges that the federal performance specification may be an appropriate compliance tool to ensure high quality data in the future.

If the MPCA has already made an irrevocable commitment "to approve or disapprove that alternate method" by the end of March, what is the point of now announcing that it is taking comments on those Administrative Orders? Furthermore, what decisions did MPCA make, and upon what bases?

Nevertheless, we shall take this opportunity—our first—to provide our comments on the issue of CEMs and their alternatives. First, it is clear that MPCA recognizes the value of good emissions data as a component of its BART strategies:

> The MPCA has determined that continuous emission monitors or a comparable alternative emission measurement method combined with hourly process data can provide data that would be necessary in setting BART NO_x limits based on BART as good combustion practices, past installation of Low NO_x Burners in the preheat zone and the upcoming implementation of furnace energy efficiency projects in early 2008.
>
> From its experience with electric utilities, refineries, and other facilities, the MPCA notes that strategies to use CEMs to reduce NO_X have been successful. The MPCA believes that monitoring NO_X emissions with CEMs or other parametric monitoring at pelletizing furnaces will identify operating conditions under which NO_X emissions can be reduced. The MPCA also notes that NO_X reductions have occurred at another taconite facility after installing CEMs. While those reductions cannot be directly tied to operational changes identified with the aid of CEMs, this observation strongly suggests that using CEMs at pelletizing furnaces will help reduce NO_X through the feedback to the operator and plant management that a CEMs or predictive emission monitoring system provides. Operators can fine tune the operation since it responds to a number of variables under their control and the results of these adjustments can be seen with a CEMs. Plant management can analyze temporal differences in individual furnace operations and differences in emissions among similar furnaces to gain understanding of the factors that influence NO_X formation and apply that knowledge to lower emissions.

MPCA has approved installation and operation of CEMs for some taconite plants:

- p279: The U.S. Steel facilities will monitor their SO_2 emissions with Continuous Emission Monitors (CEMs), ensuring that the MPCA will have a more complete and accurate picture of actual emissions, compared to other facilities, and understand how emissions react to changes at the facility.
- Keetac (p6): An SO_2 Continuous Emission Monitoring Systems (CEMS) will be required to gather data to establish the appropriate BART limit. The CEMS will also be used to determine continuous compliance with that limit. Through Administrative Orders by Consent, the MPCA has required other taconite facilities that use solid fuels with a higher sulfur content (coal) to install SO_2 Continuous Emission Monitoring Systems and to monitor parameters that are linked to scrubber performance.
- p7: Keetac proposes existing combustion controls and fuel blending as BART, with the installation of continuous emission monitoring systems (CEMS) to monitor NO_X emissions. The NO_X limit for the furnace will be based on at least twelve months of monitoring data. The MPCA agrees with Keetac's proposal to install CEMS to monitor NO_X emissions and to set a limit based on those measurements after acquiring twelve months of emission data.
- Minntac p551: The MPCA has determined that continuous emission monitors combined with hourly process data can provide data that would be necessary in setting BART NO_X limits based on BART as good combustion practices, fuel blending and the operation of low-NO_X burners for Lines 4, 5, 6, and 7 and combustion controls and fuel blending for Line 3.
- p559: Minntac has agreed to install SO_2 Continuous Emission Monitoring Systems (CEMS) on the waste gas stacks for Lines 3, 4, and 5; in addition, SO_2 CEMS and the collection of scrubber operating data are being required through an Administrative Order by Consent to provide more accurate emission data and scrubber operating parameter data for determination of a BART limit for only Lines 6 and 7 where a high sulfur fuel (coal) is burned.
- p532: If HTC decides to monitor SO_2 emissions with CEMs, the MPCA may adjust the SO_2 emission limit based on scrubber performance parameters (e.g., pH) and on the data collected from CEMs.

MPCA has also required CEMs at small EGUs: (p666) Northshore Compliance with the NO_X and SO_2 limits will be through the use of CEMs.

We therefore endorse the use of CEMs in the contexts described above, and encourage their use wherever good emissions data are essential and where CEMs are applicable.

We have some major concerns about the potential for the comparable alternatives to be equivalent to CEMs:

- MPCA has not presented any evidence or examples that such an approach will work as well as the established CEM method. MPCA has consistently demanded that potential control technologies be demonstrated and proven before considering them as BART. MPCA should apply the same rigorous standard to the methods used to set and to verify compliance.

- MPCA should provide assurance that it is capable of obtaining the data necessary to adequately assess and evaluate the proposed alternatives. We are especially concerned by the apparent inability of MPCA to obtain data it had twice requested from United Taconite, which twice "declined" to comply with MPCA's requests, with no adverse consequences, as described below (by MPCA):

  > p608: The MPCA requested that United Taconite amend the BART analysis to include an additional control technology – a new recirculating particulate matter wet scrubber to replace existing equipment on Line 2 to achieve an overall SO2 control efficiency of at least 60%. When **United Taconite declined to provide such information**, the MPCA contracted with STS Consultants to prepare the cost estimate. The final cost estimate was completed by the MPCA, and is dated July 30, 2007. The final cost estimate is attached.
  > The MPCA also requested an analysis of alternative fuel blends (coal and petroleum coke) for Line 2 as an SO2 control alternative. **United Taconite declined to provide such analysis.** As a result, the MPCA prepared separately its analysis of fuel blends.

We strongly believe that CEMs should be the preferred and presumptive method to determine emissions, and that any alternative approach should be used only if CEMs cannot be relied upon due to site-specific circumstances or that the alternative meets or exceeds the EPA performance specifications for predictive emission systems. We also request assurance from MPCA that it has the authority to obtain any information it needs from a source to ensure that any proposed alternative monitoring strategy can be successfully and transparently implemented.

In conclusion, we appreciate MPCA's efforts to date regarding the BART process, but we believe that significant additional reductions can be achieved and are warranted. We look forward to working with the MPCA as this process advances. We believe that good communication and sharing of information will help expedite this process, and suggest that you contact Don Shepherd (don_shepherd@nps.gov, 303-969-2075) if you have any questions or comments about this document.

Sincerely,

John Bunyak

John Bunyak
Chief, Policy, Planning and Permit Review Branch

Enclosures

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BART Determinations for United Taconite
National Park Service (September 3, 2009)

On page 379 of the Response to Comments, the U. S. Forest Service (USFS) states that the MPCA's SO_2 BART determination for United Taconite of 1.7 lbs/mmBtu, based on fuel blending, was selected inappropriately. The USFS notes that the memo states that fuel blending was selected because "1) it does not require additional construction, 2) is quicker, and 3) avoids further degradation of water quality." The USFS believes that the first two reasons are not included as factors for consideration by the Clean Air Act. The USFS also states that reason 3 does not appear to be valid because water treatment costs are included as part of overall scrubber costs, sulfate treatment has been implemented at Minntac and is predicted to improve the quality of the tailing basin discharge, and therefore it is not clear that water quality would be degraded with a scrubber option. As the MPCA determined that all options are cost-effective, the USFS believes that fuel blending plus a polishing scrubber represents BART, with an emission limit of 0.68 lbs/mmBtu.

MPCA Response: The regulations at 40 CFR 51.308(e)(1)(ii)(A), mentioned by the commenter, specify certain mandatory criteria. The criteria are not identified as the exclusive criteria, however.

The consideration of the water quality drawbacks of scrubbing is part of the evaluation of "energy and nonair quality environmental impacts." A BART determination that does not exacerbate existing water quality issues is appropriate; when a BART determination is available that does not require extensive mitigation of nonair quality impacts such a determination should be strongly considered. Although the USFS states that sulfate treatment at Minntac "is predicted" to improve the quality of the discharge, the MPCA notes that this improvement has not yet been demonstrated. In addition, considerable energy usage is necessary for water treatment. Therefore, the MPCA believes its BART limit of 1.7 lbs SO_2/mmBtu heat input is reasonable and appropriate, and has been demonstrated as such using the five factors.

NPS: MPCA cannot "derive" additional reasons to exclude a control technology. Furthermore, only those "energy and nonair quality environmental impacts" that cannot be evaluated as part of the technical economic feasibility analyses should be considered under that category. MPCA should provide reasons why it does not believe that sulfate treatment at Minntac would improve the quality of the discharge.

p612: The BART limit for Line 2 is 1.7 lb SO_2/MMBtu heat input. This SO_2 limit can be met through modifying fuel blends; however, it could also be accomplished through use of additional air pollution control equipment. This limit is a 30-day rolling average, using SO_2 flue gas monitors. The emissions limit can be met through fuel changes, additional air pollution control equipment, or a combination of both.

NPS: MPCA should explain how it derived this limit.

BART Determinations for Keewatin Taconite
National Park Service (September 3, 2009)

MPCA p3: The permit for the US Steel – Keetac facility allows the combustion of natural gas, distillate fuel oils, coal, and petroleum coke in the pelletizing furnace. Coal and natural gas are the primary fuels; **coal is a significant source of sulfur**. Another source of sulfur emissions from this furnace is the iron ore used to form the green balls, although this represents a smaller contribution than the sulfur in the solid fuels burned. Sulfur dioxide emissions are currently controlled by wet scrubbers.

MPCA p5: The MPCA reviewed the BART analysis provided by Keetac and agrees with Keetac's assessment of technical infeasibility for Dry Sorbent Injection, Spray Dryer Absorption, **Alternate Fuels**, and Coal Processing.

NPS: MPCA should explain why it considers it technically infeasible for Keetac to burn a lower-sulfur coal.