

Regional Haze Meeting: Status of BART Implementation

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May 15, 2007



**Minnesota Pollution
Control Agency**

Best Available Retrofit Technology

- Sources built between 1962 and 1977
- Emit more than 250 tpy of visibility-impairing pollutant
- Facility must implement BART if State finds it contributes to visibility impairment in a Class I area
- States have discretion in the application of BART



MPCA Modeled 25 “BART-eligible” Facilities

11 facilities were found to contribute to visibility impairment over a threshold amount:

- ❑ 5 power plants: (Xcel-Sherco 1,2; MP-Taconite Harbor 3; MP-Boswell 3; NSM boiler 2; RPU 3,4)

- ❑ 6 taconite mining facilities



MPCA Decision: Does CAIR = BART For Electric Generating Units (EGU)?

- EPA: Overall, Clean Air Interstate Rule (CAIR) is better than BART
- States allowed to decide whether CAIR substitutes for BART
- MPCA postponed decision pending:
 - BART analyses from facilities
 - More information on planned control upgrades from facilities
 - Informal stakeholder input



Upcoming Control Projects at MN EGU

Facility Name/ Boiler # <i>Units in boldface are BART-eligible</i>	Estimated % Reduction Over Avg. '01-'03 Emission Rate (lb/MMBtu)	Estimated Year Emission Control Project Completed
Xcel - AS King/ unit 1	NO _x - 86% SO ₂ - 91%	2007
Xcel- Riverside/ units 6,7, 8	NO _x -98% SO ₂ - 99+%	2009 <i>replacing coal units w/ NG turbine</i>
Xcel-High Bridge/ units 5,6	NO _x -98% SO ₂ - 99+%	2008 <i>replacing coal units w/ NG turbine</i>
Xcel- Sherco/ units 1,2,3	NO _x -43-45% Plus add'l NO _x , SO ₂ reductions proposed Jan. '07	2006-2008
MN Power- Boswell/ unit 3	NO _x - 81% SO ₂ - 90%	2009
MN Power- Laskin/ units 1,2	NO _x - 60%	Done - 2007
MN Power-Taconite Harbor/ units 1,2, 3	NO _x - 66% SO ₂ - 63%	2007-2009
Rochester Public Utilities/ unit 4	NO _x - 63% SO ₂ - 85%	2009 –NO _x upgrades 2010 – SO ₂ upgrades
Ottertail Power Hoot Lake/ units 2, 3	NO _x - 46%	2006 (#3), 2008 (#2)

MPCA determination: CAIR=BART for MN EGU

- Nearly all BART EGU have announced plans to control visibility impairing pollutants plus additional control projects announced at non-BART units
- Continue to look for cost-effective controls at all sources as part of long-term strategy for reasonable progress



Taconite BART Proposals

Facility Name	2002 NOx / SO2 Emissions (tons)	Technology Proposed as BART by Facility
US Steel Corp - Minntac	14,924 1,946	NOx: Low-NOx burners in preheat zone on three units- 10% reduction; existing design remaining 2 units SO2: Existing design
Hibbing Taconite	6,203 593	NOx: Existing design SO2: Existing design
US Steel Corp- Keetac	6,050 704	NOx: Existing design (CEM for compliance) SO2: Existing design
UTAC Mining	1,771 3,222	NOx: Existing design SO2: Existing design
Mittal (Ispat Inland)	3,254 155	NOx: Existing design SO2: Existing design
Northshore Mining (excludes power boilers)	964 68	NOx: Existing design SO2: Existing design



MPCA Review of BART Proposals

- Reviewed facility cost estimates of add-on controls
 - Overall, cost estimates for add-on controls were within 30% of MPCA estimates
- Costs for add-on controls evaluated exceeded \$9000/ ton except for SO₂ removal at one furnace
 - Contractor to estimate cost to 1) redesign existing scrubber system to add lime or 2) replace existing scrubber with re-circulating lime scrubber



Can SO₂ removal from existing PM scrubbers be increased?

- Draft Report:
 - Adding chemicals not an option to enhance SO₂ removal at most existing PM scrubbers
 - Most existing PM scrubbers already operating at near optimum SO₂ scrubbing conditions
- MPCA: Need data. Are scrubbers are routinely operating at optimum SO₂ scrubbing conditions?



Difficulties in Establishing BART Limit

- Little research: No new facilities and few NO_x/SO₂ control upgrades in nearly 30 years
- Lack of comprehensive emissions data to set limit
 - NO_x Continuous Emission Monitors (CEMs) only installed at Minntac
 - Little data on variability in NO_x emissions and correlation of emissions with operating parameters
- MPCA: Lack of sufficient data to establish NO_x limits at all units and SO₂ limits at some units



MPCA direction on Taconite BART

- BART is likely to be existing design based on technology. Exceptions:
 - One furnace for SO₂
 - Low NO_x burners in preheat zones of furnaces
- CEMs data (or comparable) needed now for setting BART limits, establishing emissions from existing work practices/ controls
- Long term strategy will address:
 - Needed research into pollution prevention/controls
 - Possible additional limits

