

Regional Haze Meeting: Status of BART Implementation

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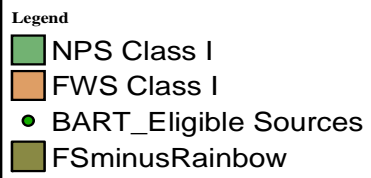
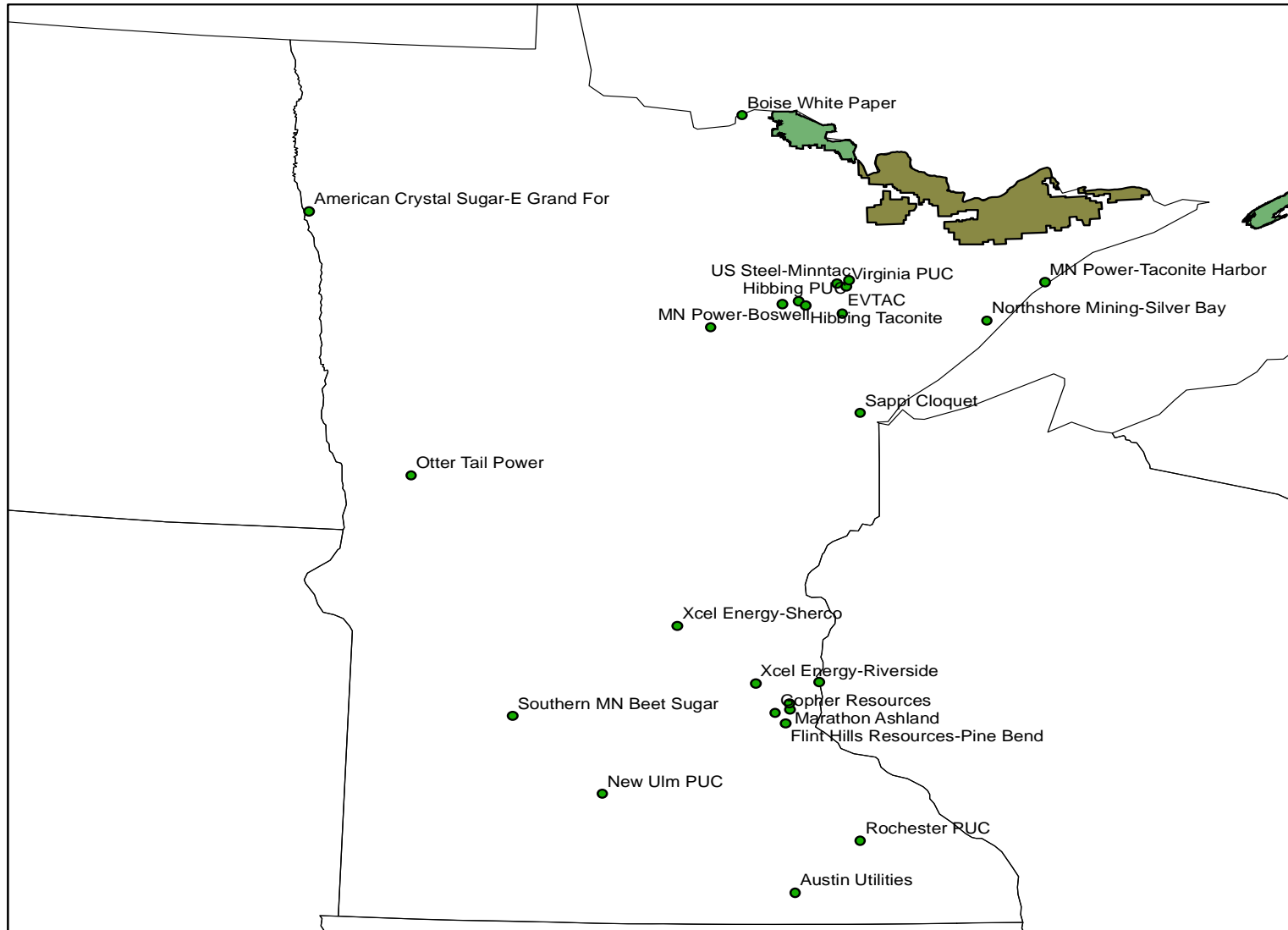
**Minnesota Pollution
Control Agency**

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



BART-Eligible Minnesota Sources & Class I Areas



MPCA Modeled 25 “BART-eligible” Facilities

- 11 were found to contribute to visibility impairment over a threshold amount:
 - 6 taconite mining facilities
 - 5 EGU (Xcel-Sherco 1,2; MP-Taconite Harbor 3; MP-Boswell 3; NSM boiler 2; RPU 3,4)
- Requested BART engineering analyses from all but: MP-Boswell 3; RPU 3,4; MP-TacHarbor3*.
 - These facilities had committed to BART-like controls or better

*MP Tac Harbor submitted BART analysis only for PM.



Steps in a BART Analysis

1. Identify all available control technologies
2. Eliminate technically infeasible options
3. Evaluate control effectiveness of remaining options
4. Evaluate impacts (cost to install and operate, energy impacts, non-air impacts, remaining useful life)
5. Evaluate visibility impacts



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



Technologies Evaluated by Taconite Facilities

- NOx Controls:
 - SCR – 80% control (\$9,400-23,000+/ton)
 - Ported kiln – 5% (\$5000/ton)
 - LoNOx burner in preheat zone -10% (\$700/ton)
- SO2 Controls:
 - Wet scrubber – 60% (\$3400 -15,000++/ton)
 - Wet Walled ESP – 80% (\$8100;\$15,000++/ton)
- Cost per ton of pollutant is in the thousands of dollars, compared to hundreds of dollars for power plants



Difficulties in Establishing BART Limit

- No new facilities and few NO_x/SO₂ control upgrades in nearly 30 years
 - Not much research on technologies to reduce these emissions from this industry
 - Difficult to require a technology such as LoTox as BART when it has not yet been tried at a taconite plant
 - Will consider LoTox/ other controls as part of long term strategy

- Need good emissions data
 - NO_x Continuous Emission Monitors only installed at Minntac
 - Little data on variability in NO_x emissions at other facilities



MPCA Review of Taconite BART Proposals

- Reviewing cost estimates for technologies evaluated by facilities
 - Were cost estimates reasonable?
 - Even if cost estimates were adjusted, would it change the outcome?
- Preparing an estimate of cost to improve SO₂ removal from existing PM scrubbers at certain facilities
- Evaluating stack test data to determine if a BART limit can be established



MPCA Decision: Does CAIR = BART?

- EPA: Overall, Clean Air Interstate Rule is better than BART
- IPM modeling: Few MN facilities would install controls in future years
- Before making decision, MPCA wanted:
 - BART analyses from facilities
 - More information planned control upgrades from facilities



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%	2009
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
Otertail Power Hoot Lake/ units 2, 3	NO _x - 46%	2006 (#3), 2008 (#2)

Leaning Towards CAIR=BART

- All but one BART EGU has 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

