

STATE OF COLORADO

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Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S. Laboratory Services Division
Denver, Colorado 80246-1530 8100 Lowry Blvd.
Phone (303) 692-2000 Denver, Colorado 80230-6928
TDD Line (303) 691-7700 (303) 692-3090
Located in Glendale, Colorado
<http://www.cdphe.state.co.us>



Colorado Department
of Public Health
and Environment

January 9, 2008

Mr. Jeremy Nichols
Director
Rocky Mountain Clean Air Action
1536 Wynkoop, Suite 302
Denver, CO 80202

Re: Public Service Company of Colorado BART Determinations

Dear Mr. Nichols:

This letter is in response to the comment letter, dated July 24th, that Rocky Mountain Clean Air Action (RMCAA) submitted regarding the Colorado Air Pollution Control Division's BART determinations for Public Service Company of Colorado (PSCO). The Division has considered your comments in the BART determination process and we appreciate the effort you have put forth in addressing this and other air quality issues in Colorado. We will address the issues in your letter in the order they were presented.

POST COMBUSTION NOX EMISSION CONTROLS

The Air Quality Control Commission's regulation provides that sources are not required to analyze post-combustion NOx controls and that the Division cannot require these controls for BART purposes. This provision is consistent with numerous statements made in the EPA BART rule (70 FR 39104) that relate to the establishment of the presumptive NOx emission limits for electric generating units greater than 750 MW in size. The presumptive NOx limits are based on the type of boiler and the type of coal used at a source. EPA's BART rule further explains EPA's basis for establishing presumptive limits for NOx based on boiler and coal type:

Page 39131 (starting in upper 3rd column): *For NOx, we are establishing a set of BART presumptive emission limits for coal-fired EGUs greater than 200 MW in size based upon boiler size and coal type, and based upon whether selective catalytic reduction (SCR) or selective noncatalytic reduction (SNCR) are already employed at the source. See section d. below for a table listing those specific limits. Based on our analysis of emissions from power plants, we believe that applying these highly cost effective controls at the large power plants covered by the guidelines would result in significant improvements in visibility and help to ensure reasonable progress toward the national visibility goal.*

Page 39131 (starting in lower 3rd column): *In addition, while States are not required to follow these guidelines for EGUs located at power plants with a generating capacity of less than 750 MW, based*

on our analysis detailed below, we believe that States will find these same presumptive controls to be highly-cost effective, and to result in a significant degree of visibility improvement, for most EGUs greater than 200 MW, regardless of the size of the plant at which they are located. A State is free to reach a different conclusion if the State believes that an alternative determination is justified based on a consideration of the five statutory factors. Nevertheless, our analysis indicates that these controls are likely to be among the most cost effective controls available for any source subject to BART, and that they are likely to result in a significant degree of visibility improvement.

Page 39134 (starting in middle 1st column): *For EGUs currently using controls such as SCRs or SNCRs to reduce NOx during part of the year, we are establishing a presumption that use of these same controls year-round is BART. (Some commenters supported year-round operation of these controls. One commenter suggested the cost of year-round operation of SCRs would be significant. However, our analysis showed year-round operation of existing SCRs compared to operation during the 5-month ozone season only to be highly cost effective (average cost-effectiveness of \$170 per ton).) Although only a few BART-eligible sources currently have SNCRs installed, we note that States may wish to consider SCR as an alternative to annual operation of SNCR in light of the relatively high operating costs associated with SNCR. For sources without post-combustion controls (i.e., SCRs and SNCRs), we are establishing a presumption as to the appropriate BART limits for coal-fired units based on boiler design and coal type. These presumptions apply to EGUs greater than 200 MW at power plants with a generating capacity greater than 750 MW and are based on control strategies that are generally costeffective for all such units.*

Page 39134 (starting in lower 1st column): *For all types of boilers other than cyclone units, the limits in Table 2 are based on the use of current combustion control technology. Current combustion control technology is generally, but not always, more cost-effective than post combustion controls such as SCRs. For cyclone boilers, SCRs were found to be more cost-effective than current combustion control technology; thus the NOx limits for cyclone units are set based on using SCRs. SNCRs are generally not cost-effective except in very limited applications and therefore were not included in EPA's analysis. The types of current combustion control technology options assumed include low NOx burners, over-fire air, and coal reburning.*

Page 39136 (starting near top of 1st column): *As a result, we are establishing a presumptive NOx limit for cyclone units based on the use of SCR. For other units, we are not establishing presumptive limits based on the installation of SCR. Although States may in specific cases find that the use of SCR is appropriate, we have not determined that SCR is generally cost-effective for BART across unit types.*

Page 39144 (starting in middle 3rd column): *For NOx, for those large EGUs that have already installed selective catalytic reduction (SCR) or selective noncatalytic reduction (SNCR) during the ozone season, States should require the same controls for BART. However, those controls should be required to operate year-round for BART. For sources currently using SCR or SNCR for part of the year, states should presume that the use of those same controls year-round is highly cost-effective. For other sources, the guidelines establish presumptive emission levels that vary depending largely upon boiler type and fuel burned. For coal-fired cyclone units with a size greater than 200 MW, our analysis assumes these units will install SCR. For all other coal-fired units, our analysis assumed these units will install current combustion control technology.*

Page 39171 (Appendix Y – starting near middle of 3rd column):

5. Nitrogen oxide limits for utility boilers.

You should establish specific numerical limits for NOx control for each BART determination. For power plants with a generating capacity in excess of 750 MW currently using selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) for part of the year, you should presume that use of those same controls year round is BART. For other sources currently using SCR or SNCR to reduce NOx emissions during part of the year, you should carefully consider requiring the use of these controls year-round as the additional costs of operating the equipment throughout the year would be relatively modest.

For coal-fired EGUs greater than 200 MW located at greater than 750 MW power plants and operating without post-combustion controls (i.e. SCR or SNCR), we have provided presumptive NOx limits, differentiated by boiler design and type of coal burned. You may determine that an alternative control level is appropriate based on a careful consideration of the statutory factors. For coal-fired EGUs greater than 200 MW located at power plants 750 MW or less in size and operating without post combustion controls, you should likewise presume that these same levels are cost-effective. You should require such utility boilers to meet the following NOx emission limits, unless you determine that an alternative control level is justified based on consideration of the statutory factors. The following NOx emission rates were determined based on a number of assumptions, including that the EGU boiler has enough volume to allow for installation and effective operation of separated overfire air ports. For boilers where these assumptions are incorrect, these emission limits may not be cost-effective.

Page 39172 (starting a top of 1st column): Most EGUs can meet these presumptive NOx limits through the use of current combustion control technology, i.e. the careful control of combustion air and low-NOX burners. For units that cannot meet these limits using such technologies, you should consider whether advanced combustion control technologies such as rotating opposed fire air should be used to meet these limits. Because of the relatively high NOx emission rates of cyclone units, SCR is more cost-effective than the use of current combustion control technology for these units.

Based on the above discussion and on the findings of EPA's nationwide review of BART eligible EGU sources, the Division believes that the Air Quality Control Commission was justified in excluding post combustion controls from BART consideration.

THE PROPOSED BART DETERMINATION FOR PAWNEE STATION

The Division acknowledges that EPA issued a notice of violation (NOV) to Xcel Energy on June 27, 2002 for alleged unauthorized modifications to Pawnee Station. The Division considers the NOV as an allegation of a violation and not a determination that violations actually occurred. Therefore, the NOV is not a final agency action and cannot be considered as conclusive evidence that a violation has occurred. Further, as of the date of this letter, it appears that EPA has taken no additional action on this NOV. It is not apparent whether EPA is actively pursuing this matter. Consequently, potential emission reductions associated with EPA's unresolved enforcement action do not preclude the Division from acting to establish a BART determination on Pawnee Station. Moreover, EPA has not raised the NOV as a BART concern and the Division's BART determination does not preempt or foreclose options available to EPA in resolving the NOV.

THE PROPOSED NOX EMISSION RATE FOR PAWNEE STATION

Since the Pawnee plant will be required to meet the presumptive NOx emission limit of 0.23 lb/MMBtu based on a 30-day rolling average, the Division has determined that the presumptive BART

requirements are satisfied. RMCAA notes that Pawnee is currently achieving an annual average emission rate of 0.21 lb/MMBtu, and contends that an emissions increase occurs by requiring a presumptive limit of 0.23 lb/MMBtu. The Division disputes this contention because the 0.23 lb/MMBtu NOx limit is based on a 30-day rolling average, while the current limit, required by the Acid Rain program (0.50lb/MMBtu), is based on an annual average. Moreover, in response to the shorter averaging period, Pawnee will either modify the current low NOx burner/overfire air system or install new equipment in order to meet the shorter averaging period required by the presumptive limit. The Division expects this change to result in emission reductions because a shorter 30-day rolling average will require Pawnee to operate with a compliance margin and this will result in emissions below the current level. The Division does not expect large NOx emission reductions from the combustion control changes at Pawnee, but instead believes that real reductions will occur.

THE PSCO BART ALTERNATIVE

RMCAA has identified several concerns regarding the PSCO Metro-Denver BART alternative. The two main concerns identified are: 1) that the alternative will allow emission increases based on the last three years of operation; and 2) that if stricter limits were imposed on all PSCO sources, including those not subject to BART, greater emission reductions could be obtained.

The Division agrees that recent annual SO2 emissions from the Metro Denver power plants have averaged slightly less than 10, 500 tons per year (TPY). Under the Voluntary Emission Reduction Agreement (VERA) PSCO agreed to reduce SO2 emissions from the metro Denver power plants from approximately 25,000 tons per year to 10,500 TPY, or approximately 70%. The VERA is a State-only provision and is not currently part of Colorado's State Implementation Plan (SIP). PSCO has now proposed that the VERA and Pawnee plant be included in a BART alternative, which would make the VERA part of Colorado's Regional Haze SIP and federally enforceable upon EPA approval. The Colorado BART rule allows for a BART alternative that is consistent with the EPA BART rule (70 FR 39136). EPA's BART rule specifies procedures for evaluating BART alternatives, including an example showing how the CAIR program is considered "better than BART" based on an emissions reduction evaluation. Under a BART alternative, BART eligible facilities are not required to meet specific BART emission limits; rather, the total alternative program must demonstrate that greater emission reductions are achieved than would occur by installing BART controls on BART eligible sources only. The PSCO alternative meets the "better than BART" criteria because SO2 emission controls will be applied to five sources (Cherokee Units 1, 2, 3 and Arapahoe Units 3 and 4), which are not BART eligible, in addition to controls on the two BART eligible units - Cherokee 4 and Valmont 5. The voluntary controls applied include a lime spray dryer on Cherokee Unit 3, and dry sorbent injection on Cherokee Units 1 and 2 and Arapahoe Units 3 and 4. In addition to the voluntary emission controls installed by PSCO, the VERA also required the shutdown of Arapahoe Units 1 and 2.

The BART alternative also includes provisions for NOx, which will require that new or modified low NOx burners and overfire air systems be installed on Valmont Unit 5 and Cherokee Units 3 and 4. Additional controls on Cherokee Unit 3 were not required since it is not BART eligible.

While RMCAA is partly correct in stating that the BART alternative SO2 cap (10,500 tpy) may essentially allow for a slight emissions increase (because the past three years of actual emissions data has averaged slightly under the existing VERA emissions cap of 10,500 tpy), it is important to point out the long-term benefits of an estimated 14,500 tpy SO2 emission reduction, which started in 2003, occurred at least ten years prior to any potential reductions anticipated under BART. Moreover, the lower emission rates achieved through the VERA, which are currently not federally enforceable, will

become federally enforceable upon EPA approval. The following table shows historical SO2 emissions from the VERA plants. The VERA compliance year is 2003.

Metro Denver PSCO SO2 Emissions (tons per year)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006
VERA Emissions	26,397	26,854	26,435	25,904	23,032	9,671	9,975	10,350	10,358

Currently both BART eligible units (Cherokee Unit 4 and Valmont Unit 5) utilize lime spray dryer systems for SO2 control. These systems are approximately 85-90% efficient in removing SO2. RMCAA states that if the 2004-2006 average emissions from these two units is reduced by 95% that much lower emissions would result. The Division notes that for existing systems, it would not be practical to require a higher level of control since both lime spray dryer systems operate at approximately 85% control efficiency. Further, adding an additional scrubber to remove 95% of the remaining emissions is not technically feasible in a retrofit situation. Moreover, the Division questions the ability of SO2 scrubbers to meet 95% control efficiency on low sulfur western coal. A review of the presumptive limit discussion in the EPA BART rule indicates that the 95% control capability is applicable to high sulfur eastern coals only. That is why EPA established presumptive limits of 0.15 lb/MMBtu or 95% control.

The Division has evaluated the PSCO alternative in numerous ways. It must be understood that each plant operates at different rates each year and that different operating scenarios result in different emission rates. In the PSCO BART application, the extra reduction from the BART alternative is estimated at 7,095 tons of SO2 per year, compared to only having BART on Cherokee Unit 4 and Valmont Unit 5. The Division has evaluated other scenarios involving higher plant utilization levels and has determined that the alternative will consistently result in a better than BART emission reduction.

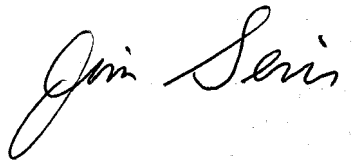
RMCAA also expresses concern regarding the Division not evaluating stricter emission controls, such as wet scrubbers, and lower emission rates on the BART eligible sources. It must be understood that the use of a BART alternative provides a group of sources with increased flexibility as to which sources are controlled. When a better than BART result occurs, specific BART limits on plants can be eliminated provided the total emissions stay below a cap. The EPA has approved programs such as Acid Rain and CAIR that establish emission caps with the goal of providing the source flexibility in determining how it will comply, typically by reducing emissions or buying emission credits. This situation exists with the VERA. Under the alternative there is no specific emission control requirement, rather an overall emission limit that must be met and verified through continuous emissions monitoring. The Division also must express concern regarding the suggested use of wet scrubbers at Cherokee 4 and Valmont 5. In the past, wet scrubbers were used at Cherokee Unit 4 for control of particulate matter. Unfortunately, under some meteorological conditions, the wet scrubber plume fails to rise. This has resulted in emissions dispersing directly into downtown Denver, a situation the Division does not want to facilitate in the future.

RMCAA suggests that a new alternative should be considered based on all metro plants included in the VERA meeting the BART presumptive SO2 level. It is not clear to the Division how this alternative would be required since the EPA BART rule only applies to BART eligible sources and there are no guidelines for how an alternative program must be constructed. The Division has no authority to simply require all sources (BART and non-BART) to meet the presumptive limits. This type of requirement

could have been proposed during the BART regulation stakeholder process, but no discussion of this approach occurred.

The Division hopes that we have addressed the issues raised in your comment letter and we appreciate your efforts on behalf of clean air. If you would like to discuss these issues in more detail please feel free to contact Jim Geier at (303) 692-3167 or Curt Taipale at (303) 692-3265.

Sincerely,

A handwritten signature in black ink that reads "Jim Geier". The signature is written in a cursive style with a large, looping initial "J".

Jim Geier P.E.
Air Pollution Control Division