BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

In the Matter of:	)	
Basin Electric Power Cooperative	)	Docket No. 10-2802
Air Quality Permit No. MD-6047	)	
BART Permit: Laramie River Station	)	

RESPONSE TO BASIN ELECTRIC'S MOTION FOR SUMMARY JUDGMENT

Basin Electric's Initial Submittal, dated 2/28/07

EXHIBIT 2

BASIN ELECTRIC POWER COOPERATIVE

1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58503-0564
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Reviewer KR
Copy to:
Cynthia
D.E.
File: 1047

February 28, 2007

David A. Finley
Wyoming Department of Environmental Quality
Division of Air Quality
122 West 25th Street
Cheyenne, WY 82002

Dear Mr. Finley,

The Department of Environmental Quality (DEQ) notified Basin Electric in June 2006 that the Laramie River Station (LRS) was a Best Available Retrofit Technology (BART) applicable source which required a BART engineering and modeling analysis for reducing visibility impacts in accordance with the Environmental Protection Agency's Guidelines for BART Determinations under the Regional Haze Rules (40 CFR Part 51). Visibility impacts for LRS were evaluated at two Federal Class I areas; Badlands National Park and Wind Cave National Park.

A BART review was required to identify the best control technology for the reduction of nitrogen oxides (NOx), sulfur dioxide (SO_2), and particulate matter (PM) emissions from Laramie River Station Units 1, 2 and 3. Basin Electric contracted Black & Veatch to conduct a BART analysis to identify technically feasible and cost-effective technologies following the BART Guidelines. A modeling analysis was completed to evaluate the impact on visibility in the two identified Class I areas. A summary of their findings is attached.

As a result of Black & Veatch's studies, Basin Electric commits to meet an equivalent to the presumptive level of 0.23 lb/mmBtu NOx on a plant-wide 30-day rolling average based on a pound per hour limitation of 4,471 pounds per hour for LRS.

Basin Electric will participate in the Western Regional Air Partnership (WRAP) SO_2 emissions trading program. Should the WRAP trading program not be implemented, Basin Electric will commit to meeting an equivalent to the presumptive level of 0.15 lb/mmBtu on a plant-wide 30-day rolling average based on a pound per hour limitation of 2,916 pounds per hour for LRS.

Our existing electrostatic precipitators are already state-of-the-art particulate control and are considered BART technology; therefore, no additional technology or further reductions of PM are necessary.

The Laramie River Station will meet all BART emission levels no later than five years following EPA's approval of the Wyoming State Implementation Plan.

If you have any questions, please contact me at 701-355-5654. Thank you.

Sincerely,

Robert L. Eriksen, P.E.
Environmental Compliance Administrator

/gmj
Enclosures
cc: Ken Rairigh, DEQ
Roosevelt Huggins, Black & Veatch
Kyle Lucas, Black & Veatch
Dallas Wade
Terry Archbold
Tom Spaulding

BLACK & VEATCH

MEMORANDUM

Basin Electric Power Cooperative
Laramie River Station BART Analysis
BART 5-Step process

B&V Project 145423
B&V File 15.1300
February 28, 2007

The Wyoming Department of Environmental Quality (DEQ) identified Basin Electric Power Cooperative's (BEPC) Laramie River Station's (LRS) Unit 1, 2 and 3 as Best Available Retrofit Technology (BART) applicable sources which required a BART engineering and modeling analysis for reducing visibility impacts in accordance with the Environmental Protection Agency's (EPA's) Guidelines for BART Determinations under the Regional Haze Rules (40 CFR Part 51). Visibility impacts for LRS were evaluated at two Federal Class I areas; Badlands National Park and Wind Cave National Park.

A BART review was required to identify the best control technology for the reduction of nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulate matter (PM) emissions from Laramie River Station Units 1, 2 and 3. However, it should be noted that for those large BART sources greater than 200 MW in size located at power plants greater than 750 MW, EPA has defined presumptive limits for NO_x and SO_2 which have been determined to be generally highly-cost effective, but may prove not to be for certain sources. SO_2 presumptive limit emission rate of 0.15 lb/mmBtu was established for coal-fired units that do not have existing post-combustion SO_2 controls. The NO_x presumptive limits differ based on the type of coal burned and the boiler design. In the case of the Laramie River Station, the NO_x presumptive limits for a dry-bottom wall fired, sub-bituminous coal burning unit is 0.23 lb/mmBtu. There are no presumptive limits for PM. A BART source, meeting the applicable criteria, can complete the BART engineering analysis and determine those technologies able to reach the presumptive limits are the preferred control strategy for each unit.

The units at LRS are currently operating with existing air quality control equipment in place. For NO_x emissions reduction, all three units utilizes good combustion practices and Low NO_x Burners (LNB) to achieve permit levels of NO_x. LRS Units 1 and 2 are also equipped with high-efficiency Electrostatic Precipitator (ESP) and a high-efficiency Wet Flue Gas Desulfurization (FGD) system. LRS Unit 3 is equipped with a dry scrubber FGD system with a high-efficiency ESP. Unlike many other BART applicable sources, LRS employs two of the three air quality control devices that can achieve the most visible improvement.

Wyoming DEQ identified that based upon the state's overall goals in achieving the federal requirements for visibility improvement, that acceptance of the BART presumptive limits would preclude the requirements of the exhaustive 5-step engineering analysis. This was also identified based upon the fact that LRS station already has significant controls with good operation history. The guideline allows for units with existing controls to focus on enhancement or operating modifications to the existing control equipment in lieu of complete replacement of air quality retrofit changes.

The BART review performed for LRS Units 1, 2 and 3 utilized EPA's five step process for determination of the BART selected technologies. In Step 1 of the BART methodology, available retrofit emissions control technologies that may be practically implemented at the Laramie River Station site are identified for NO_x, SO_2 and PM. The technology considered can be a method, system, or a combination for control of a pollutant. Technologies that have been successfully applied in commercial scale at similar sources or sources with similar gas characteristics are considered to be available. From this list of available technologies, technically feasible control technologies are identified in Step 2. A control technology is technically feasible if it is

determined to have been successfully implemented at a similar facility and/or is available commercially.

In Step 3, characteristics and features of the technically feasible control technologies are determined and the estimated control effectiveness of the technology as applied to Laramie River Station was determined. Also evaluated in this step are the retrofit requirements for the control technology at the existing plant site; these are determined by considering the current configuration of the equipment and the situation at the plant site. Control effectiveness is a measure of the emissions reduction expected after the implementation of the control technology.

For Step 4 of the BART review process, cost-effectiveness and other impacts are evaluated. Impact analysis for each technically feasible control technology was performed for this purpose. The impact analysis considers such issues as the cost of compliance, energy impacts, non-air quality impact, and the remaining useful life. Upon completion of the impact analysis for each control technology, the cost-effectiveness can be calculated. The two types of cost-effectiveness are average cost-effectiveness and incremental cost-effectiveness. Also performed in this step is the identification of the most cost-effective control technologies; these are determined by plotting the total annual cost to implement each technology versus the expected emissions reduction which results in a "least-cost envelope". The "least-cost envelope", identifies the most cost-effective control technologies for each pollutant.

The control effectiveness information was then used as one of the factors for consideration along with the cost effectiveness, existing plant conditions, retrofit difficulty of the control technology, and operational impacts of the new control technologies to determine the control technology for each BART unit. Therefore, to meet the presumptive level of emissions, the most cost effective control technologies were selected as the recommended BART control scenario.

In Step 5 of the BART review process, visibility demonstration using CALPUFF, was performed. To satisfy DEQ requirements, only two CALPUFF model runs were required – Scenario one represents the existing emissions case (Baseline Scenario) and Scenario two represents the preferred control strategy selected for PM and the strategy selected to achieve the presumptive emission levels for NO_x and SO_2. The visibility modeling was performed based on a modeling protocol that was approved by the Wyoming DEQ, dated September 2006. The preferred control strategy for each pollutant was modeled using meteorological data for years 2001 to 2003. Visibility data was analyzed for the 98th percentile modeled visibility impact and the number of days per year that the 0.5 deciview (dv) extinction criteria in each of the Federal Class I area modeled is exceeded. The CALPUFF modeling to determine visibility improvements with the addition of the preferred BART control technologies resulted in improvements to visibility from 0.2 dv to 0.24 dv. This corresponds to the number of days exceeding the 0.5 dv extinction criteria ranging from 34 to 45 days. These visibility improvements are limited due to the LRS units already having existing control technology that is considered for BART technology and operating at corresponding controlled emission level for NO_x, SO_2 and PM.

At the conclusion of the BART process, it was determined that presumptive emissions level for NO_x at 0.23 lb/mmBtu and SO_2 at 0.15 lb/mmBtu will be achieved at Laramie River Station on a plant-wide basis on a 30-day rolling average. The preferred control strategy to achieve these

presumptive emissions levels includes potentially installing overfired air (OFA) systems for one or more units. Additionally, possible DBA addition into the Units 1 and 2 wet FGD system and potential modifications to the Unit 3 dry scrubber is preferred to improve SO_2 removal to meet the required emissions level. It was also determined that the performance of the existing ESPs meets the requirements for controlling visibility impacts.