BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

In the Matter of the Appeal	)	
And Petition for Review of:	)	
BART Permit No. MD-6040	)	
(Jim Bridger Power Plant); and	)	Docket No. 10-2801
BART Permit No. MD-6042	)	
(Naughton Power Plant).	)	

RESPONSE TO PACIFICORP'S MOTION FOR PARTIAL SUMMARY JUDGMENT

PacifiCorp's Response, received 9/18/09

EXHIBIT 16

PACIFICORP ENERGY
A PACIFICORP COMPANY

William K. Lawson
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September 16, 2009

Mr. Chad Schlichtemeier
NSR Program Manager
Air Quality Division
Herschler Building
122 W. 25th Street
Cheyenne, Wyoming 82002

Re: Response to Comments Received on BART
Applications (AP-6040, -6041, -6042, -and 6043)

Dear Mr. Schlichtemeier:

On August 27, 2009, the Division of Air Quality requested that PacifiCorp Energy address additional items identified during the recent BART public hearing process. Below are responses to the additional requests.

1. ***Please provide supporting information that the proposed 0.07 lb/MMBtu, 30-day rolling average NOx emission limit for SCR represents the most stringent control option.***

   SCR with a 30-day rolling average of 0.07 lb/MMBtu is at the limit of current applied technology and thus represents the most stringent control option. Imposing lower limits would result in substantially higher costs than those identified in the BART studies and would introduce significant performance problems and operational uncertainties.

   Imposing lower NO_X limits also would result in a higher ammonia slip rate, particularly at the end of certain catalyst replacement time periods. This, coupled with expected coal quality variations at any particular unit, will lead to an inability to meet the lower limit at all times, as would be required under BART and the permit conditions.

   The general concerns noted above are supported by PacifiCorp's review of the potential installation of SCR at Naughton Unit 3. Although the comments below are specific for Naughton Unit 3, they apply generally to any unit that is being retrofitted with SCR.

   It is self-evident that the higher the inlet NO_X to the SCR, the more difficult and expensive it is to achieve lower SCR outlet rates on a regular basis. Unfortunately,

most coal sources, including the coal source at Naughton Unit 3 are expected to have significant run-of-mine coal quality variations which cause variations in the amount of NO_X entering the SCR. Based on the expected coal quality, a design inlet NO_X rate of 0.50 lb/MMBtu was chosen. This corresponds to a 0.05 lb/MMBtu outlet design rate and is the expected guarantee rate of the SCR installed on Naughton Unit 3. Vendor guarantees are only available for short term performance periods and are met by performing acceptance testing immediately following the installation the equipment. Vendor guarantees are not that meaningful when considering the hour-by-hour performance of the equipment over the life of the facility.

With a design outlet rate of 0.05 lb/MMBtu, the SCR at Naughton Unit 3 is expected to operate at 0.06 lb/MMBtu over the long term. Still, the unit cannot achieve this 0.06 lb/MMBtu rate all of the time. This is due, in part, to variations in coal quality and operational issues which cause fluctuations in the emissions by 0.01 to 0.02 lb/MMBtu. It was for these reasons that Sargent & Lundy, an independent engineering firm, recommended a NO_X permit limit above 0.08 lb/MMBtu. The proposed permit limit of 0.07 lb/MMBtu and any lower proposed limit must be viewed in the context of this recommendation. At the proposed 0.07 lb/MMBtu permit level, PacifiCorp will be required to operate at a rate lower than what has been recommended and the unit may be at risk of violating the 0.07 lb/MMBtu NO_X permit limit when high coal quality variations and end of life catalyst replacements coincide. For these additional reasons and all others noted in prior submittals to the Division, PacifiCorp continues to believe that the installation of SCR with a 30-day rolling average of 0.07 lb/MMBtu is the most stringent BART control option at Naughton unit 3 and other PacifiCorp units.

2. ***Please provide a detailed explanation of how sulfate emissions were calculated for the CALPUFF visibility modeling.***

CH2M HILL used the following methodology to calculate sulfate emissions for the different PacifiCorp coal-fired power plant air pollution control configuration cases:

- 1.0% of the SO2 in the boiler is converted to SO3
- An additional 1.0% of the SO2 is converted to SO3 in an SCR unit
- The SO3 is converted to H2SO4 mist in the flue gas
- 50% of the H2SO4 is removed in a wet FGD unit
- 95% of the H2SO4 is removed in a dry FGD unit
- An SCR unit has 2.0 ppmvd NH3 slip
- 50% of the NH3 slip is converted to ammonium sulfate and 50% is converted to ammonium bisulfate
- 50% of the ammonium sulfate and bisulfate are removed in a wet FGD unit and 90% of the ammonium sulfate and bisulfate are removed in a dry FGD unit
- Total Sulfate emissions are made up of H2SO4 mist, ammonium sulfate and ammonium bisulfate

3. ***Please provide information on PacifiCorp's overall schedule for the installation of pollution control equipment and an analysis of the engineering and planning timeframe(s) used as the basis for the schedule.***

PacifiCorp operates 19 coal-fired units, 14 of which are BART-eligible. In addition, PacifiCorp owns a BART-eligible unit in Arizona, and co-owns four BART-eligible units in Colorado and two coal-fired units in Montana. Given these many BART-eligible units and the short five year BART control installation window that follows final BART approval, PacifiCorp recognized early that it would need to take proactive steps to install controls in order to ensure that the pollution control equipment required under BART and other programs could be installed in a timely and efficient manner.

As a result, PacifiCorp has begun a long-term construction program across its system which is intended to comply with BART and other emission reduction requirements. This program will significantly reduce emissions at these facilities. The table below identifies the projects and status of the emission control projects that are currently included in PacifiCorp's construction plan.

Table 1: Status of Pollution Control Projects Undertaken by PacifiCorp:

Plant Name	State Where Plant is Located	SO2 Scrubbers New - N Upgrade - U	Low NO_X Burner Installations	Baghouse Installations	Status of SO2 / LNB / Baghouse Projects
Hunter 3	Utah	Installed	2008	Installed	Completed
Huntington 2	Utah	2007 - N	2007	2007	Completed
Cholla 4	Arizona	2008 - U	2008	2008	Completed
Jim Bridger 4	Wyoming	2008 - U	2008		Completed
Jim Bridger 2	Wyoming	2009 - U	2005		Completed
Dave Johnston 3	Utah	2010 - N	2010	2010	Under Construction
Huntington 1	Utah	2010 - U	2010	2010	Permitted
Jim Bridger 1	Wyoming	2010 - U	2010		Under Construction
Naughton 2	Wyoming	2011 - N	2011		Under Construction
Hunter 2	Utah	2011 - U	2011	2011	Permitted
Jim Bridger 3	Wyoming	2011 - U	2007		Under Construction
Wyodak	Wyoming	2011 - U	2011	2011	Permitted
Dave Johnston 4	Wyoming	2012 - N	2009	2012	Under Construction
Naughton 1	Wyoming	2012 - N	2012		Under Construction
Hunter 1	Utah	2014 - U	2014	2014	Permitted
Naughton 3	Wyoming	2013 - U	2013	2013	Permitted

In addition to these projects that are well under way, PacifiCorp is pursuing the installation of selective catalytic reduction (SCR) at Naughton Unit 3 in 2013, Jim

Bridger Unit 3 in 2015, and Jim Bridger Unit 4 in 2016 based on the expectation that SCR at these units will be required under the long-term strategy component of the state of Wyoming's Regional Haze SIP and other programs in the region. Even though PacifiCorp is pursuing the installation of SCR at these locations, PacifiCorp does not agree that the installation of the SCR at these facilities is required as BART.

The following information describes the engineering and planning timeframe(s) used as the basis for planning of the construction schedule for the projects noted above.

Table 2: Time required to Plan, Design and Install Pollution Control Equipment:

Technology	Low NO_X Burners	SCR	New Scrubber	Retrofitted Scrubber	Baghouse
Project Activity	Values Represent Months				
A. Develop and Permit	12 -14	18 - 24	12 - 14	12 - 14	12 - 14
B. Design	8 - 10	9 - 12	8 - 10	8 - 10	8 - 10
C. Procurement	10 - 14	9 - 13	10 - 14	10 - 14	8 - 10
D. Construct	3 - 4	18 - 24	18 – 36	12 - 18	24
E. Start, Tune & Test	4 - 6	4 - 6	4 - 6	4 - 6	4 - 6
Total Project Time	30 - 36	60 - 66	54 - 60	36 - 42	54 - 60

Note: Multiple project activities are done in parallel and by their very nature overlap. The total project time is representative of all activities completed in their respective overlapping time frames.

During the same time frame for installing the pollution control projects noted above, PacifiCorp also expects to expend significant additional costs for added mercury controls, carbon dioxide mitigation, new generation (including gas-fueled generation and renewable resources), and new transmission additions to support the renewable generation and other added generation. Although these costs are not specific to the BART process or the control equipment noted above, they are costs and construction activities that must be considered when evaluating the ability of PacifiCorp to install added BART controls or to install emission controls targeted at reducing regional haze sooner than proposed.

PacifiCorp recognizes that adding more emission controls faster than proposed may lead to achieving more environmental benefits sooner. However, the environmental benefits are only one consideration when determining appropriate BART controls. The challenge shared by all stakeholders is to ensure that the environmental benefits achieved are worth all of the costs incurred. One important element to being able to finance even the emission control projects noted above is the timing associated with the installation of the equipment. When considering only a single unit, one might conclude that pollution control equipment can be added virtually on any time schedule by only considering the normal construction and outage limitations of that single unit. This simplistic approach; however, simply does not work for a system the size of PacifiCorp's. When considering the cost of controls under BART, the Division must give consideration to how PacifiCorp's entire system is impacted and how the

required BART reductions can be achieved in a reasonable manner over time. PacifiCorp has demonstrated that its construction plan, including the new emission controls required under BART, adequately take into account:

- the cost of pollution control equipment,
- the associated loss of resource during extended outages
- the significant addition of capital and O&M costs
- the availability of construction resources
- the design and procurement of materials
- the installation time necessary to install all proposed emission control projects in a methodical and consistent manner

It is simply unrealistic to expect anything different and it is contrary to BART not to account for the enormous system-wide construction effort.

4. ***Please provide additional justification for the proposed LNB with OFA NOx limit of 0.26 lb/MMBtu, 30-day rolling averate at the Jim Bridger and Naughton plants.***

PacifiCorp has provided numerous papers discussing the issues concerning the quality of coal burned at the Naughton and Jim Bridger units. The presumptive BART limit set by the EPA for units burning sub-bituminous coals is based on sub-bituminous C coals such as those which come from the Powder River Basin. Sub-bituminous C coals are highly susceptible to staged combustion. It was these coals that were used to set the presumptive BART rates for tangentially-fired units utilizing low NOX burners with overfire air technology. Tangentially fired units burning sub-bituminous C coals can typically achieve the identified presumptive BART NOX emission rate of 0.15 lb/MMBtu.

The Jim Bridger and Naughton plants do burn sub-bituminous coals. However, these coals are sub-bituminous A or B coals which are not as susceptible to staged combustion as sub-bituminous C coals. Tangentially fired units equipped with low NOX burners and burning sub-bituminous A coals will achieve NOX emission rates closer to the 0.28 lb/MMBtu presumptive rate set for tangential units burning bituminous coals. This is based entirely on the attributes of the rank of sub-bituminous coals burned in these tangentially fired units.

Actual operations of the low-NOX burners at the Jim Bridger plant provide additional justification for the 0.26 lb/mmBtu limit on a 30-day rolling average. Three of the Jim Bridger units have already been modified with the best available low NOX burners and over-fire air technology. On an annual basis, the units have been able to achieve emission rates ranging from 0.21 to 0.24 lb/MMBtu. However, actual operating experience has demonstrated that during periods when mill maintenance is performed, or during times of high coal variability, the units may have difficulty meeting a 30-day rolling average of 0.26 lb/MMBtu.

5. ***Please provide information on potential installation of additional NO_X control equipment at the Dave Johnston and Wyodak plants.***

   There are several developing programs and requirements that may require additional controls at these units, including the state's development and implementation of a long-term strategy for meeting the continuous progress requirements of the regional haze rules. It is expected that the installation of additional NOX controls at these units will be discussed and developed as these programs mature and the requirements defined and justified.

6. ***Please provide information on the potential installation of additional NO_X control equipment at the Naughton plant.***

   There are several developing programs and requirements that may require additional controls at the Naughton plant, including the state's development and implementation of a long-term strategy for meeting the continuous progress requirements of the regional haze rules. It is expected that the installation of additional NOX controls at the Naughton plant will be discussed and developed as these programs mature and the requirements are defined and justified.

Sincerely,

William K. Lawson