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ATTORNEYS FOR BASIN ELECTRIC
POWER COOPERATIVE



**BEFORE THE ENVIRONMENTAL QUALITY COUNCIL**
**STATE OF WYOMING**

| | | |
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| In the Matter of: | ) | |
| Basin Electric Power Cooperative | ) | Docket No. 07-2801 |
| Dry Fork Station, | ) | |
| Air Permit CT – 4631 | ) | |

# RESPONSE TO PROTESTANTS' STATEMENT OF UNDISPUTED FACTS

Basin Electric responds to and corrects Protestants' "Undisputed Facts" as follows (following Protestants' paragraph numbers):

2. Basin Electric will use Powder River Basin coal from the adjacent Dry Fork mine to generate steam in a boiler that will in turn be used in a steam turbine to generate electricity.

3. Pulverized coal power plants can use subcritical or supercritical technology – involving more components than just the boiler and including the boiler, steam turbine/generator, and auxiliary equipment – depending on the size of the plant and other site-specific conditions.

4. Pulverized coal boilers designed for either subcritical or supercritical steam cycles start with pulverized coal and combust the coal in the boiler to generate heat which is used to produce steam. The steam then drives a turbine-generator which converts thermal energy to electrical energy. Steam produced in subcritical and supercritical boilers has significantly different properties, and cannot fairly be lumped together as generic "steam." The boiler design, steam turbine design, and design of certain auxiliary equipment (e.g., boiler feedwater heaters) also differ between subcritical and supercritical plants.

6. Because supercritical cycles operate at higher temperatures and pressures, turbine-generators larger than approximately 500 megawatt (MW) output designed for supercritical steam flows are generally more efficient at converting thermal energy to electrical energy than similarly sized subcritical units. The efficiency gain, if any, will depend on the size of the turbine-generator and other site specific factors.

7. Although DEQ did not evaluate supercritical technology as part of the BACT process, DEQ did review the potential for supercritical technology at Dry Fork Station.

8. The remaining 40% of the electricity not produced in an IGCC combustion turbine does not come solely from the steam produced in the syngas cooler but is a combination of that and what comes from the hot gas from the gas turbine exhaust going through the heat recovery steam generator.

9. Lower emissions from an IGCC plant are expected for some, but not all constituents, and have not yet been demonstrated in practice when compared to advanced pulverized coal plant emissions such as the permit limits for the Dry Fork Station, which are among the most stringent in the country.

10. Although DEQ did not evaluate IGCC technology as part of the BACT process, DEQ did review the technical and commercial potential for using IGCC technology at Dry Fork Station.

15. Even if $PM_{10}$ and $PM_{2.5}$ have different sources and formation processes, a majority of the $PM_{10}$ and $PM_{2.5}$ from the Dry Fork Station will be generated from the same source – that is, coal combustion in the boiler.

16. Paragraph 16 does not accurately reflect what EPA stated at 72 FR 20589. EPA states that "[i]n contrast to $PM_{10}$, EPA anticipates that achieving the NAAQS for $PM_{2.5}$ will

generally require States to evaluate different sources for controls, to consider controls of one or more precursors in addition to direct PM emissions, and to adopt different control strategies." Nothing at 72 FR 20589 states that different techniques and technologies are more effective at controlling $PM_{2.5}$ than controlling $PM_{10}$.

17. All of the tools needed to model $PM_{2.5}$ do not exist. That is one reason why DEQ properly used $PM_{10}$ modeling as a surrogate pursuant to EPA policy. Although ISC and AERMOD can model $PM_{2.5}$ primary emissions, neither has the atmospheric chemistry modules to calculate the formation of secondary particles in the plume. All they can do is calculate the dispersion of the primary particles emitted from the stack.

18. All of the tools needed to measure $PM_{2.5}$ emissions do not exist. That is one reason why DEQ properly used $PM_{10}$ modeling as a surrogate pursuant to EPA policy. These monitoring methods, particularly Method 202, suffer from an artifact problem. Method 202 passes the flue gas through chilled water. In doing so, gaseous SO2 can be absorbed and measured as if it was particulate sulfate, causing the measurement of condensable $PM_{2.5}$ to be inflated. EPA is aware of this error as are many states. EPA is working on a modified method that does not have this problem.

19. Technologies capable of capturing fine particulate matter ($PM_{2.5}$) are available and in use, including fabric filters, scrubbers, and wet electro-static precipitators (ESPs). The applicability and effectiveness of each of these control technologies will be project-specific. Dry Fork Station will use several of these technologies to effectively control primary $PM_{2.5}$ and limit emissions of secondary $PM_{2.5}$ precursors.

20. Wyoming actually has seven $PM_{2.5}$ monitoring stations that collect data posted on the EPA AirData web site. In Mr. Pearson's affidavit attached to Basin Electric's Response, he

lists data from each of the seven monitoring stations to show all monitoring results, including the stations closest to Dry Fork Station.

21. The permit for the Dry Fork Station contains a permit limit for mercury of 97 x $10^{-6}$ lb/MWh, requires the station to install and operate a mercury control system within 90 days of initial startup, and requires the station to perform a one year mercury control optimization study.

22. BEPC prepared a BACT analysis for mercury control. That analysis determined, based on the development status of emerging mercury control systems, that a complete 5-step top-down BACT analysis could not be performed.

23. During the permitting process, Basin identified at least four potentially available technologies for consideration in the mercury optimization study: sorbent injection, sorbent enhancement additives, coal pretreatment processes, and mercury oxidation technologies. To date, none of the control technologies have been tested on a pulverized coal unit firing subbituminous coal and equipped with a circulating dry scrubber for SO2 control.

24. DEQ's approach will result in the installation of a technically feasible and effective mercury control system, and will provide more protection for the environment than a premature BACT analysis.

28. Basin Electric agreed to model Colstrip Units 3 and 4 at allowable emissions while noting that regulations only required sources to be modeled at actual emissions.

29. Basin Electric's modeling consultant, CH2MHill, had short term actual emissions that were used for increment modeling.

30. There was no reason or requirement for Basin Electric to appeal DEQ's March 28, 2006 requirement to model Colstrip at allowable emissions, because DEQ had not made a final decision on the permit application at that time.

32. The summary of modeling is not a complete summary of the increment modeling results or Dry Fork Station's impact to those results. The values Protestants show are also incorrect. In 2002, the highest cumulative value was 7.15 on October 12. At that same receptor and time, the Dry Fork Station contribution was zero (0.0000) and the Colstrip contribution was 7.06. In 2003, the only exceedance was 5.07 (not 5.8) and the Dry Fork contribution was zero (0.0000) and the Colstrip contribution was 4.84.

33. to 34. This modeling used Colstrip Units 3 and 4 at allowable rather than actual emissions at DEQ's request, which was not the approach called for under federal and Wyoming rules on modeling increment. Even this modeling conclusively showed that Dry Fork Station's contributions, when there was a non-zero contribution at the time and place of the increment exceedance, was below the significant impact level approved by EPA.

DATED September 12, 2008.

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## CERTIFICATE OF SERVICE

I hereby certify that on September 12, 2008, I served the foregoing by electronic service and by placing a true and correct copy thereof in the United States mail, postage prepaid and properly addressed to the following:

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