

BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

FILED

OCT 17 2008

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

Jim Ruby, Executive Secretary
Environmental Quality Council

PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW
(Claims II and III – IGCC and Supercritical Technologies)

The Wyoming Department of Environmental Quality Air Quality Division (DEQ/AQD) by and through the Office of the Attorney General, and Basin Electric Power Cooperative, Inc. (Basin Electric), through its counsel, Holland & Hart LLP, submit the following Proposed Findings of Fact and Conclusions of Law on Protestants' claims set forth in paragraphs 33-41 of their Petition in the above-captioned permit appeal:

I. INTRODUCTION

On November 10, 2005, Basin Electric submitted its air construction permit application to Wyoming DEQ to construct the Dry Fork Station. Schlichtemeier Aff., ¶ 15, Ex. D (Ex. 1 to DEQ's Motion for Partial Summary Judgment (DEQ Motion)).

On October 15, 2007, after review and comment, the Director of the DEQ and the Administrator of the Air Quality Division issued Air Quality Permit CT-4631 (Permit) to Basin Electric to construct the Dry Fork Station approximately seven (7) miles north of Gillette, Wyoming. Schlichtemeier Aff., ¶¶ 32-33, Ex. T and Ex. U.

On November 1, 2007, Sierra Club, Powder River Basin Resource Council, and Wyoming Outdoor Council (collectively Protestants) filed a petition for hearing before the Environmental Quality Council (EQC) in response to the permit granted to Basin Electric. (Protestant's Pet. for Hr'g at 1). In Counts II and III of the Petition, Protestants allege that DEQ erred by failing to consider Integrated Gasification Combined Cycle (IGCC) and supercritical and ultra-supercritical technologies as potential pollution control technologies in the "Best Available Control Technologies" (BACT) portion of the permitting process. These allegations are set forth in paragraphs 33-41 of the Protest and Petition for Hearing (Petition).

All parties moved for summary judgment on these claims. A hearing (Hearing) was held on these motions on September 29, 2008 and September 30, 2008, at the Wyoming Game and Fish Casper Regional Building, Pronghorn Room, 3030 Energy Lane, Suite 100, Casper, Wyoming. Protestants, Sierra Club, Powder River Basin Resource Council, and the Wyoming Outdoor Council were present and represented by their attorneys, James S. Angell, Robin Cooley, Andrea L. Zaccardi of Earthjustice and Reed Zars. Respondent, Basin Electric was present and represented by its attorneys, Patrick R. Day and Mark R. Ruppert of Holland & Hart

LLP. Respondent DEQ/AQD was present and represented by Assistant Attorneys General, Nancy E. Vehr and Luke J. Esch of the Wyoming Attorney General's Office. The Hearing was held before Hearing Examiner Deborah A. Baumer, and EQC member and presiding officer F. David Searle, and EQC members Dr. Fred Ogden, Tim Flitner, Dennis M. Boal, John N. Morris, and Thomas Coverdale.

The Hearing was conducted pursuant to the Wyoming Administrative Procedure Act, WYO. STAT. ANN. § 16-3-101 *et seq.*, and the DEQ's Rules and Regulations, PROCEDURES FOR CONTESTED CASE HEARINGS. The proceedings were recorded by court reporter Randy A. Hatlestad from Wyoming Reporting Service, Inc.

The Parties submitted written briefs, exhibits and affidavits, and presented oral arguments and answered questions from the EQC on the issues. The EQC then deliberated. Having considered the Parties' motions, briefs and supporting exhibits, and having heard argument on the issues, and for the reasons set forth in the pleadings and exhibits of DEQ and Basin Electric, the Council hereby FINDS and ORDERS as follows on Counts II and III of the Petition:

II. FINDINGS OF FACT

1. On November 10, 2005, Basin Electric submitted its air construction permit application to DEQ to construct the Dry Fork Station. *See* Schlichtemeier Aff., ¶ 15; Schlichtemeier Aff., Ex. D; DEQ Annex ¶ 1; Protestants' Response to DEQ Annex ¶ 1.

2. Under the permit application, Basin Electric proposed a mine-mouth 422 megawatt (MW)(gross)/385 MW(net) pulverized coal-fired electric power generating unit. *See* Schlichtemeier Aff., ¶ 34. The Permit Application was filed with DEQ pursuant to the Wyoming Environmental Quality Act (WEQA) and the Prevention of Significant Deterioration (PSD) program created by the federal Clean Air Act (CAA), as administered by the AQD, pursuant to Wyoming's State Implementation Plan (SIP) approved by the Environmental Protection Agency (EPA).

3. The DEQ/AQD completed its Permit Application Analysis on February 5, 2007. *See* Schlichtemeier Aff., Ex. N.

4. Basin Electric considered different possible electrical generating technologies for meeting the projected electrical demand, including Integrated Combined Cycle Gasification (IGCC) and supercritical and ultra-supercritical pulverized coal technologies (collectively supercritical technologies). Williams Aff., at ¶ 2 (attached to Basin Electric's Memo in Support of Motion for Summary Judgment (Basin Electric Brief)). Basin Electric concluded that the project required an operating "base load" facility that would be available 90% of the time with a capacity factor of at least 85% on a continuous basis. Raatz Aff., Ex. A; Raatz Aff., at ¶¶ 3 and 4 (attached to Basin Electric Brief) and Williams Aff., at ¶ 9. Basin Electric also had access to a local coal mine next to the Dry Fork Station that could provide a low-sulfur coal at the plant inlet, a consideration in its technology selection. *See* Raatz Aff., at ¶ 7; Schlichtemeier Aff., Ex. T at DEQ/AQD Bates No. 004195.

5. Basin Electric selected a subcritical pulverized coal boiler as its proposed emission source technology for purposes of its PSD permit application. This technology has a

proven track record burning sub-bituminous Wyoming coal, at Wyoming elevation, with an availability factor in excess of 90%. *See Williams Aff., Ex. A at 3.*

6. On April 20, 2007, the DEQ/AQD requested information from Basin Electric regarding its selection of a pulverized coal (PC) boiler instead of IGCC, supercritical or ultrasupercritical technologies. *See Schlichtemeier Aff., Ex. P.*

7. DEQ/AQD required Basin Electric to provide information regarding its technology selection, but DEQ/AQD did not require Basin Electric to evaluate IGCC or supercritical technologies as part of the BACT analysis. Basin Electric responded to the DEQ/AQD's request. *See Schlichtemeier Aff., ¶¶ 29-30, Ex. R, Ex. S, and Ex. T at DEQ/AQD Bates Nos. 004182-4240.*

8. There are four IGCC plants world-wide using coal as the sole feedstock, none of which: has ever achieved 90% availability and 85% capacity, combusted sub-bituminous coal, or operated at high elevation. *See Protestants' Answer to Interrog. No. 19 at p. 11 (Ex. 8 to DEQ Motion); Fowler E-mail, p. 2 (attached as Ex. 5 to Basin Electric Brief).*

9. Basin Electric's evaluation concluded that IGCC would not meet the availability and capacity design requirements for a baseload unit. *See Schlichtemeier Aff., Ex. R at DEQ/AQD Bates Nos. 001019-1020, Ex. S, and Ex. T at DEQ/AQD Bates Nos. 004182-4240.*

10. Subcritical and supercritical technologies differ in large part due to differences in their main steam turbine operating pressures and temperature. *See Expert Report of Kenneth J. Snell (Snell Report) at 10-11 and 17 (attached as Ex. 10 to Basin Electric Brief).*

11. Supercritical boilers operate at temperatures and pressures above the "critical point" of water, while subcritical boilers operate at temperatures and pressures below the critical point of water. *See Snell Report at 10 (Basin Electric Ex. 10); June 11, 2007 Memo re: Subcritical – Supercritical Boiler Comparison (Protestants Ex. 28); and Schlichtemeier Aff., Ex. S at DEQ/AQD Bates No. 001013.* As a result of these different pressure and temperature conditions, changing from subcritical to supercritical technologies would require a different boiler made with different steel alloys, different water wall tubing, different valves, different turbines, different reheaters, different boiler feed pumps, and a different economizer. *Sahu Depo. (excerpts attached as Sahu Depo. to Basin Electric's Brief) at 58-59, 62-67; Schlichtemeier Aff., Ex. R, Ex. S, and Ex. T; Williams Aff., Ex. C; and Snell Report at 10-11 and 17 (Basin Electric Ex. 10).*

12. In an IGCC facility, coal is crushed and then thermally converted to a synthetic gas (syngas) for combustion in a gas turbine. IGCC technology uses two steps: gasification and combined cycle power generation, which are not present in subcritical technologies. The syngas is combusted in a combustion turbine to produce the energy that is converted to electricity. *See Schlichtemeier Aff., Ex. T at DEQ/AQD Bates No. 004200; Jenkins Depo. at 120:4-125:23 (attached as Ex. 6 to DEQ Motion).*

13. In an IGCC plant, no coal-fired boiler is involved. The fuel combusted to generate electricity in a subcritical pulverized coal plant is coal, but an IGCC plant combusts

syngas. *See, e.g.*, Jenkins Expert Report at 13-18 (Ex. 4 to Basin Electric Brief); Williams Aff., Ex. D at 4-7.

14. Protestants did not dispute these technical differences between IGCC and a subcritical coal boiler. In a June 26 e-mail to Mr. Angell, counsel for the Protestants, Protestants' expert Mr. Fowler acknowledged that "Jenkins [Basin Electric's expert] also includes some detail on how an IGCC is very different from a [subcritical] plant. He is basically correct about that . . ." Fowler E-mail, p. 2 (Basin Electric Ex. 5).

15. DEQ did not consider IGCC or supercritical technologies to be control technologies that had to be evaluated as part of the BACT process required by WAQSR Ch. 6, § 4(a). As a consequence, although DEQ did require Basin Electric to explain the reasons for its decision not to employ these technologies, DEQ did not submit these technologies to a separate "BACT" analysis as potential pollution control options when issuing Basin Electric's permit. *See Schlichtemeier Aff.*, ¶ 34-35, 44-47.

16. DEQ did not do so because it considered these technologies to be fundamentally different emission source technologies than the one proposed by Basin Electric and, if applied, would require Basin Electric to "redefine" its proposed emissions source, a subcritical pulverized coal boiler, contrary to DEQ's interpretation of WAQSR, Ch. 6, § 4(a) and prior precedent from this Council affirming DEQ's interpretation of the BACT regulation. *See In the Matter of a Permit Issued to Black Hills Power & Light Company, Neil Simpson Unit #2*, Permit No. CT-1028, Docket No. 2476-93 at Conclusions of Law ¶ 5 (attached as Ex. 3 to Basin Electric Brief).

17. Since at least 1989, and in the more than 40 PSD permit reviews conducted by the DEQ/AQD since 1996, the DEQ/AQD's policy has been to not require redefinition of a source in the BACT analysis. *See Schlichtemeier Aff.*, ¶¶ 34-36, 47; Ex. T at DEQ/AQD Bates Nos. 004159-4161.

18. The DEQ/AQD conducted a site-specific BACT analysis for the Dry Fork facility that did not include redefining the source. *See Schlichtemeier Aff.*, ¶ 34.

III. CONCLUSIONS OF LAW

1. Chapter II, Section 14 of the DEQ Rules of Practice & Procedure (DEQ RPP) makes the Wyoming Rules of Civil Procedure applicable to matters before the EQC. (DEQ RPP Ch. 2, § 14).

2. The Wyoming Rules of Civil Procedure provide that summary judgment is appropriate when "the pleadings, depositions, answers to interrogatories, and admissions on file, together with affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." WYO. R. CIV. P. 56(c).

3. Summary judgment is appropriate if there is no genuine issue of material fact and the moving party is entitled to judgment as a matter of law. WYO. R. CIV. P. 56(b), (c).

4. Summary judgment procedures set out in WYO. R. CIV. P. 56 apply to administrative cases. *Rollins v. Wyoming Tribune Eagle*, 2007 WY 28, ¶ 6; 152 P.3d 367, ¶ 6 (Wyo. 2007).

5. The purpose of summary judgment is to dispose of cases before trial that present no genuine issues of material fact. *Id.* A fact is material if proof of that fact would have the effect of establishing or refuting one of the essential elements of the cause of action or defense. *Id.*

6. Where there are no genuine issues of material fact, summary judgment concerns application of the law. *Bd. of County Comm'rs of County of Laramie v. City of Cheyenne*, 2004 WY 16, ¶ 8; 85 P.3d 999, ¶ 8 (Wyo. 2004).

7. “[T]he well-reasoned views of the agencies implementing a statute ‘constitute a body of experience and informed judgment to which courts and litigants may properly resort for guidance[.]’” *U.S. v. Mead Corp.*, 533 U.S. 218, 227(2001).

8. “Considerable weight should be accorded to an executive department’s construction of a statutory scheme it is entrusted to administer.” *Id.* at 227-228.

9. The WEQA requires a permit to construct “before construction or modification of any industrial facility capable of causing or increasing air or water pollution in excess of standards established by the department is commenced.” WYO. STAT. ANN. § 35-11-801; WAQSR Ch. 6, § 2.

10. Before the DEQ may issue a permit, the applicant must prove to the DEQ Director’s satisfaction that the applicant has complied with the WEQA and regulations promulgated thereunder. WYO. STAT. ANN. § 35-11-801; WAQSR Ch. 6, § 2.

11. Under Wyoming law, the applicant proposes the emissions source for which a permit is required. WAQSR Ch. 6, §§ 2(c)(v), 4(a).

12. The DEQ/AQD, as Wyoming’s air quality permitting agency, analyzes the air quality impacts of the proposed facility and establishes emission limits which are protective of Wyoming’s air quality. WAQSR Ch. 6, §§ 2(c), 4(a).

13. DEQ/AQD’s air quality construction permitting program requires a BACT analysis for the proposed facility for each pollutant subject to regulation. WAQSR Ch. 6, § 2(c)(v).

14. Pursuant to the WAQSR, BACT is defined as:

. . . an emission limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under these Standards and Regulations or regulation under the Federal Clean Air Act, which would be emitted from or which results for [sic] any proposed major stationary source or major modification which the Administrator,

on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application or [sic] production processes and available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emission standard infeasible, he may instead prescribe a design, equipment, work practice or operational standard or combination thereof to satisfy the requirement of Best Available Control Technology. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means which achieve equivalent results. Application of BACT shall not result in emissions in excess of those allowed under Chapter 5, Section 2 or Section 3 of these regulations and any other new source performance standard or national emission standards for hazardous air pollutants promulgated by the EPA but not yet adopted by the State of Wyoming.

WAQSR Ch. 6, § 4(a).

15. This regulation requires DEQ to consider emission limitations that can be achieved from a “proposed source.” See also WAQSR Ch. 6, § 2(c). In this case, the “proposed source” in the permit application is Basin Electric’s subcritical pulverized boiler. The BACT regulation also provides that DEQ is to consider the application of production processes, methods, etc., that may be applied to “such source” for control of pollutants. It therefore follows that the BACT process requires consideration of control technologies that may be available for the source proposed by the permit applicant. In this case, Basin Electric’s proposed emissions source is a subcritical pulverized boiler, not IGCC or supercritical technologies.

16. EPA construes the federal BACT statute in this fashion, stating in its New Source Review Workshop Manual (NSR Manual) in 1990 that “EPA has not considered the BACT requirement as a means to redefine the design of the source when considering available control alternatives.” NSR Manual at B.13 (attached as Ex. 2 to Basin Electric Brief). This interpretation of the BACT statute was recently affirmed by the United States Seventh Circuit Court of Appeals. *Sierra Club v. U. S. EPA*, 499 F.3d 653, 655 (7th Cir. 2007). It has also been upheld by the Environmental Appeals Board (EAB) on numerous occasions. See, e.g., *In re Prairie State Generating Station*, PSD Appeal No. 05-05, 13 E.A.D. ___, slip op. at 29 (EAB 8-24-2006) (it is the “proposed facility” identified by the permit applicant that is subject to BACT and that “[i]n this context, the permit applicant initiates the process and, in doing so, we conclude, defines the proposed facility’s end, object, aim or purpose—that is the facility’s basic design”); and slip op. at 27 (“We have specifically stated that ‘EPA has not generally required a source to change (i.e., **redefine**) its basic design.’” (quoting *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 136 (EAB 1999)) (emphasis in original); *In the Matter of Hawaiian*

Commercial & Sugar Co., 4 E.A.D. 95, 99 (EAB 1992); *In re Pennsauken County, New Jersey, Resource Recovery Facility*, 2 E.A.D. 667 (EAB 1992).

17. This Council has followed this interpretation of the BACT regulation in Wyoming. This Council held in 1993:

The Applicant, Black Hills, defined the proposed source, a coal-fired steam electric generating plant with a pulverized coal boiler. Federal and state laws and regulations do not require the DEQ/AQD to redefine the source and as a result cause Black Hills to build a different type of boiler, such as a circulating fluidized bed boiler, rather than a pulverized coal boiler. The DEQ/AQD properly exercised its discretion not to redefine the source.

In the Matter of a Permit Issued to Black Hills Power & Light Company, Neil Simpson Unit # 2, Permit No. CT-1028, Docket No. 2476-93 at Conclusions of Law ¶ 5 (Basin Electric Ex. 3).

18. An agency may make law through adjudication using prior contested cases as precedent. *Montana-Dakota Util. Co. v. Pub. Serv. Comm'n*, 746 P.2d 1272, 1275 (Wyo. 1987).

19. A rule of law developed in the context of agency adjudication applies to the future conduct of all persons subject to the agency's jurisdiction. *N.L.R.B. v. Bell Aerospace Co.*, 410 U.S. 267, 293-294 (1974).

20. Employment of IGCC technology would require Basin Electric to scrap its boiler altogether and combust synthetic gas. Employment of supercritical technologies would require changes to Basin Electric's proposed source all of the way down to the basic metallurgy of the boiler, and numerous other substantial changes to the design of the subcritical boiler, associated turbines, and additional plant equipment, as acknowledged by Protestants' expert, Dr. Sahu.

21. Protestants do not dispute the differences in the basic design of the technologies at issue. Rather, they argue these differences are not legally relevant because all of these technologies are "production processes" comparable to Basin Electric's proposed sources and thus must be considered as pollution control options under BACT. This is a legal argument based on Protestants' interpretation of the BACT regulation, not a disagreement on the facts.

22. Protestants argue that what they conceive to be Basin Electric's basic purpose for this project, generating electricity from coal, can be met with IGCC and supercritical technologies, and therefore requiring these technologies to be considered as control devices does not "redefine" the basic purpose of the project.

23. Protestants' interpretation of the BACT statute has been rejected by the EAB and the Seventh Circuit Court of Appeals. In response to this argument, the EAB stated that: "We . . . specifically reject Petitioners' contention that an electric generating facility's purpose must be viewed as broadly as 'the production of electricity, from coal.'" *Prairie State*, slip op. at 32. On appeal, the Seventh Circuit affirmed the EAB decision, stating that: "Refining the statutory definition of 'control technology' – 'production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment of innovative fuel combustion

techniques' –to exclude redesign is the kind of judgment by an administrative agency to which a reviewing court should defer." *Sierra Club v. EPA*, 499 F.3d at 655.

24. Protestants also argue that the term "proposed source" set forth in the definition of BACT means any source which falls into the administrative category of "electric utility steam generating units" under the New Source Performance Standards (NSPS). 40 C.F.R. § 60.40Da *et. seq.* Protestants offer no authority for this proposition. This source category also includes natural gas fired plants, which Protestants concede cannot be required under the redefinition principle associated with the BACT statute. Protestants' Brief at 19-21.

25. The question that arises, when redefinition of the source is implicated, is "where control technology ends and a redesign of the 'proposed facility' begins." *Sierra Club v. EPA*, 499 F.3d at 655. Here, the facts applicable to this evaluation are not disputed. The application of IGCC or supercritical technologies would require Basin Electric to either scrap its subcritical boiler altogether (IGCC) or fundamentally change its design all of the way down to the basic metallurgy of the steel (supercritical). Either technology would require Basin Electric to reconfigure its proposed plant, which the Seventh Circuit has acknowledged would constitute an improper redesign of the applicant's proposed major stationary source. *Id.* The definition of BACT "does not include redesigning the plant proposed by the permit applicant" and requiring the permit applicant to make changes to the plant that would be required to accept a different kind of coal would be a "reconfiguration [that] would constitute a redesign." *Sierra Club*, 499 F.3d at 654, 657.

26. DEQ's determination that IGCC and supercritical technologies were not required for consideration in the BACT process was therefore in accord with the law. DEQ did not err in concluding that IGCC and supercritical technologies would require Basin Electric to redefine its proposed subcritical boiler, and these technologies were not required to be considered as pollution control technologies under the BACT process.

27. This conclusion is in accord with this Council's prior holdings in the *Neil Simpson* permit appeal cited above, and with EPA's interpretation of the BACT statute. DEQ properly followed the approach required under the Clean Air Act (CAA) and the WEQA permitting process: "we conclude that the permit issuer appropriately looks to how the applicant, in proposing the facility, defines the goals, objectives, purpose, or basic design for the proposed facility. Thus, the permit issuer must be mindful that BACT, in most cases, should not be applied to regulate the applicant's objective or purpose for the proposed facility" *In re Prairie State Generating Station*, slip op. at 30.

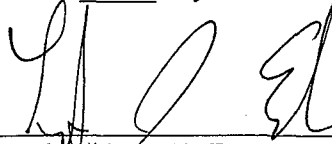
28. Based on all the foregoing findings of fact and conclusions of law, DEQ/AQD's decision to not require IGCC, supercritical and ultrasupercritical technologies in the BACT analysis was authorized under the WAQSR, the WEQA, and the CAA.

THEREFORE IT IS HEREBY ORDERED THAT:

DEQ/AQD's and Basin Electric's motions for summary judgment are granted and DEQ/AQD's decision to issue air quality permit No. CT-4631 to Basin Electric to construct the Dry Fork Station in regard to the issue of IGCC, supercritical and ultrasupercritical technologies

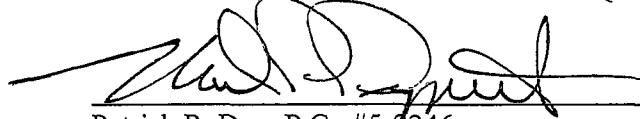
is affirmed. Protestants' Motion for Summary Judgment on these same issues is denied, and DEQ's decision to issue the Permit as it relates to the contentions set forth in Counts II and III of the Petition is affirmed.

RESPECTFULLY SUBMITTED this 17 day of October, 2008.



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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served via U.S. Mail, postage prepaid, this the 17 day of October, 2008 to the following:

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A handwritten signature in black ink, appearing to read "Reed Zars", is written over a horizontal line. The signature is stylized and cursive.

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