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Christina Niednagel

m: Robin Cooley
nt: Tuesday, July 29, 2008 10:54 AM
To: Christina Niednagel
Subject: FW: CONFIDENTIAL and PRIVILEGED-- Issues with Jenkins Report on IGCC at Dry Fork

-----Original Message-----

From: Jim Angell
Sent: Monday, July 28, 2008 3:46 PM
To: Robin Cooley
Subject: FW: CONFIDENTIAL and PRIVILEGED-- Issues with Jenkins Report on IGCC at Dry Fork

From: Jim Angell
Sent: Thursday, June 26, 2008 3:49 PM
To: 'mfowler@catf.us'
Subject: RE: CONFIDENTIAL and PRIVILEGED-- Issues with Jenkins Report on IGCC at Dry Fork

How about 4 pm your time?

-----Original Message-----

From: Mike Fowler [mailto:mfowler@catf.us]
Sent: Thursday, June 26, 2008 3:38 PM
To: Jim Angell
Subject: Re: CONFIDENTIAL and PRIVILEGED-- Issues with Jenkins Report on IGCC at Dry Fork

je. I'm not as far along on the work today as I had hoped. What time works for you tomorrow (preferably later rather than earlier)?

Mike

Sent from my Verizon Wireless BlackBerry

-----Original Message-----

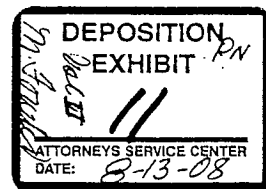
From: Jim Angell <jangell@earthjustice.org>
Date: Thu, 26 Jun 2008 14:28:16
To: 'Mike Fowler' <mfowler@catf.us>
Subject: RE: CONFIDENTIAL and PRIVILEGED-- Issues with Jenkins Report on IGCC at Dry Fork

Mike,

I've been at some out-of-office events today, but this all looks great to me. I'll read this stuff this afternoon and this evening. Should we set aside a time to talk tomorrow afternoon?

Jim

From: Mike Fowler [mailto:mfowler@catf.us]
Sent: Thursday, June 26, 2008 9:33 AM
To: Jim Angell
Subject: CONFIDENTIAL and PRIVILEGED-- Issues with Jenkins Report on IGCC at Dry Fork



Hi Jim,

I had hoped to get you something yesterday on the Jenkins report but it took me longer than I expected to go through it in detail. There is a lot in there that we might want respond to, but I think the issues fall into 5 rough categories. Although my thinking on this is preliminary at this stage, here are the categories:

1 - The "redesigning the source" argument

Jenkins argues that including IGCC in the BACT analysis for Dry Fork is requiring a redesign of the "source" and that redesign is inconsistent with the air permitting requirements. I think this is fundamentally a legal issue, which I should address only briefly in a response but which should be addressed in detail somewhere. Personally, I don't think the argument Jenkins makes (or rather, repeats from other venues) is compelling, but it has some traction around the country (in part, perhaps, due to overzealous plaintiffs stretching the bounds of the argument).

Jenkins also includes some detail on how an IGCC is very different from a PC plant. He is basically correct about that, but it's not really a relevant detail. Both plant types use coal feed and produce electricity - that is what matters. And they do share a number of process features, at a macro-level. I will go over that, again, briefly, in my response.

2 - Commercial availability of IGCC at Dry Fork

Jenkins argues that IGCC is not commercially available for Dry Fork due to the plant's size (smaller than standard), the elevation of the plant (relatively high), the coal to be used by the plant (PRB sub-bituminous), Basin's requirement that the plant achieve very high availability (95%), and Basin's desire to purchase a plant under a lump-sum turn-key contract with full guarantees and warranties.

While it is true that the issues Jenkins raises effect the terms under which Basin could purchase an IGCC plant, I plan to argue that a LSTK contracting approach often doesn't make sense for projects like this, as it raises the cost significantly (since the vendor in return for shouldering the risk, charges more). I would also like to be able to argue that a LSTK approach is also not standard for Basin's new projects, or similar projects elsewhere in the industry, but I'll have to research that. LSTK contracts with guarantees are more prevalent in the PC market than IGCC; the question is, though, how does Basin usually do things and is the commercial availability standard that Jenkins applies consistent with Basin's usual approach?

The commercial availability issue touches on plant size, coal type, and elevation as well, since the fundamental question is "Can you buy the plant you need on the open market"? I would like to argue that Basin could indeed buy such a plant, with guarantees, though there may be a price premium. There are some arguments for this (vendor responses to PacifiCorp's RFP for an IGCC at the Jim Bridger plant, for example), but there are also arguments against (in particular Basin's RFP for an IGCC alternative at Dry Fork, to which they deemed the vendor responses inadequate).

As for plant availability, I would like to argue that Basin's standard of 95% is inappropriate. I don't know that there is a coal plant anywhere that actually achieves 95% availability. This is only 18 days a year when the plant is unavailable. A survey of plants in the US (noted in my report) suggests availabilities for new plants in the West of around 85%. Even if there are some plants that achieve 95% (and Basin may have some plants like that - I need to check on that) to apply that standard for a new, hypothetical plant is contrary to general practice. DOE, EPA, etc. generally use 85%. I also would be surprised if Basin used more than 85% in other filings for this plant (or in their work with financiers, for that matter). The respondents to PacifiCorp's IGCC RFP quoted availabilities of around 85% after several years of operation, so that level is reasonable. 85% is also the value used for the IGCC that are being permitted in the east and, despite Jenkins' statements, I don't think there is a compelling reason to suspect that elevation or coal type or plant size really would have a strong impact on availability (esp. for the ConocoPhillips technology, which has been used on PRB coal in the past).

3 - Technical feasibility of IGCC at Dry Fork

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IGCC and PC Major Equipment List

Major Pieces of Equipment/Systems	Dry Fork Station	IGCC Plant
	Coal delivery, storage and handling	Coal delivery, storage and handling
	Coal pulverizers	Slurry preparation or coal crushing and coal drying
	Forced draft fans	Coal slurry pump or dry coal transport system
	Primary air fans	High pressure coal gasification system
	Boiler	Gasifier slag quenching and removal system
	Fly ash removal and handling system	Slag handling and screening system
	Bottom ash removal and handling system	Radiant and convective syngas coolers
	Selective catalytic reduction system	Carbon scrubbers
	Flue gas desulfurization system	Dry ash removal cyclones and candle filters
	Fabric filter system	Activated carbon beds for mercury removal
	Stack	Carbonyl sulfide hydrolysis system
		Sour water stripper
		Acid gas removal system

DEPOSITION
EXHIBIT *PN*
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ATTORNEYS SERVICE CENTER
DATE: *8-13-08*

IGCC and PC Major Equipment List

Major Pieces of Equipment/Systems	Dry Fork Station	IGCC Plant
		Hydrogenation reactor
		Sulfur recovery unit or sulfuric acid production plant
		Low temperature gas cooling system
		Cryogenic air separation unit with large compressors for air, oxygen and nitrogen
		Syngas, nitrogen and natural gas lines to gas turbine
		Gas turbines
		Gas turbine generators
		Syngas and acid gas flares
		Nitrogen diluent injection system
		Steam injection system
		Heat recovery steam generator
		Brine concentration system
	Water treatment system	Water treatment system
	Air-cooled condenser	Steam condenser
	Steam turbine generator	Steam turbine generator
	Main transformer	Main transformer

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details of the analysis procedure, and results for Dry Fork, are discussed below.

Step 1 – Identify All Control Technologies

In Step 1 of the BACT analysis, all available air pollution control options with a practical potential for application to the source in question must be listed. Available and potentially applicable control options must include production processes, such as IGCC, that can reduce emissions. According to EPA:

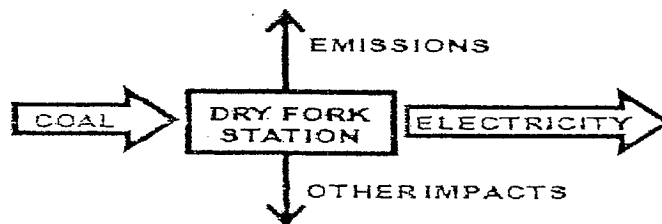
The first step in a "top-down" analysis is to identify, for the emissions unit in question (the term "emissions unit" should be read to mean emissions unit, process or activity), all "available" control options. Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation.

NSRM at B.5 (emphasis added).

Within EPA's top-down framework of the NSRM potentially applicable control alternatives are categorized as 'inherently lower-emitting' (such as production process that result in lower emissions), as 'add-on controls' (such as scrubbers and fabric filters) and as combinations of inherently lower-emitting and add-on controls, and the NSRM directs that the analysis "should consider potentially applicable control techniques from all three categories." NSRM at B.10 (emphasis added). NSRM further directs that inherently lower-emitting process should be considered based on "demonstrations made on the basis of manufacturing identical or similar products from identical or similar raw materials or fuels." NSRM at B.10 (emphasis added).

Applying EPA's top-down framework and the BACT requirements of the Clean Air Act to electric power generation using coal fuel leads directly to the conclusion that all processes for transforming the chemical energy of coal into electricity should be considered in the top down analysis. This is depicted schematically in Figure 1-1 below, where any modification to the grey shaded box (representing the production process) that can reduce emissions (represented by the vertical arrow) must be considered in the top-down BACT evaluation for a coal-fueled electric plant.

Figure 1-1 – Schematic Illustration of Coal-to-Electricity Production Process



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BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF)	
EAST KENTUCKY POWER)	
COOPERATIVE, INC.)	
HUGH L. SPURLOCK GENERATING)	ORDER RESPONDING TO
STATION)	PETITIONER'S REQUEST
MAYSVILLE, KENTUCKY)	THAT THE
PETITION IV-2006-4)	ADMINISTRATOR
PERMIT No. V-06-007)	OBJECT TO
ISSUED BY THE KENTUCKY)	ISSUANCE OF
ENVIRONMENTAL PROTECTION CABINET)	STATE PERMIT
DEPARTMENT FOR ENVIRONMENTAL)	
PROTECTION, DIVISION FOR AIR QUALITY)	

ORDER GRANTING IN PART AND DENYING IN PART
PETITION FOR OBJECTION TO PERMIT

On August 17, 2006, the United States Environmental Protection Agency (EPA) received a petition from the Sierra Club (Petitioner) pursuant to section 505(b)(2) of the Clean Air Act (CAA or the Act), 42 U.S.C. § 7661d(b)(2). Sierra Club's petition requests that the Administrator object to the permit issued by the Kentucky Division for Air Quality (KYDAQ or Kentucky) to East Kentucky Power Cooperative, Inc. (EKPC), for the operation of the Hugh L. Spurlock Generating Station (Spurlock Station) located in Maysville, Kentucky. The permit (No.V-06-007) is a state-issued operating permit for Units 1 through 4 at the Spurlock Station, with a combined Prevention of Significant Deterioration (PSD) construction air quality permit for Unit 4, and was issued by KDAQ pursuant to Kentucky Administrative Regulations (KAR) at 401 KAR 52:020 and 40 KAR. 51.017.

Sierra Club's petition raises several issues in requesting that EPA object to this permit. Petitioner alleges that: (1) the permit does not specify whether continuous opacity monitoring (COMS) data will be available to prove a violation of the opacity standard for Unit 1; (2) the permit must include a heat input limit under the heading *Operating Limits* for Unit 2; (3) the permit must contain a compliance schedule for bringing Unit 2 into compliance with PSD requirements; (4) the permit improperly omits an applicable requirement to construct and operate Unit 3 consistent with and according to the specifications provided in its permit application; (5) the permit contains erroneous best available control technology (BACT) limits at Unit 3 for several pollutants; (6) the permit contains

(explaining why coal washing is an “additional” or “supplemental” control technology). Nothing in the PSD permitting requirements require that the possible emission reduction benefits of supplemental control technologies must be analyzed with regard to control options that have already been eliminated. Accordingly, Petitioner fails to demonstrate that the SO₂ limit contained in the permit for Unit 4 is not in compliance with the CAA. For these reasons, EPA denies the petition with respect to this issue.

3. Consideration of Integrated Gasification Combined Cycle (IGCC)

Petitioner’s Comment: Petitioner argues that “[t]he Administrator must object to the permit because it contains limits that do not represent BACT,” and explains that “[a] BACT analysis for a coal fired power plant must include consideration of Integrated Gasification Combined Cycle (“IGCC”) technology.” Petitioner emphasizes that “IGCC constitutes a cleaner production process and an innovative fuel combustion technique under the definition of BACT,” and that “IGCC is a different process and combustion technique, which achieves much lower emission rates than the [circulating fluidized bed] process proposed for Spurlock 4.” Petitioner argues that IGCC should be considered under the BACT analysis, and should not be considered to redefine the source, based on the definition of BACT under CAA section 169(3), the legislative history of that provision, and decisions of EPA’s Environmental Appeals Board (“EAB” or “Board”).

EPA’s Response: EPA disagrees with Petitioner’s conclusion. Petitioner has not sufficiently demonstrated to the Administrator that the permit limits, by not reflecting IGCC, do not represent BACT. As a result, Petitioner has not demonstrated that the permit fails to include applicable PSD requirements, and the petition is, therefore, denied with respect to this issue.

Petitioner made the same IGCC comment on the proposed permit as it now makes this petition. KYDAQ responded to the initial comment by stating: “IGCC would result in a redefinition of the basic design of the project and is not required under a BACT analysis” KYDAQ’s Response to Comments at 44.¹⁵

selection of the primary BACT fuel. Accordingly, the Administrator notes that if KYDAQ were to choose a different coal type as BACT following remand, KYDAQ should consider in its BACT analysis whether washing the different coal should be an additional SO₂ control technology for Spurlock Unit 4.

¹⁵ KYDAQ added that “review of IGCC could be performed under [CAA] section 165(a)(2),” which requires the permitting authority to provide an opportunity for interested persons to comment on “alternatives” to the source. KYDAQ determined that “the Division will not require the use of an IGCC design as an alternative to a [circulating fluidized bed] unit,” KYDAQ’s Response to Comments at 44. Petitioners have not challenged the adequacy of this latter determination; and in denying this petition with respect to the IGCC issue, I am not making any determination regarding the adequacy of

In repeating, in their petition, the comments made on the proposed permit, Petitioners have not demonstrated that KYDAQ erred in declining to analyze IGCC under BACT on grounds that IGCC would redefine the source. The Administrator and the EAB have long maintained a policy against utilizing the BACT requirement as a means to fundamentally redefine the basic design or scope of a proposed project. See e.g., *In re Knauf Fiber Glass*, 8 E.A.D. 121, 140 (EAD 1998); *In the Matter of: Pennsauken County, New Jersey, Resource Recovery Facility*, 2 E.A.D. 667, 673 (Adm'r 1988) ("*Pennsauken County*"). EPA has not required applicants proposing to construct coal-fired steam electric generating facilities to evaluate building natural gas-fired combustion turbines as part of a BACT analysis, even though a gas turbine may be inherently less polluting. *In re SEI Birchwood Inc*, 5 E.A.D. 25 (1994); *In the Matter of: Old Dominion Electric Cooperative Clover, Virginia*, 3 E.A.D. 779, 793 n. 38 (Adm'r 1992). Likewise, in *In re Hawaii Commercial & Sugar Co.*, the EAB found no error by the permitting authority in rejecting the petitioner's argument that the BACT analysis for a coal-fired steam electric generator should include the option of constructing an oil-fired combustion turbine. 4 E.A.D. 95, 99-100 (EAB 1992).

EPA's policy reflects the Agency's longstanding judgment that limits should exist on the degree to which permitting authorities can dictate the design and scope of a proposed facility through the BACT analysis. This policy is based on a reasonable interpretation of sections 165 and 169(3) of the CAA, which the EAB recently reiterated and explained in *In re Prairie State Generating Company*, PSD Appeal No. 05-05 (Aug. 24, 2006). In the *Prairie State* case, involving a permit for an coal-fired electric generating station that was co-located and co-permitted with a new coal mine supplying fuel for the facility, the Board determined that it was consistent with EPA's historic policy and the CAA for the permitting authority in this case to decline to conduct a detailed BACT review of the option of using lower-sulfur coal from another location. Based on various provisions of the CAA, including language that requires the "proposed facility" to be "subject to" BACT, the Board concluded that "the statute contemplates that the permit issuer looks to how the permit applicant defines the proposed facility's purpose or basic design" as part of Step 1 of the top-down BACT analysis. *Prairie State*, slip op. at 28-29. The Board further explained that "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." *Prairie State*, slip op. at 30. The Seventh Circuit recently affirmed the EAB's *Prairie State* decision, including the Board's interpretation of the interplay between determining what redefines a source and the required BACT analysis. See generally *Sierra Club v. EPA*, slip op. (7th Cir. Aug. 24, 2007).

As discussed by the Board in the *Prairie State* opinion, affirmed by the Seventh Circuit, and explained more fully below, EPA's policy against redefining

KYDAQ's alternatives analysis. Cf. *Sierra Club v. EPA*, slip op. at 3 (7th Cir. Aug. 24, 2007) (finding that only the BACT requirements were at issue because the petitioners had not invoked the alternatives provision).

the proposed source through the BACT analysis is supported by a permissible and reasonable interpretation of the Clean Air Act. The language in sections 165 and 169 of the CAA distinguishes between the consideration of alternatives to a proposed source on the one hand, and permitting and selection of BACT for the proposed source on the other. Alternatives to a proposed source are evaluated through the CAA section 165(a)(2) public hearing process, which requires that, before a permitting authority may issue a permit, interested persons have an opportunity to "submit written or oral presentations on the air quality impact of such source, *alternatives thereto*, control technology requirements, and other appropriate considerations." 42 U.S.C. § 7475(a)(2) (emphasis added). By listing "alternatives" and "control technology requirements" separately in section 165(a)(2), Congress distinguished "alternatives" to the proposed source that would wholly replace the proposed facility with a different type of facility, from the kinds of "production processes and available methods, systems and techniques" that are potentially applicable to a particular type of facility and should be considered in the BACT review. See 42 U.S.C. § 7479(3).¹⁶

In contrast to the requirements of section 165(a)(2), other parts of the PSD permitting process, including the requirement to apply BACT, focus on, and are generally confined by, the project as proposed by the applicant. Sections 165(a)(1) and 165(a)(4) of the CAA provide that no facility may be constructed unless "a permit has been issued for *such proposed facility* in accordance with this part" and "the *proposed facility* is subject to best available control technology for each pollutant subject to regulation under the Act." 42 U.S.C. § 7475(a)(1) and (a)(4) (emphasis added). The following definition of BACT in section 169(3) of the Act also makes clear that the BACT review is based on the proposed project, as opposed to something fundamentally different:

an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this Act emitted from or which results from any major emitting facility, which the permitting authority, on a *case-by-case basis*, taking into account energy, environmental, and economic impacts and other costs determines is achievable for *such facility* through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of such pollutant.

42 U.S.C. § 7479(3) (emphasis added). The phrases "proposed facility" and "such facility" in section 165(a)(4) and 169(3) refer to the specific facility proposed by the applicant, which has certain inherent design characteristics. The Act also requires BACT to be determined "on a case-by-case basis." The case-specific nature of the BACT analysis indicates that the particular characteristics of each facility are an important aspect of the BACT determination. Thus, the Act requires

¹⁶ As noted above, KYDAQ considered, but rejected, IGCC as an "alternative[]," and Petitioner has not challenged that determination.

that permitting authorities determine BACT for each facility individually, considering the unique characteristics and design of each facility.

However, as the Petitioner has pointed out, the statutory definition of BACT also requires permitting authorities in selecting BACT to consider “application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques.” 42 U.S.C. § 7479(3). EPA has interpreted this phrase to require that permitting authorities evaluate both add-on pollution control technologies and lower polluting process in the BACT review. *Prairie State* at 33.

Considering these provisions together, the Act requires that the permitting authority conduct the BACT analysis on a “case-by-case” basis on the “proposed facility” while concurrently considering the “application of production processes and available methods, systems and techniques” that could alter the proposed facility. The statute does not provide clear direction on how the permitting authority is to reconcile these concepts and simultaneously consider the particulars of the facility proposed by the applicant while also assessing the use of methods or technology that could modify those particulars. Where a statute is ambiguous and Congress has not spoken to the precise issue, an administrative agency may formulate a policy to resolve the issue, provided that the policy is based on a permissible construction of the statute. *Chevron v. Natural Resources Defense Council*, 104 S.Ct. 2778, 2782 (1984). In this instance, sections 165 and 169(3) of the CAA are permissibly construed to authorize EPA and permitting authorities to establish some level of balance between the case-by-case nature of a BACT determination and the need to consider available processes, methods, systems, and techniques to reduce emissions. EPA’s policy against redefining a source as part of the BACT analysis, which KYDAQ implemented for this permit, reasonably harmonizes the competing BACT obligations by requiring the permitting authority to consider potentially applicable processes, methods, systems, or techniques that may reduce pollution from the type of source proposed, provided such processes or techniques do not fundamentally redefine the basic design or scope of the facility proposed by the permit applicant.

EPA does not read the legislative history cited by the Petitioner to require a detailed evaluation of the IGCC technology in the BACT analysis for every proposed facility that generates electricity from coal. Petitioner points out that when Congress enacted the BACT definition in 1977, Senator Huddleston intended for the phrase “innovative fuel combustion techniques” to encompass “gasification” or “low Btu gasification,”¹⁷ but this does not necessarily require EPA or other permitting authorities to identify the IGCC option as a candidate for further analysis at Step 1 of a top-down BACT review. The “innovative fuel combustion techniques” phrase appears in the BACT definition among a list of examples of things included in the phrase “production processes and available methods, systems, and techniques.” Thus, the “innovative fuel combustion” language, like the phrase

¹⁷ 123 Cong. Rec. S9434-35 (June 10, 1977) (debate on P.L. 95-95).

it modifies in the definition of BACT, is limited by other language discussed above that requires BACT to be applied to each proposed facility and determined on a case-by-case basis. Thus, even assuming that coal gasification was in all respects an innovative fuel combustion technique for producing electricity from coal, EPA does not interpret the CAA to require an "innovative fuel combustion technique" to be subject to a detailed BACT review when application of such a technique would re-design the proposed source to the point that it becomes an alternative type of facility, which, as discussed below, EPA believes would be the case if the IGCC technology were applied to Spurlock's Unit 4.

Furthermore, it is not clear from the terms of his statement that Senator Huddleston himself intended to require mandatory review of coal gasification in every case where such an option was not proposed by the permit applicant. Senator Huddleston said the purpose of the amendment was to leave no doubt that "all actions taken by the fuel user are to be taken into account." This phrase suggests the Senator wanted to make sure that, when a fuel user was proposing an innovative fuel combustion technique, such as coal gasification, that such actions by the fuel user would be taken into account and credited in the determination of BACT for the proposed facility. Thus, the Senator's statement could be read to express an intent similar to that expressed in a subsequent Congress when adding the phrase "clean fuels" to the definition of BACT in the 1990 amendments of the Clean Air Act. Pub. Law No. 101-549, § 403(d), 104 Stat. at 2631 (1990). At the time "clean fuels" was added to the list that includes "innovative fuel combustion techniques," the relevant Senate committee report stated the following in consecutive paragraphs:

The Administrator may consider the use of clean fuels to meet BACT requirements if a permit applicant proposes to meet such requirements using clean fuel In no case is the Administrator compelled to require mandatory use of clean fuels by a permit applicant.

S. Rep. 101-228, at 338 (describing section 402(d) of S. 1630). Based on this legislative history, EPA does not interpret the list of examples that appear in the BACT definition after the phrase "production processes, methods, systems, or techniques" to require mandatory evaluation of each of those options at advanced stages of the BACT analysis, regardless of the degree to which such an option would redefine the type of facility proposed by the permit applicant.

Although EPA reads the Act to preclude redefining the source, EPA does not interpret the CAA to obligate a PSD permitting authority to accept all elements of a proposed project when determining BACT. To the contrary, EPA recognizes that the Act calls for an evaluation of the "application of production processes and available methods, systems, and techniques." 42 U.S.C. § 7479(3).

As the Board observed in *Prairie State*, EPA's policy against redefining the source is only relevant when considering lower polluting processes and would not

permit a reviewing authority to rule out “add-on controls” at Step 1 of the BACT analysis. Slip op. at 33. Further, although EPA does not require a source to consider a totally different design, some design changes to the proposed source are within the scope of the BACT review. See *Knauf Fiber Glass*, 8 E.A.D. 121, 136. As the Board observed in the *Prairie State* case, the central issue in situations involving a lower polluting process concerns “the proper demarcation between those aspects of a proposed facility that are subject to modification through the application of BACT and those that are not.” Slip Op at 26. The Board observed that one of the permit issuer’s tasks at Step 1 of the BACT analysis is to “discern which design elements are inherent to [the applicant’s] purpose, articulated for reasons independent of air quality permitting, and which design elements may be changed to achieve pollutant emissions reductions without disrupting the applicant’s basic business purpose for the proposed facility.” *Prairie State*, slip op. at 30.

Since this line can be difficult to draw in each case, the Administrator and Environmental Appeals Board have generally recognized that the decision on whether to include a lower polluting process in the list of potentially-applicable control options compiled at Step 1 of the top-down BACT analysis is a matter within the discretion of the PSD permitting authority. *Knauf*, 8 E.A.D. at 136; *Old Dominion*, 3 E.A.D. at 793; *Hawaiian Commercial*, 4 E.A.D. at 100 and n.9. The Administrator and the EAB have usually respected the decisions of the permitting authority and only remanded permits in cases where it was clear that the permitting authority abused its discretion by excluding a particular option from consideration in the BACT review. *Knauf Fiber Glass*, 8 E.A.D. 121, 140; See e.g., *In the Matter of: Hibbing Taconite Company*, 2 E.A.D. 838, 843 (Adm’r 1989) (“*Hibbing*”). The Seventh Circuit affirmed this view in upholding the EAB’s *Prairie State* decision, emphasizing the discretion given the permitting authority in making the technical judgment as to “where control technology ends and a redesign of the ‘proposed facility’ begins.” *Sierra Club v. EPA*, slip op. at 5.

Petitioners insist that in *Pennsauken County*, the EAB made clear that the “redefining the source” policy only prevents substituting a type of industrial category for another,” and does not prevent substituting one type of source for another type of source in the same source category. Petitioners argue that the EAB affirmed this view in *Hibbing*. EPA does not read those two decisions in that manner. In particular, in *Hibbing*, the Board considered whether the option in question would “require any fundamental change to Hibbing’s product, purpose, or equipment.” *Hibbing* at 843 n. 12. Thus, in *Hibbing*, the EAB specifically identified a “fundamental change to ... equipment” as a type of redefinition of the source.

With respect to the project proposed by Spurlock, Petitioner’s have not demonstrated that the KYDAQ erred in concluding that the application of the IGCC process to the facility would fundamentally change the nature of the proposed major source because it would fundamentally change the basic design of the equipment

that EKPC proposes to install at Spurlock. Specifically, EKPC has proposed a facility that fires coal in a fluidized mixture with limestone and inert materials, in a boiler to generate steam to drive an electric turbine. An IGCC facility uses a chemical process to first convert coal into a synthetic gas and to fire that gas in a combined cycle turbine. "Final Report, Environmental Footprints and Costs of Coal-Based Integrated Gasification Combined Cycle and Pulverized Coal Technologies," EPA-430/R-06/006, July 2006. The combined cycle generation power block of an IGCC process employs the same turbine and heat recovery technology that is used to generate electricity with natural gas at other electric generation facilities. Thus, this portion of the IGCC process is very similar to existing power generation designs that EPA has agreed would redefine the basic design of the source when an applicant proposed to construct a pulverized coal-fired boiler. *In re SEI Birchwood Inc*, 5 E.A.D. 25 (1994); *Old Dominion Electric Cooperative Clover*, 3 E.A.D. 779. Furthermore, the core process of gasification at an IGCC facility is fundamentally different than a boiler. Coal gasification is more akin to technology employed in the refinery and chemical manufacturing industries than technologies generally in use in power generation (i.e. a controlled chemical reaction versus a true combustion process). Use of coal gasification technology would necessitate different types of expertise on the part of the applicant and employees to produce the desired product (electricity). Thus, these fundamental differences in equipment design are sufficient to conclude that the IGCC process would redefine the proposed source.

EPA acknowledges that in the *Prairie State* case, the EAB recognized that IGCC technology could be listed as a potentially applicable option at Step 1 of the BACT analysis, as Illinois EPA had elected to do in that case. However, the Board's opinion in *Prairie State* did not interpret the CAA to require IGCC to be listed as a potentially applicable control option at Step 1 for every permit application involving a coal-fired steam electric generating unit. That is, the Board did not conclude that IGCC, or any other option involving such extensive design changes, had to be listed as a potentially applicable option at Step 1 in each case or find that it would be an abuse of a permitting authority's discretion to decline to list IGCC at Step 1 of the BACT analysis for the type of facility proposed by Spurlock. The Board continued to recognize that the decision of where to draw the line between BACT options listed at Step 1 and alternatives to the proposed source is ultimately a matter within the discretion of the permitting authority. *Prairie State* slip op. at 29 n. 22.

Accordingly, I believe that the KYDAQ properly exercised its discretion in determining not to consider IGCC in the BACT analysis for Spurlock Unit 4, and Petitioner has not demonstrated that the title V permit fails to contain applicable requirements as a result. Accordingly, I deny the petition with respect to this issue.

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RESPONSE TO PUBLIC COMMENTS

ON

**Draft
Air Pollution Control
Prevention of Significant Deterioration (PSD)
Permit to Construct**

Permit No. PSD-OU-0002-04.00

Permittee:

**Deseret Power Electric Cooperative
10714 South Jordan Gateway
South Jordan, Utah 84095**

Permitted Facility:

**110-Megawatt Waste Coal Fired Unit
at Bonanza Power Plant**



**United States Environmental Protection Agency
Region 8
Air & Radiation Program
Denver, Colorado
August 30, 2007**

2. INTEGRATED GASIFICATION COMBINED CYCLE (IGCC)

Comment #2:

One group of commenters asserted that the proposed permit did not adequately evaluate IGCC as an available method to lower air emissions in the BACT analysis. The group of commenters presented four arguments:

Comment #2.a. First, arguing that Federal law requires a thorough evaluation of IGCC as part of the BACT analysis.

Comment #2.b. Second, arguing that recent state actions requiring consideration of cleaner coal technology establish irrefutable precedence for the consideration of IGCC, and validate the commenters' position on the "plain language of the definition of BACT."

Comment #2.c. Third, alleging EPA Region 8 previously determined it was appropriate to evaluate IGCC in the BACT analysis for a CFB coal-fired power plant. Commenters cited EPA Region 8's April 6, 2004 letter to the Utah Division of Air Quality, on Utah's proposed PSD permit for Nevco Energy's Sevier Power Company Project. Commenters also cited EPA's April 28, 2004 request to Deseret Power to provide an explanation of why Deseret ruled out IGCC for the WCFU project.

Comment #2.d. Fourth, pointing out the overall benefit of the alternative IGCC technology, including fewer emissions of criteria and hazardous air pollutants, the opportunity for capturing greenhouse gases, and increases in efficiency over other coal burning technologies.

Response #2:

Response #2.a. Disagree. EPA does not agree that the Clean Air Act requires a detailed evaluation of IGCC for the proposed facility, at or beyond step 1 of the top-down BACT analysis. We evaluated whether IGCC should be listed at step 1 and considered the commenters arguments, but we have not been persuaded to change our view that this alternative process would represent a redefinition of the source proposed by the applicant and thus need not be listed as a potentially applicable control option at step 1 and evaluated further in the BACT analysis for this type of facility. We have, however, evaluated this option as a potential alternative to the proposed source under other parts of our PSD permit review; see discussion below in response #2.d.

The Administrator and EPA's Environmental Appeals Board ("EAB" or "Board") have long maintained a policy against utilizing the BACT requirement as a means to fundamentally redefine the basic design or scope of a proposed project. *See, e.g., Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 140 (EAB 1998); *Pennsauken County, New Jersey, Resource Recovery Facility*, 2 E.A.D. 667, 673 (Adm'r 1988). EPA has not required applicants proposing to construct coal-fired steam electric generating facilities to evaluate building natural gas-fired combustion turbines as part of a BACT analysis, even though a

gas turbine may be inherently less polluting. *SEI Birchwood Inc*, 5 E.A.D. 25 (1994); *Old Dominion Electric Cooperative Clover, Virginia*, 3 E.A.D. 779, 793 n. 38 (Adm'r 1992). Likewise, in *Hawaii Commercial & Sugar Co.*, the EAB found no error by the permitting authority when the petitioner argued that the BACT analysis for a coal-fired steam electric generator should include the option of constructing an oil-fired combustion turbine. 4 E.A.D. 95, 99-100 (EAB 1992).

EPA's policy reflects the Agency's longstanding judgment that limits should exist on the degree to which permitting authorities can dictate the design and scope of a proposed facility through the BACT analysis. This policy is based on a reasonable interpretation of sections 165 and 169(3) of the CAA, which recognizes that, although the permitting authority must take comment on and may consider alternatives to a proposed facility, the BACT analysis itself is conducted without changing fundamental characteristics of the proposed source.

The EAB recently reiterated and explained EPA's policy against redefining the source through the BACT analysis in *Prairie State Generating Company*, PSD Appeal No. 05-05 (Aug. 24, 2006). In the *Prairie State* case, involving a permit for a coal-fired electric generating station that was co-located and co-permitted with a new coal mine supplying fuel for the facility, the Board determined that it was consistent with EPA's historic policy and the Clean Air Act for the permitting authority in this case to decline to conduct a detailed BACT review of the option of using lower-sulfur coal from another location. Based on various provisions of the Clean Air Act, including language that requires the "proposed facility" to be "subject to" BACT, the Board concluded that "the statute contemplates that the permit issuer looks to how the permit applicant defines the proposed facility's purpose or basic design" as part of Step 1 of the top-down BACT analysis. *Prairie State*, slip. op. at 28-29. The Board further explained that "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." *Prairie State* slip. op. at 30. The Seventh Circuit recently affirmed the EAB's *Prairie State* decision, including the Board's interpretation of the interplay of determining what redefines a source and the required BACT analysis. *See generally Sierra Club v. EPA*, slip op. (7th Cir. Aug. 24, 2007).

As discussed by the Board in the *Prairie State* opinion, affirmed by the Seventh Circuit, and explained more fully below, EPA's policy against redefining the proposed source through the BACT analysis is supported by a permissible and reasonable interpretation of the Clean Air Act. The language in sections 165 and 169 of the CAA distinguishes between the consideration of alternatives to a proposed source on the one hand and permitting and selection of BACT for the proposed source on the other. Alternatives to a proposed source are evaluated through the CAA section 165(a)(2) public hearing process, which requires that, before a permitting authority may issue a permit, interested persons have an opportunity to "submit written or oral presentations on the air quality impact of such source, *alternatives thereto*, control technology requirements, and other appropriate considerations." 42 U.S.C. § 7475(a)(2) (emphasis added). By listing "alternatives" and "control technology requirements" separately in section 165(a)(2),

Congress distinguished “alternatives” to the proposed source that would wholly replace the proposed facility with a different type of facility from the kinds of “production processes and available methods, systems and techniques” that are potentially applicable to a particular type of facility and should be considered in the BACT review. See 42 U.S.C. § 7479(3).

In contrast to the requirements of section 165(a)(2), other parts of the PSD permitting process, including the requirement to apply BACT, focus on, and are generally confined by, the project as proposed by the applicant. Sections 165(a)(1) and 165(a)(4) of the CAA provide that no facility may be constructed unless “a permit has been issued for *such proposed facility* in accordance with this part” and “the *proposed facility* is *subject to* best available control technology for each pollutant subject to regulation under the Act.” 42 U.S.C. § 7475(a)(1) and (a)(4) (emphasis added). The following definition of BACT in section 169(3) of the Act also makes clear that the BACT review is based on the proposed project, as opposed to something fundamentally different:

an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this Act emitted from or which results from any major emitting facility, which the permitting authority, on a *case-by-case basis*, taking into account energy, environmental, and economic impacts and other costs determines is achievable for *such facility* through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of such pollutant.

42 U.S.C. § 7479(3) (emphasis added). The phrases “proposed facility” and “such facility” in section 165(a)(4) and 169(3) refer to the specific facility proposed by the applicant, which has certain inherent design characteristics. The Act also requires BACT to be determined “on a case-by-case basis.” The case-specific nature of the BACT analysis indicates that the particular characteristics of each facility are an important aspect of the BACT determination. Thus, the Act requires that permitting authorities determine BACT for each facility individually, considering the unique characteristics and design of each facility.

As the group of commenters has also pointed out, the statutory definition of BACT also requires permitting authorities in selecting BACT to consider “application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques.” 42 U.S.C. §7479(3). EPA has interpreted this phrase to require that permitting authorities evaluate both add-on pollution control technologies and lower polluting process in the BACT review. *Prairie State* at 33.

Considering these provisions together, the Act requires that we conduct the BACT analysis on a “case-by-case” basis on the “proposed facility” while concurrently considering the “application of production processes and available methods, systems and

techniques” that could alter the proposed facility. The statute does not provide clear direction on how EPA is to reconcile these concepts and simultaneously consider the particulars of the facility proposed by the applicant while also assessing the use of methods or technology that could modify those particulars. Where a statute is ambiguous and Congress has not spoken to the precise issue, an administrative agency may formulate a policy to resolve the issue, provided that the policy is based on a permissible construction of the statute. *Chevron v. Natural Resources Defense Council*, 104 S.Ct. 2778, 2782 (1984). In this instance, sections 165 and 169(3) of the Clean Air Act are permissibly construed to authorize EPA and permitting authorities to establish some level of balance between the case-by-case nature of a BACT determination and the need to consider available processes, methods, systems, and techniques to reduce emissions. EPA’s policy against redefining a source as part of the BACT analysis reasonably harmonizes the competing BACT obligations by requiring the permitting authority to consider potentially applicable processes, methods, systems, or techniques that may reduce pollution from the type of source proposed, provided such processes or techniques do not fundamentally redefine the basic design or scope of the facility proposed by the permit applicant.

EPA does not read the legislative history cited by the commenter to require a detailed evaluation of the IGCC technology in the BACT analysis for every proposed facility that generates electricity from coal. That Senator Huddleston intended for the phrase “innovative fuel combustion techniques” to encompass “gasification” or “low Btu gasification” does not necessarily require EPA or other permitting authorities to identify the IGCC option as a candidate for further analysis at step 1 of a top-down BACT review. The “innovative fuel combustion techniques” phrase appears in the BACT definition among a list of examples of things included in the phrase “production processes and available methods, systems, and techniques.” Thus, the “innovative fuel combustion” language, like the phrase it modifies in the definition of BACT, is limited by other language discussed above that requires BACT to be applied to each proposed facility and determined on a case-by-case basis. Thus, even assuming that coal gasification was in all respects an innovative fuel combustion technique for producing electricity from coal, we do not interpret the Clean Air Act to require an “innovative fuel combustion technique” to be subject to a detailed BACT review when application of such a technique would redesign the proposed source to the point that it becomes an alternative type of facility, which, as discussed below, we believe would be the case if the IGCC technology were applied to Deseret’s project.

Furthermore, it is not clear from the terms of his statement that Senator Huddleston himself intended to require mandatory review of coal gasification in every case where such an option was not proposed by the permit applicant. Senator Huddleston said the purpose of the amendment was to leave no doubt that “all actions taken by the fuel user are to be taken into account.” This phrase suggests the Senator wanted to make sure that, when a fuel user was proposing an innovative fuel combustion technique, such as coal gasification, that such actions by the fuel user would be taken into account and credited in the determination of BACT for the proposed facility. Thus, the Senator’s statement could be read to express an intent similar to that expressed in a

subsequent Congress when adding the phrase “clean fuels” to the definition of BACT in the 1990 amendments of the Clean Air Act. Pub. Law No. 101-549, § 403(d), 104 Stat. at 2631 (1990). At the time “clean fuels” was added to the list that includes “innovative fuel combustion techniques,” the relevant Senate committee report stated the following in consecutive paragraphs:

The Administrator may consider the use of clean fuels to meet BACT requirements if a permit applicant proposes to meet such requirements using clean fuel. . . . In no case is the Administrator compelled to require mandatory use of clean fuels by a permit applicant.

S. Rep. 101-228, at 338 (describing section 402(d) of S. 1630). Based on this legislative history, EPA does not interpret the list of examples that appear in the BACT definition after the phrase “production processes, methods, systems, or techniques” to require mandatory evaluation of each of those options at advanced stages of the BACT analysis, regardless of the degree to which such an option would redefine the type of facility proposed by the permit applicant.

Although EPA reads the Act to preclude redefining the source and to draw a distinction between alternatives to the proposed source and lower polluting process that can be applied to the proposed source, EPA does not interpret the Clean Air Act to obligate a PSD permitting authority to accept all elements of a proposed project when determining BACT. To the contrary, EPA recognizes that the Act calls for an evaluation of the “application of production processes and available methods, systems, and techniques.” 42 U.S.C. §7479(3).

As the Board observed in *Prairie State*, EPA’s policy against redefining the source is only relevant when considering lower polluting processes and would not permit a reviewing authority to rule out “add-on controls” at Step 1 of the BACT analysis. Slip. op. at 33. Further, although EPA does not require a source to consider a totally different design, some design changes to the proposed source are within the scope of the BACT review. See *Knauf Fiber Glass*, 8 E.A.D. at 136. As the Board observed in the *Prairie State* case, the central issue in situations involving a lower polluting process concerns “the proper demarcation between those aspects of a proposed facility that are subject to modification through the application of BACT and those that are not.” Slip. Op. at 26. The Board observed that one of the permit issuer’s tasks at step 1 of the BACT analysis is to “discern which design elements are inherent to [the applicant’s] purpose, articulated for reasons independent of air quality permitting, and which design elements may be changed to achieve pollutant emissions reductions without disrupting the applicant’s basic business purpose for the proposed facility.” *Prairie State*, slip. op. at 30.

Since this line can be difficult to draw in each case, the Administrator and Environmental Appeals Board have generally recognized that the decision on whether to include a lower polluting process in the list of potentially-applicable control options compiled at Step 1 of the top-down BACT analysis is a matter within the discretion of the PSD permitting authority. *Knauf Fiber Glass*, 8 E.A.D. at 136; *Old Dominion*, 3 E.A.D.

at 793; *Hawaiian Commercial*, 4 E.A.D. at 100 & n.9. The Administrator and the EAB have usually respected the decisions of the permitting authority and only remanded permits in cases where it was clear that the permitting authority abused its discretion by excluding a particular option from consideration in the BACT review. *Knauf Fiber Glass*, 8 E.A.D. at 140. See, e.g., *Hibbing Taconite Company*, 2 E.A.D. 838, 843 (Adm'r 1989). The Seventh Circuit affirmed this view in upholding the EAB's *Prairie State* decision, emphasizing the discretion given the permitting authority in making the technical judgment as to "where control technology ends and a redesign of the 'proposed facility' begins." *Sierra Club v. EPA*, slip op. at 5.

In its review of this issue in *Hibbing*, the Board considered whether the option in question would "require any fundamental change to Hibbing's product, purpose, or equipment." *Hibbing* at 843 n. 12. In *Prairie State*, where the use of the alternative coal source arguably did not significantly affect the power-generating equipment to be used at the proposed source, the Board focused on the applicants "objective or purpose" to the extent that purpose was "articulated for reasons independent of air quality permitting." *Prairie State*, slip op. at 30.

With respect to the project proposed by Deseret, our assessment is that the application of the IGCC process to the Deseret facility would fundamentally change the nature of the proposed major source. The IGCC option would both fundamentally change the basic design of the equipment that Deseret proposes to install and fundamentally alter the objective and purpose of Deseret to make productive use of a coal supply that was previously considered a waste. Thus, we consider the IGCC process to be an alternative to the proposed source that should be evaluated under section 165(a)(2) of the Clean Air Act rather than as a BACT candidate under section 165(a)(4).

From an equipment perspective, Deseret has proposed a facility that fires pulverized waste coal in a fluidized mixture with limestone and inert materials, in a boiler to generate steam to drive an electric turbine. An IGCC facility uses a chemical process to first convert coal into a synthetic gas and to fire that gas in a combined cycle turbine. "Final Report, Environmental Footprints and Costs of Coal-Based Integrated Gasification Combined Cycle and Pulverized Coal Technologies," EPA-430/R-06/006, July 2006. The combined cycle generation power block of an IGCC process employs the same turbine and heat recovery technology that is used to generate electricity with natural gas at other electric generation facilities. Thus, this portion of the IGCC process is very similar to existing power generation designs that EPA has agreed would redefine the basic design of the source when an applicant proposed to construct a pulverized coal-fired boiler. *SEI Birchwood Inc*, 5 E.A.D. 25 (1994); *Old Dominion Electric Cooperative Clover, Virginia*, 3 E.A.D. 779 (Adm'r 1992). Furthermore, the core process of gasification at an IGCC facility is fundamentally different than a boiler. Coal gasification is more akin to technology employed in the refinery and chemical manufacturing industries than technologies generally in use in power generation (i.e. a controlled chemical reaction versus a true combustion process). Use of coal gasification technology would necessitate different types of expertise on the part of the applicant and employees to produce the desired product (electricity). Thus, these fundamental

differences in equipment design are sufficient to conclude that the IGCC process would redefine the proposed source. Similarly, in *Sierra Club v. EPA*, slip op. at 4 (7th Cir. Aug. 24, 2007), the Court upheld the EAB's decision that use of low-sulfur coal that was available only at a distance from a proposed plant would redefine the source, because the plant was designed to use higher sulfur coal located at a nearby mine. As the Court explained, "to convert the design from that of a mine-mouth plant to one that burned coal obtained from a distance would require that the plant undergo significant modifications – concretely, the half-mile-long conveyor belt, and its interface with the mine and the plant, would be superfluous and instead there would have to be a rail spur and facilities for unloading coal from rail cars and feeding it into the plant." *Id.*

Furthermore, Deseret Power's proposal calls for extracting the remaining heating value of the waste coal that has accumulated over the past 20 years in order to conserve other natural resources. In light of the technical difficulties of using IGCC for waste coal (described in detail below), IGCC would not serve the basic purpose of the project, which is to take advantage of the current waste coal reserves and future waste coal generated from the coal washing operations that provide the existing Bonanza Unit 1 with its coal. *See* Letter from Ed Thatcher, Deseret Power, to Richard R. Long, EPA Region 8, May 10, 2005. Thus, in addition to fundamentally changing the basic design of the source that Deseret proposes to construct, the IGCC option would also have the effect of regulating the applicant's objective or purpose for the proposed facility by precluding the use of the waste coal resource. The record reflects that Deseret is seeking to use waste coal for reasons independent of air quality permitting. *See Prairie State*, slip. op. at 30.

We acknowledge that in the *Prairie State* case, the EAB recognized that IGCC technology could be listed as a potentially applicable option at step 1 of the BACT analysis, as Illinois EPA had elected to do in that case. However, the Board's opinion in *Prairie State* did not interpret the Clean Air Act to require IGCC to be listed as a potentially applicable control option at step 1 for every permit application involving a coal-fired steam electric generating unit. In *Prairie State*, the Board did not directly address the issue raised by the Petitioners comment on the Deseret permit because Illinois EPA chose, in an exercise of its discretion, to list the IGCC option at step 1 of the BACT analysis for the proposed facility and further analyze the option. IEPA ultimately eliminated the option at step 2. *See Prairie State*, slip. op. at 45. In *Prairie State*, the Board pointed to IEPA's consideration of the IGCC option beyond step 1 to illustrate that there was no question that IEPA had conducted a sufficiently thorough step 1 BACT analysis in that case, because IEPA had even considered an option that "would have required extensive design changes to *Prairie State*'s proposed facility." Slip. op. at 36. The Board did not conclude that IGCC, or any other option involving such extensive design changes, had to be listed as a potentially applicable option at Step 1 in each case or find that it would be an abuse of a permitting authorities discretion to decline to list IGCC at Step 1 of the BACT analysis for the type of facility proposed by Deseret. The Board continued to recognize that the decision of where to draw the line between BACT options listed at step 1 and alternatives to the proposed source is ultimately a matter within the discretion of the permitting authority. *Prairie State* slip. op. at 29 n. 22.

Moreover, even if EPA was to list IGCC as a potentially applicable option at step 1 of the BACT analysis for the facility proposed by Deseret, the IGCC option could also be eliminated at step 2 of the top-down BACT analysis for the facility proposed by Deseret. It is not technically feasible to use Deseret's waste coal in the IGCC process. Based on an analysis of samples, Deseret's waste coal has an average heating value of approximately 4,000 Btu/lb, with a range of 3,051 Btu/lb to 5,326 Btu/lb, and ash content of the waste coal is estimated by Deseret to be in excess of 50 percent by weight on a dry basis. *See* Statement of Basis at 9. As explained below, IGCC units are not designed to operate, nor have they been operated, with coal that has a heating value as low, or ash content as high, as the waste coal that will be utilized for the proposed project.

A recently issued EPA report on IGCC states that "relatively little research or commercial work has been done to investigate gasification of low rank coals, including subbituminous and lignite, for electric generation purposes. The existing IGCC plants use bituminous coal as feedstocks." *See* "Final Report, Environmental Footprints and Costs of Coal-Based Integrated Gasification Combined Cycle and Pulverized Coal Technologies," EPA-430/R-06/006, July 2006, page ES-1, available in the Administrative Record for this permit and through website at:

http://www.epa.gov/air/caaac/coaltech/2007_01_epaigcc.pdf

The report only discusses IGCC units as a possibility for use with bituminous, subbituminous and lignite coals. Deseret's waste coal is a lower rank of coal than subbituminous or lignite, having much lower heat content and much higher ash content than either subbituminous or lignite.

The above-mentioned EPA report states that there are currently two commercial-scale, coal-based IGCC plants in the U.S. and two in Europe. The U.S. projects (Wabash River Repowering Project in Indiana and Tampa Electric Polk Power Station in Florida) were both supported by the DOE's Clean Coal Technology demonstration program. Both plants have operated on bituminous coals and petroleum cokes; no use of low-rank coal at these facilities is known. EPA report at 2-6 and 2-7.

Another publication on IGCC analyzes the impact that various coal parameters have on various gasifiers, based on actual operation of the gasifiers. *See* "Coal Quality Handbook for IGCC," published by Cooperative Research Centre for Coal in Sustainable Development, Technology Assessment Report 8, April 1999, available through website at <http://www.ccsd.biz/products/qualitybook.cfm>.

Page 14 of the Handbook lists the maximum ash content of the coal that can be handled by various types of gasifiers. For a moving bed gasifier, the ash content has to be less than 15 percent; for an entrained bed gasifier, less than 25 percent; and for a fluidized bed gasifier, less than 40 percent. As mentioned above, Deseret's waste coal will have ash content in excess of 50 percent.

In addition to the Wabash River and Tampa Electric IGCC projects, the above-mentioned Handbook reviews several other IGCC demonstration or pilot projects, utilizing various gasifier designs, and the required characteristics of the coal. These projects include:

BGL IGCC Process, owned/operated by British Gas and Lurgi
Demkolec IGCC plant, owned/operated by Shell
Nedo facility, owned/operated by Engineering Research Associates
Pinon Pine Power Project, owned/operated by Sierra Pacific and MK Kellogg
Prenflow IGCC Process, owned/operated by Krupp Koppers and Siemens AG

However, all of these projects require coal with higher heat content and lower ash content than Deseret's waste coal. Of particular significance is that all of these projects (as well as the Wabash River and Tampa Electric projects) require coal with ash content less than 25 percent by weight on a dry basis. This is less than half the ash content of Deseret's waste coal. The Handbook also indicates that the above-mentioned IGCC projects generally require coal with much higher heat content than Deseret's waste coal, 8,100 to 13,760 Btu/lb, compared to Deseret's range of 3,051 to 5,326 Btu/lb, respectively. *See Handbook at 22-28.*

Inquiries with representatives of IGCC test programs confirmed that IGCC units have not been tested on coal with heat content as low as Deseret's waste coal. The U.S. Department of Energy's Power Systems Development Facility near Wilsonville, Alabama, has only utilized coal as low as 6,000 to 7,000 Btu/lb. The National Energy Technology Institute is also not aware of any IGCC unit utilizing coal with the low heating value that will be used in Deseret Power's proposed WCFU. (Ref: June 9, 2004 letter from Ed Thatcher, Deseret Power, to Richard R. Long, EPA Region 8.)

Response #2.b: Disagree. As was recognized by commenters in the comment letter, state decisions as to how to conduct the BACT analysis do not necessarily set the bar for EPA. As discussed above, the decision of where to draw the line between alternatives to the proposed source is a discretionary matter. The fact that some states have elected to list IGCC at step 1 of the BACT analysis for a coal-fired steam electric generating facility does not require EPA to do so if EPA's reasoned assessment is that the option would redefine the proposed source. EPA does not interpret the Clean Air Act to mandate evaluation of IGCC in a BACT analysis in cases involving proposed coal-fired steam electric generating facilities. We do not read the state examples cited by commenters to be based on a contrary interpretation of the Clean Air Act, but rather to reflect policy decisions in those states to conduct a more extensive analysis. Even if a state were to conclude that evaluation of IGCC was mandatory under its interpretation of the Clean Air Act or state law, such a decision by a state is not binding on EPA. Furthermore, because Illinois administers the Federal PSD program under a delegation agreement with EPA Region V, Illinois must act in a manner consistent with EPA's interpretation of the Clean Air Act and controlling regulations.