

IN RE LA PALOMA ENERGY CENTER, LLC

PSD Appeal No. 13-10

ORDER DENYING REVIEW

Decided March 14, 2014

Syllabus

Sierra Club petitions the Environmental Appeals Board (“Board”) to review a greenhouse gas (“GHG”) prevention of significant deterioration permit that Region 6 (“Region”) of the United States Environmental Protection Agency (“EPA”) issued to the La Paloma Energy Center, LLC (“LPEC”) pursuant to Clean Air Act § 165, 42 U.S.C. § 7475. The permit authorizes LPEC to construct and operate a 637- to 735-megawatt natural gas-fired power plant in Harlingen, Texas. Sierra Club challenges the permit’s emission limits for greenhouse gases on two grounds, claiming that the Region clearly erred or abused its discretion (1) by failing to base the permitted GHG emission limits for the combined cycle natural gas-fired combustion turbines that will be used at this facility on the energy efficiency of the most efficient of the three turbine models that LPEC identified for potential use at this facility, and (2) by declining to require LPEC to consider adding a solar thermal energy component to the proposed facility in order to further reduce GHG emissions because the Region incorrectly concluded that solar technology would “redefine the source.”

Held: The Board denies the petition for review of the Region’s final permit decision.

(1) Issue Concerning the Permit’s GHG Emission Limits for the Combustion Turbines

Sierra Club has failed to demonstrate that the Region clearly erred or abused its discretion in establishing the GHG permit limits for the combustion turbines at the proposed LPEC facility. The Board finds no support in EPA’s BACT guidance for Sierra Club’s position that the three specific turbine models proposed by LPEC *must* be identified as separate control technologies throughout the Region’s five-step analysis. The Region had a rational basis for its determinations that all three of the permitted turbine models are comparably efficient on a performance basis, that the assigned BACT limits are substantially equivalent except for marginal differences attributable to capacity, and that the GHG emission limits for all three turbine models represent BACT for highly efficient combined cycle combustion turbines.

(2) Issue Concerning Region’s Conclusion That Solar Technology Would “Redefine the Source”

Sierra Club has failed to demonstrate that the Region abused its discretion in concluding that adding solar technology to this facility would “redefine the source.” Under the circumstances of this case, the business purposes and site-specific constraints described in the administrative record support the Region’s conclusion that the addition of supplemental solar power to this facility would constitute redesign of the source.

Before Environmental Appeals Judges Catherine R. McCabe, Randolph L. Hill, and Kathie A. Stein.

Opinion of the Board by Judge Catherine R. McCabe:

I. STATEMENT OF THE CASE

Sierra Club filed a timely petition seeking Environmental Appeals Board (“Board”) review of a Clean Air Act greenhouse gas (“GHG”) prevention of significant deterioration (“PSD”) permit, PSD-TX-1288-GHG, that U.S. Environmental Protection Agency (“EPA” or “Agency”) Region 6 (“Region”) issued to La Paloma Energy Center, LLC (“LPEC”) on November 6, 2013. The permit authorizes LPEC to construct and operate a 637- to 735-megawatt (“MW”) natural gas-fired power plant in Harlingen, Texas. *See* PSD Permit for Greenhouse Gas Emissions Issued Pursuant to the Requirements at 40 C.F.R. § 52.21 (“Permit”) at 1-2 (Nov. 6, 2013) (Administrative Record Index No. (“A.R.”) V.01). The petition challenges the permit’s emission limits for GHGs on two grounds. Both the Region and LPEC filed responses to the petition. The Board held a status conference/oral argument in this matter on February 12, 2014. For the reasons set forth below, the Board denies the petition for review of the Region’s final permit decision.

II. ISSUES

This appeal presents the following issues for resolution:

- A. Has Sierra Club demonstrated that the Region clearly erred or abused its discretion in establishing the GHG permit limits for the combustion turbines at the LPEC facility?
- B. Has Sierra Club demonstrated that the Region abused its discretion in concluding that adding solar technology to the LPEC facility would “redefine the source?”

III. STANDARD OF REVIEW

Section 124.19 of Title 40 of the Code of Federal Regulations governs Board review of a PSD permit. In any appeal from a permit decision issued under part 124, the petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19(a)(4). The Board has discretion to grant or deny review of a permit decision. *See In re Avenal Power Ctr., LLC*, 15 E.A.D. 384 (EAB 2011) (citing Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980)), *appeal docketed sub nom. Sierra Club v. EPA*, No. 11-73342 (9th Cir. Nov. 3, 2011). The Board will deny review of a permit decision unless the petitioner demonstrates that it is based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review. 40 C.F.R. § 124.19(a)(4)(i)(A)-(B). In considering whether to grant or deny review of a permit decision, the Board is guided by the preamble to the regulations authorizing appeal under part 124, in which the Agency stated that the Board's power to grant review "should be only sparingly exercised," and that "most permit conditions should be finally determined at the [permit issuer's] level." 45 Fed. Reg. at 33,412; *see also* Revisions to Procedural Rules Applicable in Permit Appeals, 78 Fed. Reg. 5,280, 5,281 (Jan. 25, 2013).

When evaluating a challenged permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised his or her "considered judgment." *See, e.g., In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 191, 224-25 (EAB 2000); *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion. *E.g., In re Shell Offshore, Inc.*, 13 E.A.D. 357, 386 (EAB 2007). As a whole, the record must demonstrate that the permit issuer "duly considered the issues raised in the comments" and ultimately adopted an approach that "is rational in light of all information in the record." *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2002); *accord In re City of Moscow*, 10 E.A.D. 135, 142 (EAB 2001); *In re NE Hub Partners, LP*, 7 E.A.D. 561, 568 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999). Permit issuers therefore must provide sufficient documentation in the record to justify decisions to set less stringent BACT limitations where the record suggests that more stringent levels may be achievable. *In re Pio Pico Energy Ctr.*, 16 E.A.D. 56, 130-34 (EAB 2013); *accord In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 131 (EAB 1999) ("The BACT analysis is one of the most critical elements of the PSD permitting process. As such, it should be well documented in the administrative record."). On matters that are fundamentally technical or scientific in nature, the

Board typically will defer to a permit issuer's technical expertise and experience, as long as the permit issuer adequately explains its rationale and supports its reasoning in the administrative record. *See In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 510, 560-62, 645-47, 668, 670-74 (EAB 2006); *see also, e.g., In re Russell City Energy Ctr.*, 15 E.A.D. 1, 29-32 (EAB 2010), *petition denied sub nom. Chabot-Las Positas Cmty. Coll. Dist. v. EPA*, 482 F. App'x 219 (9th Cir. 2012); *NE Hub*, 7 E.A.D. at 570-71.

In reviewing an exercise of discretion by the permitting authority, the Board applies an abuse of discretion standard. *E.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 443 n.7 (EAB 2011). The Board will uphold a permitting authority's reasonable exercise of discretion if that decision is cogently explained and supported in the record. *See Ash Grove*, 7 E.A.D. at 397 (“[A]cts of discretion must be adequately explained and justified.”); *see also Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 48 (1983) (“We have frequently reiterated that an agency must cogently explain why it has exercised its discretion in a given manner * * *.”).

IV. SUMMARY OF DECISION

For the reasons stated below, the Board concludes that (1) Sierra Club has not demonstrated that the Region clearly erred or abused its discretion in establishing the GHG permit limits for the combustion turbines at the proposed LPEC facility, and (2) Sierra Club has not demonstrated that the Region abused its discretion in concluding that adding solar technology to this facility would “redefine the source.” Accordingly, the Board denies Sierra Club's petition for review.

V. PROCEDURAL AND FACTUAL HISTORY

In April 2012, LPEC submitted a GHG PSD permit application to the Region to construct a new natural gas-fired electric generating plant in the City of Harlingen, Texas.¹ *See U.S. EPA Region 6, Statement of Basis, Draft Greenhouse*

¹ In 2011, EPA issued a final rule promulgating a federal implementation plan in Texas that made EPA Region 6 the PSD permitting authority for the pollutant GHGs in the State. *See Federal Implementation Plan Regarding Texas's PSD Program*, 76 Fed. Reg. 25,178 (May 3, 2011) (promulgating 40 C.F.R. § 52.2305). The Texas Commission on Environmental Quality (“TCEQ”) is the PSD permitting authority for all other pollutants. *See id.* at 25,179 n.2; SOB at 1. Consequently, in addition to the PSD GHG permit application it submitted to the Region, which is the subject of this appeal, LPEC also

Gas Prevention of Significant Deterioration Preconstruction Permit for the La Paloma Energy Center, LLC (“SOB”) at 1 (Mar. 2013) (A.R. III.03). LPEC revised its application in July 2012.² LPEC, PSD GHG Permit Application for a Combined Cycle Power Plant at LPEC, Cameron County, Texas, at 1, 16 (revised July 17, 2012) (A.R. I.03) [hereinafter Revised Application]. LPEC plans to produce electricity to sell to the Electricity Reliability Council of Texas (“ERCOT”) power grid. SOB at 5-6. In its application, LPEC stated that the proposed facility would consist of two natural gas-fired combined cycle combustion turbines, each exhausting to a fired heat recovery steam generator to produce steam to drive a shared steam turbine. Revised Application at 1. LPEC explained that, while “final selection of the combustion turbine model would not be made until after the permit was issued,” it was considering three models, each producing different maximum baseload power: the General Electric 7FA (183 MW) (“GE turbine”), the Siemens SGT6-5000F(4) (205 MW) (“Siemens 4 turbine”), and the Siemens SGT6-5000F(5) (232 MW) (“Siemens 5 turbine”). *Id.* Combined with the steam turbine’s output capacity of approximately 271 MW, the combustion turbines would produce a total generating capacity at this facility of 637, 681, or 735 MW of electricity, depending upon which combustion turbine model is finally selected. *Id.*

The Region issued a draft GHG PSD permit for public comment for 30 days, beginning on March 20, 2013. *See* U.S. EPA Region 6, *Responses to Public Comments* (“RTC”) at 3 (Nov. 6, 2013) (A.R. V.02). In the draft permit, the Region specified three different sets of emission limits based on the three potential capacity scenarios. *See* SOB at 16. Sierra Club submitted comments on the draft permit. *See generally* Letter from Travis Ritchie, Sierra Club, to Aimee Wilson, Air Permits Section, U.S. EPA Region 6 (Apr. 19, 2013) (“Sierra Club Comments”).

On November 6, 2013, the Region issued its final permitting decision and a document responding to the comments it had received. *See* Permit at 1; RTC at 1. The final permit retained the three different sets of emission limits.³ Sierra Club

submitted a PSD permit application for non-GHG pollutants to TCEQ for the same proposed project. *Id.*

² LPEC revised its application several times after July 2012. The Board refers to the July 2012 revision in this decision because that is the version the parties submitted and discussed on appeal.

³ The permit specifies three types of emission limits for each capacity scenario: (1) output rate-based emission limits (pounds of carbon dioxide emitted per megawatt hour of electricity produced (lb CO₂/MWh)); (2) startup limits (lb CO₂/hour); and (3) total annual GHG limits on a mass basis (tons per year). *See* Permit at 7-13; SOB at 16. The parties’

filed a timely appeal. Both the Region and LPEC filed responses to the petition. LPEC also filed a Motion to Expedite and Resolve Petition requesting that the Board expedite consideration of this matter and issue a final decision by January 31, 2014. The Board held a status conference/oral argument in this matter on February 12, 2014, at which all parties participated.

VI. OVERVIEW OF PSD LEGAL REQUIREMENTS AND BACT ANALYSIS

The PSD provisions of the Clean Air Act govern air pollution in “attainment” areas, where the air quality meets or is cleaner than the national ambient air quality standards, as well as in areas that EPA is unable to classify as either attainment or “non-attainment.” CAA §§ 160-69, 42 U.S.C. §§ 7470-79; *accord In re Rockgen Energy Ctr.*, 8 E.A.D. 536, 541 (EAB 1999). The statutory PSD provisions are largely carried out through a regulatory process that requires new major stationary sources in attainment (or unclassifiable) areas, such as the LPEC facility, to obtain preconstruction permits. CAA § 165, 42 U.S.C. § 7475; 40 C.F.R. § 52.21.

The Clean Air Act and Agency PSD regulations require that every proposed PSD permit be subjected to a preconstruction review by the permitting authority, which must include a public hearing with the opportunity for interested persons to comment on the air quality impact of the proposed source, alternatives thereto, control technology, and other appropriate considerations. CAA § 165(a)(2), 42 U.S.C. § 7475(a)(2). New major stationary sources and major modifications of such sources are required to employ the “best available control technology” (“BACT”) to minimize emissions of regulated pollutants. CAA § 165(a)(4), 42 U.S.C. § 7475(a)(4); 40 C.F.R. § 52.21(j)(2). The statute defines BACT as follows:

The term “best available control technology” means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter 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 each such pollutant.

arguments in this case focus on the output-based emission limits rather than the other two sets of emission limits.

CAA § 169(3), 42 U.S.C. § 7479(3); *accord* 40 C.F.R. § 52.21(b)(12) (similar regulatory definition). As the Board explained in *In re Northern Michigan University* (“*NMU*”), the BACT definition requires permit issuers to “proceed[] on a case-by-case basis, taking a careful and detailed look, attentive to the technology or methods appropriate for the particular facility, [] to seek the result tailor-made for that facility and that pollutant.” 14 E.A.D. 283, 291 (EAB 2009) (citations and quotations omitted). The BACT determination results in the selection of an emission limitation representing application of control technology or methods appropriate for the particular facility. *In re Prairie State Generating Co.*, 13 E.A.D. 1, 12 (EAB 2006), *aff’d sub. nom Sierra Club v. U.S. EPA*, 499 F.3d 653 (7th Cir. 2007); *In re Three Mountain Power, LLC*, 10 E.A.D. 39, 47 (EAB 2001); *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 128-29 (EAB 1999).

In 1990, EPA issued draft guidance for permitting authorities to use in analyzing PSD requirements (among others) in a consistent and systematic way. *See generally* Office of Air Quality Planning & Standards, U.S. EPA, *New Source Review Workshop Manual 1* (draft Oct. 1990) (“*NSR Manual*”).⁴ The NSR Manual sets forth a “top-down” process for determining BACT for each particular regulated pollutant that is summarized as follows:

The top-down process provides that all available control technologies be ranked in descending order of control effectiveness. The PSD applicant first examines the most stringent – or “top” – alternative. That alternative is established as BACT unless the applicant demonstrates, and the permitting authority in its informed judgment agrees, that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not “achievable” in that case.

⁴ Notably, the NSR Manual is not a binding Agency regulation, and consequently strict application of the methodology described in it is not mandatory nor is it the required vehicle for making BACT determinations. *E.g.*, *NMU*, 14 E.A.D. at 291; *Prairie State*, 13 E.A.D. at 6 n.2; *Knauf*, 8 E.A.D. at 129 n.13. Nevertheless, because it provides a framework for determining BACT that assures adequate consideration of the statutory and regulatory criteria, the NSR Manual has guided state and federal permit issuers, as well as PSD permit applicants, on PSD requirements and policy for years. *E.g.*, *NMU*, 14 E.A.D. at 291; *In re Cardinal FG Co.*, 12 E.A.D. 153, 162 (EAB 2005); *see also In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 183 (EAB 2000) (“This top-down analysis is not a mandatory methodology, but it is frequently used by permitting authorities to ensure that a defensible BACT determination, involving consideration of all requisite statutory and regulatory criteria, is reached.”).

Id. at B.2. Permit issuers apply the top-down method on a case-by-case basis to each permit they evaluate. *See id.* at B.1 (explaining that all BACT analyses are done case-by-case). The NSR Manual’s recommended top-down analysis employs five steps:

- Step 1: Identify all available control options with potential application to the source and the targeted pollutant;
- Step 2: Analyze the control options’ technical feasibility;
- Step 3: Rank feasible options in order of effectiveness;
- Step 4: Evaluate the energy, environmental, and economic impacts of the options; and
- Step 5: Select a pollutant emission limit achievable by the most effective control option not eliminated in a preceding step.

Id. at B.5-9.

VII. ANALYSIS

This case arises in the relatively new context of PSD permitting authorities’ efforts to develop BACT permit limits for GHGs based on energy efficiency. EPA’s 2011 GHG Permitting Guidance explains that BACT analysis for GHGs should be conducted in the same manner as it is done for any other regulated pollutant. U.S. EPA, EPA-457/B-11-001, *PSD and Title V Permitting Guidance for Greenhouse Gases* 17 (Mar. 2011). That is, EPA will continue to apply its pre-existing framework for BACT analysis, including the five-step “top-down” analytical method described in the 1990 NSR Manual. *Id.* The GHG Permitting Guidance recognizes that BACT emission limits for GHGs often will need to be based on energy efficiency, as the use of add-on controls to reduce GHG emissions is not as well-advanced as it is for most combustion-driven pollutants. *Id.* at 21, 29. Accordingly, in this case the Region based the GHG emission limits for LPEC’s proposed new power plant on energy-efficient design and other energy efficiency measures that are available for use at this facility.

Sierra Club argues that the Region conducted a faulty BACT analysis and has not gone far enough to assure that the facility will achieve the maximum reduction of GHGs that is required by the Clean Air Act. Specifically, Sierra Club objects that the Region clearly erred or abused its discretion (1) by failing to base the permitted GHG emission limits for the combined cycle natural gas-fired combustion turbines that will be used at this facility on the energy efficiency of the most efficient of the three turbine models that LPEC identified for potential use at

this facility, and (2) by declining to require LPEC to consider adding a solar thermal energy component to the proposed facility in order to further reduce GHG emissions. Pet. at 7-29.

For the reasons explained below, the Board concludes that Sierra Club has failed to demonstrate that the Region clearly erred or abused its discretion in its BACT determinations in this case.

A. The Region Did Not Clearly Err or Abuse its Discretion in Establishing the GHG Permit Limits for the Combustion Turbines at the LPEC Facility

As explained in Part V above, LPEC has not yet made a final selection of the combustion turbine model it will use at the LPEC facility. LPEC explains that, “[b]ecause the PSD permitting process can take months or years to complete, the project developer generally does not select a particular turbine for a project until the final stages of project development.” LPEC Resp. at 8. LPEC further explains that the business considerations affecting its final selection of turbine model include the projected demand for electricity from these units (which informs the amount of generation capacity that is needed) and the turbines’ relative efficiency, reliability, and cost. *See id.*; *see also* RTC at 5 (describing factors applicants typically consider in selecting turbines).⁵

The Region accommodated LPEC’s desire to retain the flexibility to choose the specific turbine model for its facility at a later stage of the process by specifying separate GHG emission limits in LPEC’s permit for each of the three turbine models under consideration. The permit requires LPEC to submit a permit modification request to the Region once LPEC has selected the final turbine model to eliminate the non-selected models from the permit. Permit at 13. At oral argument, LPEC represented that it has obtained all other necessary permits for construction of the facility and is now prepared to finalize its financing arrangements and construction plans upon EPA’s final issuance of the PSD permit under consideration in this matter. Oral Arg. Tr. at 10-11. LPEC further stated that it currently plans to select the GE turbine (the smallest of the three turbine models). *Id.*

Sierra Club argues that the Region failed to conduct a proper BACT analysis in setting the output-based GHG emission limits for the combustion turbines. Sierra

⁵ *See also NSR Manual* at B.61 (recognizing that, in selecting gas turbine models, a utility typically considers “the peak demand which must be met, efficiency of the gas turbine, reliability requirements, and the experience of the utility with the operation and maintenance service of the particular manufacturer and turbine design”).

Club objects to the Region's establishing "alternate" GHG limits specific to each of the three models, allowing LPEC to select whichever model it chooses after the permit is issued. In Sierra Club's view, the permitted GHG emission limits must be based on the lowest GHG emission limit that any of the three turbine models can achieve, regardless of which model LPEC finally selects. Specifically, Sierra Club argues that the output-based permit limits must be set at the 909.2 lb CO₂ /MWh emission limit that the Region specified for the Siemens 4 turbine. Pet. at 9 & 14 n.5. The output-based permit limits for the Siemens 5 and GE turbines are slightly higher (912.7 and 934.5 lb CO₂/MWh, respectively).⁶ Permit at 13.

At the outset, it is important to be clear what is actually at issue in this case. The parties have characterized this case as raising the issue of whether the Region can establish "alternate limits" as BACT for the LPEC combustion turbines. Sierra Club objects that this approach will allow permit applicants essentially to choose their own emission limits.⁷ The Board does not agree. First, the Region, not LPEC, determined the permit limits here. Second, the permit will be modified to delete any reference to the other turbines once LPEC selects its model. Therefore, only *one* BACT limit ultimately will be permitted for LPEC's combustion turbines. Essentially, the Region has established separate BACT limits for each of three different potential projects to be built.

Sierra Club's arguments, in effect, pose three questions for the Board: (1) whether the permit's GHG emission limit for the Siemens 4 turbine represents BACT, (2) whether the permit limit for the Siemens 5 turbine represents BACT, and (3) whether the permit limit for the GE turbine represents BACT. Because Sierra Club does not question the BACT permit limit for the Siemens 4 turbine, the questions are narrowed to whether the slightly higher output-based GHG permit limits for the Siemens 5 and the GE turbines represent BACT when considered on their own.⁸ The GHG emission level that can be achieved by the Siemens 4 turbine is certainly relevant to these questions, but it is not conclusive, as explained below.

⁶ In contrast, the GE turbine has the lowest permit limits among the three models for total annual emissions and startup emissions. See Permit at 7-13.

⁷ Pet. at 3 ("Rather than selecting BACT based on the most efficient turbine that meets the applicant's project purpose, the Region set three different limits and allowed the applicant to choose which would apply depending on which turbine design was ultimately installed.").

⁸ As noted above, the permit limits for total annual emissions and start-up emissions from the GE turbine are actually lower than the limits for the Siemens 4 turbine.

Thus, the Board need not reach the more general question of whether PSD permits can include “alternate limits” in a single permit.⁹

Sierra Club relies most heavily on its argument that the Region erred in conducting its five-step “top-down” BACT analysis (described in Part VI above) to establish the GHG emission limits for the combustion turbines. *See Pet.* at 12-15. The Board finds that Sierra Club has failed to demonstrate clear error in the Region’s BACT analysis.

The Region explained its BACT analysis in its Statement of Basis for the draft LPEC permit. SOB at 8-20. In the first step of its analysis, the Region identified combined cycle combustion turbines with “efficient turbine design” as the most energy efficient way to generate electricity from a natural gas fuel source.¹⁰ RTC at 4; *accord* SOB at 8. In Step 2, the Region determined that this technology is technically feasible. SOB at 11. The Region did not conduct a Step 3 ranking analysis of alternatives because it had identified only one technology option for reducing GHG emissions through energy efficiency in the prior steps of the analysis. *Id.* In Step 4 of its analysis, the Region concluded that there are no energy, environmental or economic impediments to the use of combined cycle combustion technology at the LPEC power plant. *Id.* at 12. Finally, in Step 5 of its analysis, the Region based the GHG emission limits on the highest level of pollution control that it considered to be achievable for the combined cycle combustion turbines at the LPEC facility. *Id.* at 13-20.

⁹ The parties’ use of the phrase “alternate limits” reflects and adds to the confusion caused by the Region’s approach to the permit in this case, in allowing LPEC to make its final turbine selection after the permit is issued. Evaluating BACT based on three different design and construction scenarios simultaneously poses challenges for the Region in analyzing and explaining its analysis for each limit properly (and separately). It also poses challenges for members of the public seeking to comment on the proposed permit. Further, this approach complicates the permitting process and makes it more difficult to issue the PSD permit in an expeditious time frame. To avoid these problems, the Board suggests that permitting authorities encourage applicants to make the significant decisions affecting final project design before the permit is issued and ideally before the permit is issued for public comment.

¹⁰ The Region also identified carbon capture and sequestration as another technology option for reducing GHG emissions but eliminated that technology from further consideration in Step 4 of its analysis based on economic, energy, and environmental considerations. SOB at 11. Sierra Club does not challenge that determination on this appeal.

To assure that the GHG emission limits established in Step 5 of its analysis represent BACT for combined cycle combustion turbines, the Region compared the energy efficiency (as measured by heat rate) and GHG emission rates of the three proposed LPEC turbine models to the heat rates and GHG emission rates that other PSD permitting authorities have accepted as BACT for eight other facilities using combined cycle combustion technology.¹¹ *Id.* at 13-14. Permitting authorities typically conduct such a review of comparable sources when assessing appropriate BACT limits. *See NSR Manual* at B.23-24; *In re Pio Pico Energy Center*, 16 E.A.D. 56, 116-17, 130-34 (EAB 2013). The Region concluded that all three turbine models proposed by LPEC are “highly efficient turbines” and that the GHG emission limits selected by the Region are comparable to the emission limits that have been accepted as BACT by other PSD permitting authorities.¹² SOB at 8 and 17.

Sierra Club does not object to the Region’s conclusion that combined cycle combustion turbines represent the best available technology for controlling GHG emissions from the LPEC facility. Nor does it disagree with the Region’s conclusion that the heat rates and GHG emission levels of the three turbine models proposed by LPEC are within the range that other PSD permitting authorities have established as BACT for other facilities using combined cycle combustion technology. Sierra Club instead contends that the Region erred by failing to conduct its BACT analysis based on a comparison and ranking of the three specific turbine models proposed by LPEC against each other. *See Pet.* At 13-15. Under

¹¹ The comparison table provided by the Region in the Statement of Basis expresses the heat rates and GHG emission limits that have been permitted for other facilities using varying measures and operational assumptions. *See SOB* at 13-14. This makes it difficult for readers to compare these limits directly to the limits proposed for the LPEC facility. This presentation presumably reflects differing measures used by the permitting authorities for these other facilities. Nevertheless, the Board encourages permitting authorities to make a greater effort to present and explain their analyses using more consistent measures, by performing the necessary mathematical conversions and obtaining additional information when it is available. Presenting consistent, comparable information is essential for making decisions transparent to the public.

¹² The Region, like other permitting authorities, included a “compliance margin” in the permit limits to allow for design and performance variability and degradation over time of turbine equipment. SOB at 15. These compliance margins, which vary among permitting authorities and specific permits, are included in the emission limits shown in the comparison table. *Id.* at 13-14. Although Sierra Club objected in its public comments that the Region’s 12.6% compliance margin in the LPEC permit was excessive, Sierra Club did not raise that objection in this appeal.

Sierra Club's suggested approach, the Region would identify each turbine model as a separate control technology in Step 1, rank the models against each other in Step 3, and select the model with the lowest GHG emission levels (the Siemens 4) as the basis for the output-based BACT emission limit for all three models in Step 5 of the analysis. *See id.*

The Board finds that Sierra Club's suggested method of analysis is not required as a matter of law or EPA policy. Sierra Club's suggested model-specific approach to Steps 1 and 3 of the BACT analysis is not supported by the language or examples used in the NSR Manual and the GHG Permitting Guidance to describe the five-step analytical method. Both these guidance documents suggest that permitting authorities identify general *types* or *categories* of control technologies in Step 1 and rank them against each other in Step 3 based on the emission reduction levels that are achievable for that type of technology. The guidance does not suggest that the analysis should also identify and rank specific equipment *models* that are available for each type of technology considered. *See GHG Permitting Guidance* at 17-18 (“[T]he top-down process calls for all available control *technologies* for a given pollutant to be identified and ranked in descending order of control effectiveness.”) (emphasis added), 29 & F-1 (identifying simple cycle and combined cycle combustion technologies as technology options to consider for GHG emissions from natural gas-fired power plants); *NSR Manual* at B.34 (listing wet scrubbers, carbon absorbers, condensers, incineration, electrostatic precipitators, fabric filters and selective catalytic reduction as examples of technology alternatives to consider in BACT analysis for other types of pollutants), B.57-75 (identifying combined cycle and simple cycle gas turbines as control technologies in Step 1).

Therefore, the Board finds no support in EPA's BACT guidance for Sierra Club's position that the three specific turbine models proposed by LPEC must be identified as separate control technologies in the Region's five-step analysis.

The important question here is whether the Region clearly erred or abused its discretion by failing to base the output-based permit limits for the Siemens 5 and GE turbines on the maximum degree of GHG pollution reduction that is achievable at this facility. The Clean Air Act specifies that permitting authorities are required to make BACT decisions “on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs.” CAA § 169, 42 U.S.C. § 7479(3). Consistent with this statutory direction, both the Board and EPA guidance have recognized that permitting authorities have discretion to make the case-by-case determinations necessary to establish BACT limits based on the

circumstances of a particular facility. *GHG Permitting Guidance* at 17, 20; *NSR Manual* at B.57.

The GHG Permitting Guidance provides the following guidance for determining case-specific BACT limits:

In determining the appropriate limit, the permitting authority can consider a range of factors, including the ability of the control option to consistently achieve a certain emissions rate, available data on past performance of the selected technology, and specific circumstances of the specific source under review which might affect the range of performance. *In setting BACT limits, permitting authorities have the discretion to select limits that do not necessarily reflect the highest possible control efficiencies but that will allow compliance on a consistent basis based on the particular circumstances of the technology and facility at issue.*

GHG Permitting Guidance at 44 (emphasis added).

The NSR Manual makes clear that permitting authorities are not expected to consider every possible level of control or to impose the highest possible level of control in all circumstances:

It is not the EPA's intention to require analysis of each possible level of efficiency for a control technique, as such an analysis would result in a large number of options. Rather, the applicant should use the most recent regulatory decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases.

*** While the most effective level of control must be considered in the BACT analysis, different levels of control for a given control alternative can be considered.

*** In assessing the capability of the control alternative, latitude exists to consider any special circumstances pertinent to the specific source under review.

NSR Manual at B.23-24.

Similarly, the Board has recognized that permitting authorities are not always required to impose the highest possible level of control efficiency but may take case-specific circumstances into consideration in determining what level of control is achievable for a given source. *See, e.g., In re Russell City Energy Ctr.*, 15 E.A.D. 1, 58-61 (EAB 2010) (rejecting a "bright line" test of requiring the highest or average level of control that another source has achieved), *petition denied*

sub nom. Chabot-Las Positas Cmty. Coll. Dist. v. EPA, 428 F. App'x 219 (9th Cir. 2012); *In re Newmont Nev. Energy Inv., LLC*, 12 E.A.D. 429, 441 (EAB 2005) (“We recently explained that “[t]he underlying principle of all of these cases is that PSD permit limits are not necessarily a direct translation of the lowest emissions rate that has been achieved by a particular technology at another facility, but that those limits must also reflect consideration of any practical difficulties associated with using the control technology.” (citing *In re Cardinal FG Co.*, 12 E.A.D. 153, 170 (EAB 2005))); *In re Kendall New Century Redev.*, 11 E.A.D. 40, 53 (EAB 2003) (upholding state permitting authority’s decision to establish a BACT emission limit at the top of the range of comparable limits at other facilities, based on case-specific distinctions that *included the size of the combined cycle combustion units*); *In re Steel Dynamics, Inc.*, 9 E.A.D. 740, 760 (EAB 2001) (“Thus, while the guidance instructs permit authorities to evaluate the most effective level of control, it also contemplates that those authorities may exercise their discretion in reviewing less effective levels of control”).

In this case, the Region has cited two case-specific reasons for declining to impose the somewhat more stringent output-based GHG emission limit of the Siemens 4 turbine model on the Siemens 5 and GE models: (1) the variation in the models’ electric generation capacities and (2) the comparability of the GHG emission rates of all three models. Responding to Sierra Club’s public comment that the permit limits should be based solely on the Siemens 4 turbine model, the Region explained:

EPA has determined that BACT for this facility is combined cycle technology with efficient turbine design, and does not agree that each gas turbine model is a different control technique that must be compared against other models, with one model necessarily being chosen over the others. Because the project is defined by the permit applicant as having a production capacity range of 637-753 megawatts (MW) of gross electrical power, EPA has established alternative sets of BACT limits for combined cycle technology that will apply *based on the capacity of the turbine selected by the applicant from among efficient turbine models that have comparable control efficiencies.*

RTC at 4 (emphasis added).

The Region further explained that the marginal variations in efficiency and output-based GHG emission rates among the three turbine models are attributable to the differences in the models’ electric generation capacities. *Id.* at 5 (“If each turbine model is operated at maximum capacity, the Siemens [4 and 5] turbines are marginally more efficient because of their higher capacity.”). The Region

concluded that the GHG emission limits in the permit should vary with the capacity of the particular model in order to achieve the maximum emission reductions that are achievable for each model.¹³ *Id.* (“The approach reflected in the permit ensures that the applicant is required to meet the lowest GHG level that is achievable with the turbine that is optimally sized for the particular capacity that the applicant ultimately selects within the size range specified in the application.”).

Sierra Club’s petition does not specifically challenge the Region’s determination that the GHG emission limits included in the permit represent the lowest emission limits that each of LPEC’s three proposed models *can* achieve. Rather, Sierra Club suggests that any of the three models will fulfill LPEC’s project purpose, and therefore, the permit’s output-based emission limits should be based solely on the most efficient model with the lowest output-based GHG emission rate. Pet. at 7-9. At the same time, Sierra Club explicitly states that it does *not* suggest that the Region should compel LPEC to select the Siemens 4 turbine. *Id.* at 14 n.5. Thus, Sierra Club fails to refute the Region’s determination that the GHG output-based emission limits in the permit represent the maximum pollutant reductions that are achievable by each of the three turbine models.¹⁴ The Board will defer to this determination, which is based on the Region’s technical judgment. *See In re Indeck-Elwood, LLC*, 13 E.A.D. 126, 161 n.67 (EAB 2006) (“[W]here the views of the permit issuer and the petitioner indicate bona fide differences of expert opinion or judgment on a technical issue, the Board typically will defer to the permit issuer.”) (internal quotations omitted); *In re NE Hub Partners, LP*, 7 E.A.D. 561, 567-68 (EAB 1998) (same), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999).

¹³ The Region noted that, if LPEC ultimately desired to supply power at the lower end of the capacity range for business reasons (as appears to be the case here, *see* Oral Arg. Tr. at 11-15), then the marginal efficiency of the larger turbines “would not necessarily be achieved if the permit applicant is required to” oversize the turbine and operate it “at less than its optimal capacity.” RTC at 5-6.

¹⁴ Sierra Club also suggested in its public comments and at oral argument that each of the turbine models can achieve a lower emission limit because the Region has allowed an overly generous compliance margin for the permit emission limits. *See* Sierra Club Comments at 6-8; Oral Arg. Tr. at 101-02. Sierra Club did not, however, challenge that compliance margin in its Petition. In addition, Sierra Club suggests that there is no dispute “that if the LPEC applies the [Siemens 4] design, it can achieve a lower emission rate per Megawatt hour than the other two turbine designs.” Pet. at 9. Sierra Club does not explain, however, how LPEC could “apply” the Siemens 4 design without actually selecting the Siemens 4 turbine.

The Board also defers to the Region's technical determination that the differences in the GHG emission rates of LPEC's proposed three turbine models are marginal. As noted above, the GHG permit limits for the three models (calculated on a gross output basis) range from 909.2 to 934.5 lb CO₂/MWh, which the Region noted is a variation of only 2.6%. SOB at 16. The range is even narrower when the limits are calculated on a net output basis. See RTC at 11 (showing a range from 945.2 to 965.7 lb CO₂/MWh for the three models' BACT limits calculated on a net output basis). The Board calculates the variation in this range as only 2.1%. More significantly, the Region points out that the difference between the output-based emission units for the Siemens 4 turbine and the GE turbine, which LPEC currently plans to select, is only 0.1% when measured on a net output basis.¹⁵ See Oral Arg. Tr. at 67 (referring to table in RTC at 11).

The Board concludes, based on this record, that the Region had a rational basis for its determination that all three of the permitted turbine models are "comparably efficient on a performance basis and * * * the assigned BACT limits [are] substantially equivalent except for marginal differences attributable to capacity." Region's Resp. at 5; accord RTC at 4-7. In light of their comparable emission levels, the Region takes the position that there is no need to select one of the models over the others in the BACT analysis. RTC at 4-7. The NSR Manual and Board precedent provide some support for this position. The NSR Manual suggests that permitting authorities need not perform a detailed BACT analysis distinguishing between technology alternatives that result in "essentially equivalent" or "identical" emissions or emission levels with a "negligible difference." NSR Manual at B.20-21. Citing this provision of the NSR Manual, the Board upheld a permitting authority's decision to eliminate integrated gasification combined cycle ("IGCC") technology from further consideration in the BACT analysis for a coal-fired power plant that was based on a finding that the pollution control efficiency of IGCC technology was comparable to that of another, less expensive technology alternative. *In re Prairie State Generating Co.*, 13 E.A.D. 1, 34-38 (EAB 2006), *aff'd sub. nom Sierra Club v. U.S. EPA*, 499 F.3d 653 (7th Cir. 2007).

¹⁵ PSD permitting authorities have established BACT limits for GHGs based on both net output and gross output measures. See SOB at 13-14 (table); *GHG Permitting Guidance* at 37 (suggesting that net output measures may be preferable for some purposes). During the public comment period, Sierra Club suggested that the LPEC permit limits should be based on net, rather than gross, output. The Region explained its reasons for choosing the gross output measure for this permit, see RTC at 10-11, and Sierra Club raises no objection to that choice in this appeal.

Based on the record in this case, the Board concludes that the Region did not clearly err or abuse its discretion in determining that the GHG emission limits for all three turbine models represent BACT for highly efficient combined cycle combustion turbines, and that the separate emission limits specified for each of the three models will assure that LPEC minimizes GHG emissions from the combustion turbines regardless of which model it selects. The Region duly considered Sierra Club's comments on this issue, and its explanation of its decision is rational in light of all of the information in the record of this case.

If LPEC proceeds with its plan to select the GE turbine, the Board further notes that this turbine model is the smallest of the three models originally proposed by LPEC and, accordingly, has the lowest total annual GHG emission limit (and startup emission limit).¹⁶ Permit at 13. Therefore, LPEC's current choice of turbine should result in the smallest environmental impact from GHG emissions among the three options it first proposed. *See GHG Permitting Guidance* at 46 (“[S]ince the environmental concern with GHGs is with their cumulative impact in the environment, metrics should focus on longer-term averages.”).

B. Sierra Club Has Not Demonstrated that the Region Abused Its Discretion in Concluding That Adding Solar Technology to the LPEC Facility Would “Redefine the Source”

The Region did not require LPEC to evaluate solar thermal generating equipment as a potential control option in its BACT analysis for GHGs. *See generally* SOB at 8-11. In commenting on the draft permit, Sierra Club argued that the BACT analysis should have considered the option of solar hybrid technology similar to that used at two other recently permitted facilities. Sierra Club Comments at 18-19; *see also id.* at 11. The Region responded that to do so “would constitute redefining the source.” RTC at 21, 37.

On appeal, Sierra Club challenges the Region's conclusion, arguing that, if LPEC used supplemental solar thermal steam, the facility would still be a predominantly gas-fired combined-cycle power plant of the same size and energy production and thus its purpose would not be “redefined.” Pet. at 23. Sierra Club also claims that supplemental solar thermal energy in a natural gas combined-cycle generating process is a cleaner production process that has been demonstrated at Palmdale Hybrid Power Project and the Victorville 2 facility and thus should have

¹⁶ The permit's total annual GHG emission limit for the GE turbine is 1,263,055 tons per year (“TPY”) carbon dioxide equivalent (“CO₂e”), compared to limits of 1,417,263 and 1,595,712 TPY CO₂e for the two Siemens turbines. Permit at 7, 9, 11.

been considered. *Id.* at 16-20. In its response brief, the Region asserts that it has broad discretion in making “redefining the source” determinations and that, in this case, it properly concluded that a solar preheating option would redefine the source. Region Resp. at 11; *accord* LPEC Resp. at 15.

The Board reviews permitting authorities’ determinations that a proposed alternative would “redefine the source” under an abuse of discretion standard. *Russell City*, 15 E.A.D. at 73; *In re Desert Rock Energy Co.*, 14 E.A.D. 484, 526-27, 530, 538-39 (EAB 2009). For the following reasons, the Board concludes that Sierra Club has not demonstrated that the Region abused its discretion in this case.

1. *Relevant Legal Principles: Redefining the Design of the Source*

EPA guidance and Board precedent, affirmed by a federal court of appeals, give permitting authorities the discretion to exclude proposed control alternatives that would constitute a “redefinition of the design of the source” from the BACT analysis for that source. *NSR Manual* at B.13; *GHG Permitting Guidance* at 26; *In re Sierra Pacific Indus.*, 16 E.A.D. 1, 48 (EAB 2013); *In re City of Palmdale*, 15 E.A.D. 700, 728-30 (EAB 2012); *Prairie State*, 13 E.A.D. at 15; *In re Knauf Fiberglass, GmbH*, 8 E.A.D. 121, 136 (EAB 1999). If a permitting authority decides that a proposed alternative would constitute a redefinition of the source, it will not list the alternative as a potential control option in Step 1 of its BACT analysis, and that option will not be considered further. *NSR Manual* at B.13.

EPA generally considers proposed changes to an applicant’s proposed primary fuel to be a redefinition of the source. *Id.* (building a natural gas-fired electric turbine in lieu of a coal-fired electric generator not required); *Palmdale*, 15 E.A.D. at 730 (summarizing prior Board cases). The Agency’s 2011 GHG guidance acknowledges and reaffirms this principle:

EPA has recognized that the initial list of control options for a BACT analysis does not need to include “clean fuel” options that would fundamentally redefine the source. Such options include those that would require a permit applicant to switch to a primary fuel type (*i.e.*, coal, natural gas, or biomass) other than the type of fuel that an applicant proposes to use for its primary combustion process. For example, when an applicant proposes to construct a coal-fired steam electric generating unit, EPA continues to believe that permitting authorities can show in most cases that the option of using natural gas as a primary fuel would fundamentally redefine a coal-fired electric generating unit. Ultimately, however a permitting

authority retains the discretion to conduct a broader BACT analysis and to consider changes in the primary fuel in Step 1 of the analysis.

GHG Permitting Guidance at 27-28.

The 2011 guidance distinguishes the above scenario from the situation in which a permit applicant has already proposed use of a secondary fuel type in its project. *Id.* at 28. In the latter circumstance, the guidance provides:

[W]hen a permit applicant has incorporated a particular fuel into one aspect of the project design (such as startup or auxiliary applications), this suggests that a fuel is “available” to a permit applicant. In such circumstances, greater utilization of a fuel that the applicant is already proposing to use in some aspect of the project design should be listed as an option in Step 1 unless it can be demonstrated that such an option would disrupt the applicant’s basic business purpose for the proposed facility.

*Id.*¹⁷

The guidance does not explicitly address a third, intermediate option, which is at issue in the present case: whether a *partial* switch or *supplementation* of the primary fuel with a different type of fuel that the applicant did *not* initially propose as a secondary fuel would constitute a redefinition of the source. To address this issue, the Board reviews the general principles that guide permitting authorities’ decisions as to whether a proposed alternative constitutes redefinition of the source.

To determine whether a potential control option would redefine the source, the Board has required permitting authorities to examine first how the applicant defined the proposed facility’s “end, object, aim, or purpose,” in other words, “the facility’s basic design” as described in the application and supporting materials. *Prairie State*, 13 E.A.D. at 22 (footnotes and citations omitted); *accord Sierra Pacific*, 16 E.A.D. at 58. The permit issuer then should take a “hard look” at which design elements are “inherent” to the applicant’s purpose and which design elements could possibly be altered to achieve pollutant emissions reductions without disrupting the applicant’s “basic business purpose” for the proposed facility. *Sierra Pacific*, 16 E.A.D. at 58; *Desert Rock*, 14 E.A.D. at 530; *Prairie*

¹⁷ Board and Agency case law is consistent with this approach. *See, e.g., Sierra Pacific*, 16 E.A.D. at 50-52 (discussing whether biomass-natural gas mixes, other than the one the applicant proposed, should have been considered); *Palmdale*, 15 E.A.D. at 732 (discussing whether solar power generation beyond that proposed by the applicant should have been considered).

State, 13 E.A.D. at 23, 26. Additionally, the permit issuer must ensure that the proposed facility design was “derived for reasons independent of air quality permitting.” *Prairie State*, 13 E.A.D. at 26; *accord Russell City*, 15 E.A.D. at 73; *Desert Rock*, 14 E.A.D. at 530.

The Board has cautioned that permitting authorities should not simply dismiss alternative control options, such as cleaner fuels, as constituting redesign, thereby creating an “automatic BACT off-ramp” from further consideration of the option. *NMU*, 14 E.A.D. at 302. The Clean Air Act specifies that a BACT determination requires a case-by-case analysis. CAA § 169(3), 42 U.S.C. § 7479(3). Thus, permitting authorities must consider the specific circumstances of the situation presented and explain their decisions in the record. *See, e.g., Sierra Pacific*, 16 E.A.D. at 48-50; *Palmdale*, 15 E.A.D. at 732-33.

In *Sierra Pacific* and *Palmdale*, the Board upheld two permitting decisions by EPA Region 9 rejecting suggestions that applicants’ proposed fuel choices be modified to reduce GHG emissions, on the grounds that the suggested changes would redefine the design of those sources under the specific circumstances presented in those cases. *Sierra Pacific* involved a lumber manufacturing facility that proposed to use a mix of 10% natural gas and 90% biomass (the facility’s excess wood waste) to fuel steam turbines at the facility. The Board upheld the Region’s determination that requiring a greater use of natural gas or addition of solar power would be inconsistent with the applicant’s primary business purpose of burning its excess wood waste. *Sierra Pacific*, 16 E.A.D. at 48-52. *Palmdale* involved a new hybrid power plant that the applicant proposed to fuel primarily with natural gas, with a supplemental (10%) solar power component added in order to contribute to the State of California’s renewable energy goals. The Board upheld the Region’s determinations that an all-solar facility would be inconsistent with the applicant’s business purpose of providing a baseload supply of electricity¹⁸ and that, based on the record of that case, there was insufficient space at the proposed site to significantly increase the size of the solar energy component in any event. *Palmdale*, 15 E.A.D. at 732-36.

The case-specific justifications for Region 9’s “redefining the source” determinations in *Sierra Pacific* and *Palmdale* were essential to the Board’s decisions upholding those determinations. The Board did not conclude, as LPEC appears to suggest in the present case, that proposals to add solar power to a power

¹⁸ As explained in *Palmdale*, a baseload power plant is expected to be able to provide a reliable, continuous supply of electricity, at its full capacity, at all times. 15 E.A.D. at 733.

plant fueled primarily by another fuel source always will constitute a redefinition of the source. *See* LPEC Resp. at 19; Oral Arg. Tr. at 49-50.

The Board's *Palmdale* decision makes clear that technical considerations such as space constraints and geography may be considered by permitting authorities in determining whether suggestions to add or increase the use of supplemental solar power would constitute redesign of the source. *See* 15 E.A.D. at 735-39. Generally, permitting authorities evaluate issues regarding the technical feasibility of a control technology in Step 2, rather than Step 1, of the BACT analysis. *See NSR Manual* at B.17 (suggesting that permitting authorities consider the commercial "availability" and "applicability" of a control technology in Step 2 of the five-step BACT analysis). Technical factors such as the availability of space and the physical location of the facility, however, may also inform a permitting authority's decision whether a proposed use of a different fuel would require redesign of the source. In the case of solar power, for example, if the permitting authority concludes that there are space limitations and/or meteorological concerns such that requiring use of solar panels would essentially require relocation of the entire facility, this conclusion clearly would be important to a Step 1 "redefining the design of the source" analysis.

2. *Case-Specific Analysis*

In determining whether Sierra Club has shown that the Region abused its discretion in concluding that use of solar thermal hybrid technology at the LPEC facility would "redefine the source," the Board reviews both the Region's explanation and the administrative record.

The Region explained its conclusion in two of its responses to public comments. *See* RTC at 21, 37 (responses to comments 16 and 27). In both responses, the Region distinguished between the proposed LPEC facility and previous projects in which the applicant had initially proposed a solar hybrid option. *Id.* More particularly, the Region explained:

While we acknowledge there may be many ways for solar thermal processes to be integrated with a facility that intends to use steam to generate electricity, we believe that requiring such processes in combination with fossil-fuel combustion would represent the merging of distinct and different source types. While Region 9 required 50 MW of solar energy as part of its BACT determination for the Palmdale Hybrid Power Project NGCC facility, the permit applicant in that case had proposed the solar project as part of its project purpose, which included supporting California's goal of increasing the percentage of renewable energy in the State. Indeed,

Region 9 specifically explained that it incorporated the solar project into its BACT determination not because it was required to do so, but because doing so was compatible with the permit applicant's goals and would therefore not redefine the source * * *.

Id. at 37; *accord id.* at 21. The Region contrasted the situation at the Palmdale facility from the present one, pointing out that, “[h]ere, LPEC did not include a solar energy component as part of its project in its permit application.” *Id.* at 37; *accord id.* at 21 (explaining that the applicant “did not include renewable generation in its project purpose”). In its second response, the Region also referred to potential logistical problems with solar usage at this facility, stating that “the commenter has not explained how LPEC might incorporate such a solar component into its project, or even whether it has or can acquire the land necessary to do so, without redefining the source.”¹⁹ *Id.* at 37.

The Region's rationale for concluding that adding solar capacity at the LPEC facility would constitute redesign of the source is not as thorough as the Board would expect, nor does it constitute a “hard look.” The Region's explanation comes very close to suggesting that adding supplemental solar power generation is always redesign if the applicant does not propose it in the first place. Such a bright line, “automatic BACT off-ramp” approach is not consistent with the NSR Manual, the GHG Permitting Guidance, or Board precedent, all of which suggest that a case-specific assessment of the situation be made in concluding that a proposed control option would redefine a particular source.

Nevertheless, despite the deficiencies in the Region's explanation, under the facts and circumstances of this case, a remand is not necessary and would not lead to a different result. As the Board reiterated in *In re Steel Dynamics, Inc.*, 9 E.A.D. 165 (EAB 2000), to justify a remand, “there must be a compelling reason to believe that the omissions [by the permitting authority] led to an erroneous permit determination – in other words, that [omissions] materially affected the quality of the permit determination.” 9 E.A.D. at 191-92 (quoting *In re Mecklenburg Cogeneration Ltd. P'ship*, 3 E.A.D. 492, 494 n.3 (Adm'r 1990)); *accord Palmdale*, 15 E.A.D. at 735; *In re Three Mountain Power, LLC*, 10 E.A.D. 39, 55 (EAB 2001). Here, upon review of the administrative record, the Board concludes that there is sufficient evidence to support the Region's conclusion that the supplemental solar

¹⁹ As the Region had stated at the time of the proposed permit, the size of the facility site is, at most, 78 acres. See SOB at 29; Jeffrey D. Owens, Intensive Cultural Resources Survey of the Proposed 78-Acre Tract, Harlingen, Cameron County, Texas (“Cultural Resources Survey”), at iii (Dec. 2012) (A.R. II.03); see also Revised Application at 15-16 (maps of the site and surrounding area).

option would constitute redesign of the source under the specific circumstances of this case given the business purpose, space limitations, and the specific design requirements of the facility.

The record in this case clearly indicates that it would be logistically difficult for the applicant to incorporate a significant solar component into the facility. The record shows that the site is approximately 78 acres, and at least half of that appears to be utilized by the plant itself and supporting infrastructure. *See* Revised Application at 15-16; *see also* SOB at 29; Cultural Resources Survey at iii; Oral Arg. Tr. at 48-49, 90. As the Board observed in *Palmdale*, generating a significant amount of electric power from solar energy typically requires large acreage for the solar panels. 15 E.A.D. at 736 (“[A] substantial amount of additional acreage would be required to produce a significant amount of additional solar power.” (relying on statements of the California Energy Commission)); *accord* Oral Arg. Tr. at 92. For example, in *Palmdale*, the California Energy Commission had estimated that a minimum of eight acres is required to generate one megawatt of electricity. *Palmdale*, 15 E.A.D. at 736. Applying this formula to the acreage of the LPEC facility site suggests that very little solar power could be generated there without either significantly expanding the site or relocating the facility.²⁰

The record clearly indicates that relocation would be inconsistent with LPEC’s basic business purpose. In its application, LPEC summarized the facility’s purpose as the generation of 637 to 735 MW “of gross electrical power near the City of Harlingen in an efficient manner while increasing the reliability of the electrical supply for the State of Texas.” Revised Application at 11. LPEC further explained that “[p]ipeline natural gas is chosen as the only fuel for the combustion turbines and duct burner systems due to *local availability of fuel and infrastructure* to support delivery of the fuel to the facility in adequate volume and pressure.” *Id.* (emphasis added); *accord* Oral Arg. Tr. at 53. The Region also acknowledged this factor to be an important aspect of the proposed facility’s design. *See* RTC at 9. LPEC additionally noted that another “[o]ne of the factors in siting the plant is the *availability of reclaimed water* from the City of Harlingen to be used as cooling water at the plant.” Revised Application at 11 (emphasis added); *accord* Oral Arg. Tr. at 53. Because the facility is purposely located near reclaimed wastewater and available natural gas lines and associated infrastructure, relocating it would subvert

²⁰ For example, assuming that a maximum of 39 acres might be available for installation of a solar array at the site (based on the site plan included in the record) and that a minimum of eight acres is needed to generate one megawatt of electricity from solar power, LPEC would be able to produce only five megawatts of electricity from solar power.

the facility's basic business purpose and design and constitute redesign of the source.

There is also nothing in the record suggesting that LPEC could expand the acreage of the proposed facility in its current location. *See* RTC at 37; Revised Application at 11. Sierra Club has not provided any persuasive evidence or argument indicating otherwise. Sierra Club has merely pointed to two other facilities – Palmdale and Victorville – that have substantially larger acreage that specifically supports their use of solar hybrid technology. *See Palmdale*, 15 E.A.D. at 736 (explaining that the facility would use approximately 250 acres to generate 50 MW of power using solar technology); LPEC Resp. Ex. EE at 1-1 (City of Victorville, Application for PSD Permit for Victorville 2 Hybrid Power Project (Apr. 2007)) (same).

The Region's decision not to require LPEC to add a solar component to its facility under these circumstances is consistent with prior Board decisions upholding permitting authorities' discretion to reject options that would redefine the source. *See, e.g., Sierra Pacific*, 16 E.A.D. at 51; *Palmdale*, 15 E.A.D. at 736; *Russell City*, 15 E.A.D. at 74-75 (concluding that permit issuer did not abuse its discretion in determining that dry cooling would redefine the source where facility was initially designed to utilize the city's wastewater, and city transferred land to applicant to allow the facility to be located in that particular location specifically to facilitate use of that wastewater); *Prairie State*, 13 E.A.D. at 28 (concluding that permit issuer's determination that consideration of low-sulfur coal, which would necessarily require use of a fuel source other than the coal at the co-located mine, would require a redefinition of the fundamental purpose or basic design of the proposed mine-mouth facility).

In sum, the business purposes and site-specific constraints described in the administrative record support the Region's conclusion that use of supplemental solar power would constitute redesign of the source under the circumstances of this case.²¹ Sierra Club itself, in fact, generally acknowledged that "site-specific

²¹ There is also no suggestion in this case that LPEC purposely avoided use of solar hybrid technology in its proposed design to circumvent BACT analysis or air quality permitting requirements, which, as noted above, is another factor that the Board typically considers. *See Prairie State*, 13 E.A.D. at 26. LPEC's site selection was due to the availability of reclaimed wastewater from the City as well as the availability of natural gas and the infrastructure to support efficient and sufficient delivery of the fuel to the proposed facility. *See* RTC at 9; Revised Application at 11. These considerations are clearly related to efficient energy production and do not suggest in any way that the applicant attempted

considerations” could “preclude the use of solar hybrid technology” at a site in its comments on the draft permit. Sierra Club Comments at 19. Based on the record in this case, the Board concludes that Sierra Club has failed to demonstrate that the Region abused its discretion in concluding that use of solar thermal hybrid technology as a potential control technology for reducing GHG emissions at the facility would “redefine the source.”

The Board emphasizes, however, that permitting authorities should include in their Response to Comments a clear and full explanation of any decision to reject comments suggesting the use of a solar component at a proposed facility on the grounds that it would require redefinition of the source. If, as here, a permitting authority’s “redefinition of the source” decision is based in part on technical and/or logistical obstacles, it should document the factual basis for its conclusions in the record and explain how the commenter’s suggestion would be inconsistent with the facility’s basic business purpose (the essential inquiry for a “redefinition of the source” determination). If the permitting authority’s decision is based *solely* on technical and/or logistical obstacles to implementing solar options at the proposed facility, the permitting authority should consider whether a Step 2 technical feasibility analysis is needed.

The Board is not suggesting that permitting authorities must perform a full and detailed analysis of all potential solar power options every time a commenter suggests that solar power be considered at a facility. We rejected that suggestion in *Palmdale*, 15 E.A.D. at 734-35 (stating that Region was not required to analyze every possible configuration for increasing the solar power component of a proposed power plant in response to a commenter’s very vague and general suggestions). The permitting authority may appropriately tailor the level of analysis to the circumstances presented by the case. Further, the scope of a permitting authority’s duty to respond to comments suggesting the addition of solar technology is limited to the extent to which the comment is raised. *See Palmdale*, 15 E.A.D. at 744; *Knauf*, 8 E.A.D. at 147 (explaining that permit issuer may provide general justifications in its responses where commenters raised issues in a general manner). At a minimum, however, the permitting authority should provide a reasoned response to comments that are fairly raised.²²

to circumvent Clean Air Act requirements by not including a solar hybrid component in its design.

²² See, for example, the explanation that the Region provided in its response brief, explaining why the commenter’s suggestion in this case was both logistically unworkable at this site and inconsistent with LPEC’s business purpose for the facility. Region Resp.

VIII. *CONCLUSION AND ORDER*

For the reasons described above, the Board denies Sierra Club's petition for review of the Region's final permit decision for La Paloma Energy Center, LLC, PSD Permit No. TX-1288-GHG.

So ordered.

at 12-15. The Region could have provided this explanation at an earlier point in the permitting process by including it in its Response to Comments.