BEFORE THE ENVIRONMENTAL APPEALS BOARD
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In RE: Desert Rock Energy Corporation, LLC PSD Permit Number AZP 04-01	))))	PSD Appeal No. _____

PETITION FOR REVIEW
OF DESERT ROCK ENERGY AIR PERMIT
PSD PERMIT AZP 04-01

Note to Readers—All documents in the Administrative Record for the Desert Rock Air Permit can be found at http://www.epa.gov/region09/air/permit/desert-rock/. Also, this Petition for Review is being written as Hurricane Gustav approaches New Orleans and 2 million people on the Gulf Coast have been evacuated. It is long past time that the EPA and the country began to think about a "better way to boil water," (e.g. with sunlight and mirrors using the technologies grouped under the heading "Concentrating Solar Power") rather than by burning coal and annually releasing thousands of tons of various pollutants and millions of tons of carbon dioxide, a cumulative pollutant that traps heat, warming the planet, intensifying the water cycle and increasing the number of extreme weather events, including floods, fires, tornadoes and hurricanes—events that have already killed tens of thousands of people and left millions homeless around the world—and which will continue to intensify as we go forward through the coming centuries. At this point, it is nothing short of criminal to continue to emit vast quantities of CO2 and other pollutants from a coal-fired power plant when several perfectly acceptable and cost competitive alternatives exists.

I. INTRODUCTION

Pursuant to 40 Code of Federal Regulations ("C.F.R.") §. 124.19 (a), Leslie Glustrom files this Petition for Review of the Prevention of Significant Deterioration ("PSD") Permit, PSD Permit AZP 04-01 issued by Region 9 of the United States Environmental Protection Agency ("EPA") on July 31, 2008 to Desert Rock Energy Company, LLC ("Desert Rock Energy") for the Desert Rock Energy Facility ("Desert Rock" or "DREF"). The Permit authorizes construction of a 1500 Megawatt ("MW")

coal-fired power plant on the Navajo Reservation between Farmington and Ship Rock, New Mexico.

The permit and the accompanying analysis contain both findings of fact and conclusions of law which are clearly erroneous. Moreover, the decision by EPA to grant this permit without full analysis of all alternatives and all opportunities for Best Available Control Technology is an exercise of discretion which raises important policy considerations which the Environmental Appeals Board must use its discretion to review. As described further below, I filed comments on the draft permit, particularly as it relates to the consideration of Concentrating Solar Power technologies for the production of steam and to produce electricity. Consequently I have standing to file this appeal in accordance with 40 C.F.R. §. 124.19 (a).

In short, EPA has used tortured logic to defeat the purpose of the United States Congress in passing the Clean Air Act. This tortured logic has put the EPA on the wrong side of history, the wrong side of technology, the wrong side of the climate crisis, the wrong side of the future and--of course, most importantly—the wrong side of the law. This must be addressed by the Environmental Appeals Board.

Congress clearly identified air pollution prevention as a primary goal of the nation's Clean Air Act. In particular, 42 United States Code ("U.S.C.") § 7401 (c) Pollution Prevention reads:

> **A primary goal of this chapter is to encourage or otherwise promote** reasonable Federal, State and local government actions, consistent with the provisions of this chapter, for **pollution prevention**. (42 U.S.C. § 7401 (c) Emphasis added.)

We now have technologies available that allow for the production of electricity with vastly decreased emissions of air pollution. In order to fulfill the intent of the Clean Air

Act, it is now imperative that the EPA take action to encourage and promote these key technologies which can avoid tens of thousands of tons of pollutants being emitted into our fragile atmosphere. To do otherwise is to thwart the efforts of Congress and the clear intention of the Clean Air Act.

II. STANDARD OF REVIEW

In accordance with EPA regulation 40 CFR § 124.19 (a), any person who filed comments on the draft permit or participated in the public hearing can petition the Environmental Appeals Board for review of the permit. The review is to consider whether a condition of the permit is:

(1) A finding of fact or conclusion of law which is clearly erroneous; or

(2) An exercise of discretion or an important policy consideration which the Environmental Appeals Board should in its discretion review;

As will be discussed further below, the EPA analysis contains both facts and conclusions of law that are clearly erroneous and the EPA has exercised discretion on an extremely important policy consideration which the EAB should use its discretion to review.

III. SUMMARY OF COMMENTS SUBMITTED BY PETITIONER LESLIE GLUSTROM

In the fall of 2006, Petitioner Leslie Glustrom submitted extensive comments, now found in the administrative record as the following documents:

EPA RO9 OAR 2007-1110-0063 (hereafter "Document #0063")

EPA RO9 OAR 2007-1110-0063.1 (hereafter "Document #0063.1")

These documents contain several technical reports on the potential of Concentrating Solar Power as well as two e-mail comments[1] that Concentrating Solar Power ("CSP") needs to be considered as part of the Best Available Control Technology ("BACT") analysis.

As will be discussed further below, Concentrating Solar Power needs to be analyzed as part of a BACT analysis in order to ensure that the "maximum degree of reduction of each pollutant" is achieved through "application of production processes and available methods, systems and techniques…." (42 U.S.C. § 7479 (3))

The documents submitted on Concentrating Solar Power included the following:

1) Western Governors' Association: Clean and Diversified Energy—Solar Task Force Report (January 2006) found at page 71 of 157 in Document 0063.1 (Hereafter "WGA Solar Task Force Report.")

2) "Economic, Energy and Environmental Benefits of Concentrating Solar Power in California," Stoddard, L. et al. NREL/SR 550-39291 (April 2006) found at page 2 of 157 in Document 0063.1 (Hereafter "California CSP Report.")

3) "New Mexico Solar Concentrating Plant—Feasibility Study: Draft Final Report," Black and Veatch, (February 9, 2005) found at page 5 of 181 in Document 0063. (Hereafter "New Mexico 2005 CSP Report.")

4) A one page description of the Compact Linear Fresnel Reflector ("CLFR") CSP system being developed (at that time) by Solar Heat and Power of Australia found at page 1 of Document # 0063.1. [This CLFR system has since been brought to the United States and has been commercialized by (the relatively newly formed company) Ausra with a 700 MW per year CLFR manufacturing facility having just opened outside of Las

[1] The second e-mail comment (without a date) is found on page 1 of Document 0063. The first e-mail comment, sent on October 9, 2006 is found on page 3 (bottom) and page 4 of Document 0063.

Vegas in June 2008. This is just one example of how fast the CSP field is evolving. Ausra didn't exist in the fall of 2006 when comments were taken on the Desert Rock air permit and in only about 18 months, the company was formed, a commercial contract was signed with Pacific Gas and Electric and one of the largest (if not THE largest) solar manufacturing facility was designed, built and opened in the American southwest—a region blessed with massive supplies of sunshine. The manufacturing facility is highly automated and easily replicated as more and more utilities come to understand the manifold benefits of producing steam with "sunlight and mirrors" instead of by burning coal and releasing massive quantities of CO2 and other noxious pollutants. More information is available at www.ausra.com.]

Among other things, the reports submitted as part of Documents # 0063 and #0063.1 make the following points (quotation marks surround direct quotes from the reports):

- "The solar energy resource in the southwestern United States is enormous and largely untapped. It is among the best in the world and has a very high potential for electricity generation."(Page 10, WGA Solar Task Force Report, page 84 of 157 in Document # 0063.1)
- The map shown in Figure I-3 shows the solar (Direct Normal Insolation) data for the southwest United States. "The radiation increases in intensity from the yellow areas through to the dark brown regions, but all are attractively high. The six southwest States (sic) with suitably high solar radiation for CSP plants are Arizona, California, Colorado, Nevada, New Mexico and Utah. In this region, the amount of solar energy falling on an area the size of a basketball court is, in

thermal energy terms, equivalent to about 650 barrels of oil a year." (Page 10, WGA Solar Task Force Report, page 84 of 157 in Document # 0063.1)

- Using conservative estimates of potential, "**The remaining identified areas have a very large potential for CSP with a cumulative generation capacity of approximately 200 GW**….the analysis emphasizes that **the readily accessible solar resource in the Southwest is large enough to play a major role in meeting the region's future energy needs.** (Emphasis in the original, Page 11, WGA Solar Task Force Report, page 85 of 157 in Document # 0063.1; note that since 1 GW = 1000 MW then 200 GW = 200,000 MW—dwarfing the 1,500 MW of the proposed Desert Rock facility.)
- "Concentrating solar power plants produce electric power by using lenses or mirrors to efficiently convert the sun's energy either into high-temperature heat to drive turbines or engines or directly into electricity via high-efficiency photovoltaic (PV) cells….CSP systems can be sized for distributed generation (10-35 kilowatts) or central grid-connected applications (up to several hundred megawatts). ." (Page 13, WGA Solar Task Force Report, page 87 of 157 in Document # 0063.1)
- "Parabolic trough plants 30-80 MW in size are in commercial operation, with a total of 354 MW in the California Mojave Desert demonstrating reliable operation and excellent performance since 1985…. Currently a 1-MW trough system is under construction in Arizona (for Arizona Public Service) and a 65 MW trough plant is under development in Nevada (for Nevada Power). At least two 50-MW trough plants with storage are being developed in Spain. Dish-Stirling systems are

currently in an aggressive commercialization program by industry centered on a 25 kWe dish system unit for modular production of over-100 MW plants. Recently, Southern California Edison announced signing of a power purchase agreement for a 500 MW dish-Stirling project in the Mojave Desert with optional expansion to 850 MW. Separately, San Diego Gas & Electric also announced signing of a power purchase agreement for a 300-MW Stirling project in the Imperial Valley with options to expand to a total of 900 MW by 2014." (Page 14, WGA Solar Task Force Report, page 88 of 157 in Document # 0063.1; 1 MW = 1 Megawatt = 1000 kW or 1000 kilowatts) [As will be discussed further below, progress on all of these fronts has been tremendous since 2006. Now, utilities ranging from Pacific Gas and Electric, to Arizona Public Service to Public Service Company of Colorado (also known as "Xcel") are pursuing contracts for hundreds of MW of Concentrating Solar Power with the combined total of several thousand MW. These contracts will be discussed further below. Clearly, Concentrating Solar Power technologies are "available.")

- "A prototype 10 MW power tower that was successfully operated in California demonstrated efficient thermal energy storage and 24-hour per day electric production." (Page 14, WGA Solar Task Force Report, page 88 of 157 in Document # 0063.1)
- **"Dispatchability is a very important characteristic of several CSP technologies allowing delivery of firm power during selected demand periods.** Trough and tower plants can provide dispatchability by using thermal storage to store solar-produced thermal energy to generate power at a later time, by being

integrated with supplemental fossil-fired components, or by being configured to share with a fossil plant the generation portion of a facility." (Emphasis in original, page 14, WGA Solar Task Force Report, page 88 of 157 in Document # 0063.1)

- "Cost reductions in CSP systems will be driven by three factors—further technology development, volume production and scale-up in plant or project size." (Page 15, WGA Solar Task Force Report, page 89 of 157 in Document # 0063.1)
- Cost competitiveness will depend on the three factors identified above plus a consideration of electric power prices plus a comparison to fossil fuel costs. Using 2005 costs for fossil fuels and no consideration of potential carbon, mercury or coal combustion waste regulation, the Western Governors' Association projected "cost competitiveness at a deployment of 2 GW for any single technology or, more conservatively, 4 GW for multiple technologies." (Pages 15-17, with quote from page 17, WGA Solar Task Force Report, page 89-91 of 157 in Document # 0063.1)

The other reports submitted by Petitioner Leslie Glustrom also emphasize these points:

- The solar resource of the desert southwest is huge.
- Concentrating Solar Power can produce electricity by using lenses or mirrors to efficiently convert solar energy to steam ("boiling water with sunlight and mirrors") or through direct conversion into electricity.

- New Mexico has excellent potential for Concentrating Solar Power.
- CSP technologies have been commercially available and have demonstrated reliable operation and excellent performance for over 20 years.

The definition of Best Available Control Technology calls for the "maximum degree of reduction of each pollutant" through "application of production processes and available methods, systems and techniques…." (42 U.S.C. § 7479 (3)). The record in this permit is clear—there are available production processes that can produce electricity with essentially none of the pollutants that accompany the burning of coal to produce the steam to turn a steam turbine. It is imperative that EPA include an analysis of CSP as part of the BACT analysis for the Desert Rock proposed power plant.

IV. EPA'S RESPONSE TO COMMENTS OF PETITIONER GLUSTROM

A search of EPA's Response to Public Comments (Document EPA-R09-0AR-2007-1110-0120—hereafter "Document # 0120.") finds that Petitioner Glustrom's comments have been designated as Comment Numbers 682 and 683. (See p. 211 in Document # 0120.) EPA has responded to the comments on page 10 and in Appendix A to their Response to Comments (Document # 0120).

On page 10 of the Response to Public Comments, EPA merely listed "682, 683" in the bracketed list of comments discussing "Renewable Energy and Energy Conservation." No further mention was made of the extensive documentation provided with Petitioner Glustrom's comments in EPA's response.

In Appendix A of Document #0120, EPA discusses the issue of "Alternatives to the Proposed Project." On pages 222 and 223 of the EPA Response to Public Comments

(Document # 0120), EPA dismisses the possibility of considering Concentrating Solar Power using the following arguments:

1) "…the commenters' assertions about solar power are not adequate to demonstrate its suitability as an alternative to the proposed plant. Although solar energy has been shown to be an effective technology for many uses, the majority of these uses are small in scale compared to the projected power needs that would be met by the proposed project." (page 222, Document # 0120)

2) "One commenter (#682) submitted a study prepared for the State of New Mexico concerning the commercial viability of concentrated solar power (CSP), but that report focused on facilities of 50 MW in size." (page 222, Document # 0120)

3) The sites examined in the New Mexico study were in central and southern New Mexico, not in the vicinity of Desert Rock facility. (page 222, Document # 0120)

4) "…parabolic trough technology is the only CSP technology ready for a commercial project at the 50 MW level." (page 223, Document # 0120)

5) The EPA cited the *Prairie State* decision by the EAB (*Prairie State Generating Company,* PSD Appeal #05-05, August 24, 2006) stating "[s]olar energy also would not be a substitute for the reliable power provided by the proposed plant." (page 223, Document # 0120)

6) "The commenters have not presented cost and other information to substantiate their view that solar power could replace the proposed facility." (page 223, Document # 0120)

As discussed further below, the EPA made serious errors of fact in each of these responses to the petitioner's comments, and Petitioner Glustrom respectfully requests that

the EAB review these errors of fact and remand the permit back to the EPA to correct the errors.

V. ERRORS OF FACT IN EPA'S RESPONSE TO PETITIONER'S COMMENTS

Each of the assertions made by the EPA regarding Concentrating Solar Power is in error and is contradicted by the information in the record as described in Part III above. The errors of fact made by EPA are summarized below.

A. The EPA Erred in Claiming that the Information Submitted Was Not Adequate to Demonstrate the Suitability of Concentrating Solar Power as An Alternative to the Proposed Plant; the Information in the Record is Clearly Adequate to Support the Determination of Need to Develop a BACT Analysis for CSP in Northwestern New Mexico

On page 222 of the Response to Public Comments, (Document #0120), the EPA asserted that the information presented by this Petitioner was not adequate to demonstrate its suitability as an alternative to the proposed plant. This is in error for two reasons. To begin with, it is not the duty of those submitting public comments to demonstrate the full suitability of an alternative or a production process for a proposed plant—that analysis should be done as part of the review of the proposed facility and it is the duty of the entity proposing the plant to provide much of the detailed analysis used as part of a BACT determination. Nonetheless, the reports submitted with this petitioner's comments more than adequately demonstrate that:

- New Mexico is an excellent location for Concentrating Solar Power (e.g. page 10, WGA Solar Task Force Report found in Document # 0063.1)
- CSP plants were already (in 2006) being ordered by utilities in the hundreds of MW with some power purchase agreements ranging up to 900 MW (e.g. page 14, WGA Solar Task Force Report found in Document # 0063.1)

- CSP plants are commercially available and have demonstrated a track record of excellent performance for over 20 years. (e.g. page 14, WGA Solar Task Force Report found in Document # 0063.1)
- CSP costs will depend on a variety of factors discussed in each of the three reports attached to Petitioner Glustrom's comments. In order to conduct a thorough analysis of cost issues, the EPA needs to direct the Applicant to conduct an updated anaysis of the cost of Concentrating Solar Power technologies along with an analysis of the cost of fossil fuels (which have soared in price since 2006), as well as the full cost of pollution control over the life of a coal burning facility including management of coal combustion wastes, mercury and carbon dioxide while considering the evolving regulatory terrain for each of these pollutants.

Clearly, the reports that are part of the Administrative Record in Document #'s 0063 and #0063.1 contain enough information for the EPA to direct the applicant for the Desert Rock air permit to conduct an analysis of using Concentrating Solar Power either as a full replacement for the proposed coal plant or in a hybrid configuration with the coal plant—a possibility discussed in the Western Governor's Association report (See page 14, WGA Solar Task Force Report, page 88 of 157 in Document # 0063.1) and often referred to as a "fuel-saver" configuration. By failing to direct the applicant to conduct an analysis of CSP as part of the BACT analysis, the EPA is in violation of the clear requirement of the Clean Air Act at 42 U.S.C. § 7479 (3).

The arguments of the EPA related to "redefining of the source" will be thoroughly discussed—and dismissed—below.

B. The EPA Erred in Assuming that Only CSP Facilities of 50 MW in Size Were Commercially Viable; CSP Developments of Hundreds and Thousands of MW Are Easily Achievable; CSP Can Also Be Hybridized with Fossil Fuel Plants in a "Fuel Saver" (i.e. Pollution Saver) Mode

The EPA referred on page 222 in Document # 0120 to the 2005 New Mexico CSP report (which starts at page 5 of 181 in Document # 0063) and stated that "but that report focused on facilities of 50 MW in size." While it is true that this 2005 report focused on facilities that were 50 MW or larger (See p. 2-20 in the 2005 New Mexico CSP Study found at page 45 of 181 in Document # 0063), this is because the New Mexico task force was studying the possibility of development of a 50 MW CSP facility in New Mexico that would be operational by 2007. In short, the focus on 50 MW facilities was dictated by the goal of the task force—not by the ability of CSP technologies to be built at sizes bigger than 50 MW.

Indeed, the WGA report submitted with Petitioner Glustrom's comments specifically discussed dish-Stirling power purchase agreements with southern California utilities for up to 900 MW. (See page 14, WGA Solar Task Force Report, page 88 of 157 in Document # 0063.1) The WGA Solar Task Force Report also discusses the development of solar projects at the 500 MW scale. (See page 25 in the WGA Solar Task Force Report found at page 99 of 157 in Document # 0063.1). The California CSP report discusses the potential of CSP to generate "many multiples of the current demand for electricity in California." (See page 3-1 in the California CSP Report at page 18 of 157 in Document # 0063.1; note that the current electric generation in California at the time was

58,000 MW and the CSP potential on this page was identified as being in the range of 342,000 to 1,837,000 MW. From page 170 of 181 in Document 0063.1 it can be seen that New Mexico's electric generation is about one-tenth that of California.) The California CSP report also discussed the theoretical potential to install thousands of MW of CSP systems. (See page 4-2 in the California CSP Report, page 21 of 157 in Document # 0063.1). Moreover, as discussed further below, developments since 2006 have further confirmed the ability of CSP systems to produce hundreds and thousands of MW of electrical generation.

Clearly, the EPA implication that CSP facilities were limited to 50 MW was based on a hurried assessment of the 2005 New Mexico CSP study rather than a thoughtful assessment of the full information in the record. Also, if EPA had directed the applicant to consider the potential of CSP to produce electricity they would have found abundant evidence in contracts signed by and intentions stated by utilities to develop CSP power plants during 2007 and 2008—with many more announcements expected in the coming months and years. These recent developments are discussed further below.

All of this evidence indicates that EPA erred in assuming that CSP would only be available at the scale of 50 MW and as a result the EAB should remand the decision to the EPA with directions to have the applicant analyze potential CSP applications—either as a full replacement for the Desert Rock facility or as a hybrid "fuel-saver" configuration (discussed on page 2-22 of the New Mexico CSP study found at page 47 of 181 in Document # 0063.1). Obviously, any steam produced using the magnificent solar resources of New Mexico would obviate the need to burn coal to produce that steam and would reduce the air pollution emitted by any electric generating facility at that site.

Given the abundant evidence in the Administrative Record on the ability of CSP to produce electricity and reduce air pollution, the EAB must remand the decision to the EPA with instructions to consider CSP technologies in order to ensure that the BACT analysis achieves "the maximum degree of reduction of each pollutant subject to regulation…through application of production processes and available methods systems and techniques…" in accordance with 42 U.S.C. § 7479 (3).

C. The EPA Erred in Assuming that CSP Could Only be Developed in Central and Southern New Mexico; New Mexico has Massive Solar Resources Spread Throughout Almost the Entire State

Once again, the EPA made a cursory review of the 2005 New Mexico CSP study and assumed that only the sites examined in the New Mexico study were available for CSP development and these were in central and southern New Mexico, and "not in the vicinity of the project location for the Desert Rock facility." (page 222-223 in the EPA Response to Public Comment, with quote from page 222 in Document # 0120).

As explained above, the 2005 New Mexico study was focused on sites for rapid development of a facility in New Mexico by 2007 and so focused on sites with the best solar resource and lowest production costs. As the authors of the 2005 New Mexico study noted, "Furthermore, the assessment should not be considered exhaustive; it is likely that there are viable sites not identified in this task." (See page 3-1 in the New Mexico 2005 CSP Study, found at page 51 or 181 in Document # 0063.)

A quick look at the solar resource map on page 10 of the Western Governors' Association Solar Task Force Report shows the excellent solar resource found in northwest New Mexico. (See page 84 of 157 in Document # 0063.1) It is also worth

noting that Xcel, the largest utility in Colorado, is moving ahead with significant CSP developments[2] even though Colorado has a fraction of the solar resource that New Mexico has. (e.g. See the solar resource map noted above as well as page 13 in Attachment 1 to this Petition for Review to compare the solar resource of Colorado and New Mexico.)

Importantly, because the solar resource in the American southwest is so large, the National Renewable Energy Lab analysis used as the foundation for CSP studies (such as those in the studies attached to the Petitioner's comments) filtered out all land with greater than a 1% slope (see page 11 of the Western Governors' Association Solar Task Force Report, found at page 85 of 157 in Document # 0063.1)—even though lands with more than a 1% slope can be used for CSP developments. Parabolic trough plants can be sited on lands with greater than 1 % slope—it just takes a bit of "earth moving" to prepare the site, and certainly "earth moving" is a technology we have a lot of experience with in a host of applications ranging from construction to coal mining. In addition, the newer "distributed power tower" technologies such as those developed by e-Solar and BrightSource,[3] can be sited on lands that have more topography than those used for parabolic troughs.[4]

As discussed further below, even after eliminating all lands greater than 1%, the National Renewable Energy Lab ("NREL") identified a capacity of 1,940,000 MW (i.e.

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[2] See the Rebuttal Testimony of Xcel witness Kent Scholl in Docket 07A-447E at the Colorado Public Utilities Commission available at http://www.dora.state.co.us/PUC/DocketsDecisions/HighprofileDockets/07A-447E.htm.

[3] More information available at www.brightsourceenergy.com. BrightSource (sic) is developing a Distributed Power Tower and they have contracts for up to 900 MW of solar thermal electricity to be delivered to Pacific Gas and Electric.

[4] For more information on these newer power tower technologies go to www.esolar.com or www.brightsourcenergy.com . A full assessment of potential sites for these technologies would require a site-specific analysis of the area around the proposed Desert Rock facility.

over 1.9 million MW)[5] of CSP potential in New Mexico (using parabolic troughs) while the entire generation of New Mexcio is less than 10,000 MW. Indeed, the entire generation of the United States is only about 1 million MW. **That is, using lands with less than a 1% slope in New Mexico, CSP resources could be developed with almost twice the capacity of the entire country's electric generating capacity.** (See Attachment 1 to this Petition for Review, pages 13 and 14 for the conservatively estimated CSP potential of New Mexico and the electric generating capacity of the entire United States).

The area around the proposed Desert Rock facility may have slopes greater than 1% (and which were therefore eliminated from the NREL analysis of CSP potential), but that doesn't mean these lands can't be used for Concentrating Solar Power. Rather, the solar resource of New Mexico is so great that in order to get a number that wasn't completely ridiculous, NREL chose to eliminate all land that wasn't essentially flat—which in a state like New Mexico means that a lot of land was eliminated. Even after eliminating all lands with greater than 1% slope, the NREL analysis showed that New Mexico could generate almost twice as much electricity as the entire country uses!! (See Attachment 1 to this Petition to Review)

Moreover, the National Renewable Energy Lab analysis that forms the foundation for the CSP assessments attached to Petitioner Glustrom's comments assumes the use of parabolic troughs—a form of CSP that uses more land than that used by other forms of CSP. For example, newer systems such as the CLFR system being built by Ausra or the

[5] Note that 1500 MW is less than 0.1% of the 1,900,000 MW of conservatively measured CSP potential in New Mexico!!

power tower systems being built by E-Solar or BrightSource use less land than parabolic troughs and would increase the capacity available from CSP in New Mexico.[6]

To summarize, after eliminating land that had any more than a 1% slope and assuming the use of parabolic troughs (that use more land than other forms of CSP), the National Renewable Energy Lab determined that New Mexico had almost twice as much capacity for CSP as the entire electric generation capacity in the United States.[7] (See pages 13 and 14 of Attachment 1 to this Petition for Review.)

Just because the National Renewable Energy Lab analysis, which already yielded a huge potential for CSP, did not emphasize northwestern New Mexico (only because there are even better sites in the State), doesn't mean that northern New Mexico is not an excellent candidate for CSP development. This excellent potential can be seen from the solar resource map on page 10 of the Western Governors' Association Solar Task Force Report (found at page 84 of 157 in Document # 0063.1).

The NREL analysis was being used to show the potential for CSP in this country—not to analyze whether the area around the proposed Desert Rock facility could be used for a CSP development. The only way to make a determination that is appropriate for the Desert Rock PSD permit is for EPA to direct the applicant to analyze the area

[6] It is easy to see why CLFR systems use less land by comparing the picture of CLFR found on page 1 of Document #0063.1 with the pictures of parabolic troughs (e.g. on page 2-1 of the California CSP study, found on page 14 of 157 in Document #0063.1.) CLFR mirrors can be placed right next to each other while troughs have to be spaced apart in order to allow for shading effects as seen in the picture on page 2-1 of the California CSP study.

[7] Determining the amount of electricity generated by CSP plants requires a determination of capacity factor which will depend on the amount of thermal storage incorporated with the plant. Discussions of thermal storage and matching CSP output with storage to grid loads are included in all three reports attached to Petitioner Glustrom's comments. It is worth noting that utilities are increasingly coming to understand that what they most need is not a power plant that produces around the clock (because demand drops off significantly at night), but rather a dispatchable form of electricity that can produce well during the summer peak. As discussed on page 14 of the WGA Solar Task Force Report (see page 88 of 157 in Document # 0063.1), Concentrating Solar Power can be made dispatchable either through hybridization with a fossil fuel resource or through the addition of thermal storage. This concept is also discussed in the other CSP reports included with Petitioner Glustrom's comments.

around the proposed Desert Rock facility for potential CSP development. The land around the plant is described by the Applicant as being an "open, flat prairie," (see page 2-2 in the PSD Application) and a quick look on Google Earth is promising, but only after such a site-specific analysis is completed and put out for public review can it be determined whether the area around the proposed Desert Rock facility is appropriate for CSP development.

In order to ensure that the EPA achieves the "the maximum degree of reduction of each pollutant subject to regulation…through application of production processes and available methods systems and techniques…" in accordance with 42 U.S.C. § 7479 (3), the EAB must remand the Desert Rock air permit to the EPA for a full analysis of CSP potential both to replace the Desert Rock facility or to reduce coal use at the proposed plant through the use of CSP in a "fuel (and emissions)-saver" mode. [8]

D. The EPA Erred in Assuming that the Only CSP Technology Ready for Commercial Development was Parabolic Trough Technology

In response to Petitioner Glustrom's comments, EPA stated that "…parabolic trough technology is the only CSP technology ready for a commercial project at the 50 MW level." (page 223, Document # 0120). Once again, EPA has erred in relying on a cursory review of the 2005 New Mexico CSP study rather than a careful reading of the reports in the Administrative Record-or even more appropriately on an independent analysis of developments that have occurred since the close of the public comment period.

As noted previously, the WGA Solar Task Force Report noted that:

[8] The use of CSP as a hybrid with fossil fuel plants is discussed on page 14 of the Western Governors' Association Solar Task Force Report found at page 88 of 157 in Document # 0063.1.

> Recently, Southern California Edison announced signing of a power purchase agreement for a 500 MW dish-Stirling project in the Mojave Desert with optional expansion to 850 MW. Separately, San Diego Gas & Electric also announced signing of a power purchase agreement for a 300-MW Stirling project in the Imperial Valley with options to expand to a total of 900 MW by 2014." (Page 14, WGA Solar Task Force Report, page 88 of 157 in Document # 0063.1)

Clearly, power purchase agreements of up to 900 MW indicate a technology other than parabolic troughs that is potentially ready for commercialization at a scale bigger than 50 MW. In addition, the California CSP Report discusses dish engine (e.g.dish-Stirling) power purchase agreements "totaling between 800 MW and 1,750 MW" as representing "strong commercial viability for dish systems." (see page 4-2 in the California CSP Study found at page 21 of 157 in Document # 0063.1).

Also, as discussed below, numerous developments since the fall of 206 have underscored the commercial viability of several other CSP technologies at scales considerably above 200 MW. (See for example footnote 3 and the 900 MW of CSP power tower developments that are under contract between BrightSource Energyand Pacific Gas and Electric.)

Once again, the EPA has made a serious error of fact and the EAB must remand the Desert Rock PSD permit to the EPA with instructions to complete a thorough assessment of the potential of Concentrating Solar Power (both as a stand-alone technology and in the "fuel-saver" configuration) to achieve the "the maximum degree of reduction of each pollutant subject to regulation…through application of production processes and available methods systems and techniques…" in accordance with 42 U.S.C. § 7479 (3),

E. The EPA Erred in Citing the *Prairie State* Decision from Illinois When Rejecting the Possibility of Concentrating Solar Power in New Mexico

In its Response to Public Comments, the EPA cited the *Prairie State* decision by the EAB (*Prairie State Generating Company,* PSD Appeal #05-05, August 24, 2006) stating "[s]olar energy also would not be a substitute for the reliable power provided by the proposed plant." (page 223, Document # 0120). This is, of course, rather a silly thing to do to equate an analysis of the potential of solar energy in Illinois with the solar energy potential of New Mexico and on its face needs to be rejected as an error. Obviously, the solar resource of New Mexico is massively much larger than that in Illinois. (See the reports submitted by Petitioner Glustrom as well as Attachment 1 to this Petition to Review.)

Also, there is good reason to believe that, without reviewing the entire Administrative Record, that the *Prairie State* decision was referring to photovoltaic solar technologies, rather than the Concentrating Solar Power technologies discussed in the reports submitted by Petitioner Glustrom.

Once again, the EPA has made a serious error of fact and the EAB must remand the Desert Rock PSD permit to the EPA with instructions to complete a thorough assessment of the potential of Concentrating Solar Power (both as a stand-alone technology and in the "fuel-saver" configuration) to achieve the "the maximum degree of reduction of each pollutant subject to regulation…through application of production processes and available methods systems and techniques…" in accordance with 42 U.S.C. § 7479 (3).

F. The EPA Erred in Claiming that Inadequate Cost Information Was Supplied by the Commenters; Extensive Cost Information was Provided that Could Be Used for A Site-Specific Analysis of CSP at the Proposed Desert Rock Location

In its Response to Public Comments, the EPA stated, "The commenters have not presented cost and other information to substantiate their view that solar power could replace the proposed facility." (page 223, Document # 0120) Once again, EPA's claim is blatantly false. Information pertinent to an economic analysis of CSP is provided in at least the following places in the reports submitted by Petitioner Glustrom:

- Pages 13-26 of the Western Governors' Association Solar Task Force Report found in Document # 0063.1.
- Almost every page of the approximately 60 page California CSP Report in Document # 0063.1
- Almost every page of the 175 page 2005 New Mexico CSP Study found in Document # 0063.

While it is true that the cost information is not site specific to the Desert Rock location, conducting a thorough site-specific analysis is not the public's responsibility. It is the EPA's responsibility to ensure that the applicant conducts a complete analysis as part of the PSD Application process. Just as the Applicant hired a consulting firm to do much of the air impact analysis for the proposed Desert Rock facility, it could also easily hire a consulting firm (such as Black and Veatch which did both the California and New Mexico CSP studies found in Documents #0063 and # 0063.1). The consulting firm would work with site specific information as well as updated information from CSP

developers to determine cost and other economic and environmental impacts—just as it did for the California and New Mexico studies.

The only way to fully assess the costs of CSP is to conduct a careful consideration of current and future fossil fuel and transportation costs and the costs of pollution control including coal combustion waste and mercury and carbon dioxide as well as progress that has been made since 2006 in the development of CSP technologies. Such an analysis is probably best conducted by a reputable consulting firm and then put out for public review to assess the appropriateness of the various assumptions.

In the present case, Petitioner Glustrom went above and beyond the call of duty of a private citizen to provide detailed technological and economic costs. It is inappropriate, and as discussed below, illegal, for EPA to ignore this information or treat it in a cursory fashion.

Once again, the EPA Response to Public Comment is in error and the EAB must remand the Desert Rock PSD permit to the agency with instructions to complete a thorough assessment of the potential of Concentrating Solar Power (both as a stand-alone technology and in the "fuel-saver" configuration) to achieve the "the maximum degree of reduction of each pollutant subject to regulation…through application of production processes and available methods systems and techniques…" in accordance with 42 U.S.C. § 7479 (3).

G. The EPA Erred in Failing to Ensure that a Thorough and Up-to-Date Assessment of the Potential of Concentrating Solar Power to Reduce Air Pollution from the Desert Rock Facility Was Conducted; Recent Developments Underscore the Availability and Potential of Concentrating Solar Power to Produce Large Amounts of Essentially Pollution-Free Electricity

The EPA does not have to do the full assessment, but the reports submitted by Petitioner Glustrom contain more than enough information to demonstrate that EPA should have ensured that a thorough analysis of the potential of Concentrating Solar Power was conducted before issuing the air permit for the proposed Desert Rock Energy Facility. In practice, it is likely that EPA should have insisted that the applicant conduct a thorough assessment and include it with its PSD Permit Application. Then, just as the PSD Permit Application was largely written and submitted by the ENSR Consulting Company, the analysis of the potential of CSP could be written by a consulting firm such as Black and Veatch.

If EPA had taken steps to ensure that an up-to-date analysis was completed, it would have discovered substantial additional information confirming the ability of CSP to provide large-scale, cost effective electric power either in stand-along applications or in fuel(and emission)-saver configurations. Some of this information is as follows:

- A summary of the National Renewable Energy Laboratory analysis of CSP potential for the southwest, "Mining for Solar Resources," By (Dr.'s) Mark Mehos and Richard Perez, *Imaging Notes*, Summer 2005. (A copy is Attachment 1 to this Petition for Review.)
- News from July 25, 2007 of Pacific Gas & Electric signing an agreement with the Isreali firm Solel to purchase 553 MW of parabolic trough CSP produced

electricity. (A copy of the press release is Attachment 2 to this Petition for Review.)

- News from November 5, 2007 of Ausra and Pacific Gas and Electric signing an agreement for 177 MW of CSP electricity from Ausra's Compact Linear Fresnel Reflector ("CLFR") technology. (A copy of Ausra's press release is Attachment 3 to this Petition for Review.)
- News from February 21, 2008 of Abengoa and Arizona Public Service announcing plans for a 280 MW parabolic trough CSP plant built by Abengoa. (A copy of the Arizona Public Service press release is Attachment 4 to this Petition for Review.)
- News from June 3, 2008 announcing that Southern California Edison signing a power purchase agreement with eSolar to build a 245 MW scalable solar thermal (i.e. "CSP") power plant using a "smarter-sized footprint…." (A copy of the eSolar press release is Attachment 5 to this Petition for Review.)
- News from July 15, 2008 of Ausra opening an Australia office—and specifically discussing the ability of Ausra's technology to be "bolted" onto coal-fired power plants in a hybrid configuration which serves to reduce fuel and emissions from fossil fuel power plants. (A copy of the Ausra press release discussing the ability of CLFR to hybridize with fossil fuel plants is Attachment 6 to this Petition for Review.)
- The description of the ability to provide fuel (and emission)-saving CSP technology on the SkyFuel website which describes the SkyPro technology as follows:

SkyPro™
The project development unit designs and delivers utility-scale, turnkey solar fields for existing power plants and greenfield, stand-alone solar generating stations for our customers and strategic partners. SkyFuel provides the complete solar field, including mirrors and receivers, ready to supply steam to a power block. (See http://www.skyfuel.com/

The information provided by Petitioner Glustrom on CSP during the public comment period was more than adequate, as discussed extensively above, to demonstrate that Concentrating Solar Power is a viable electric generating technology for New Mexico, either as a stand-along power plant or in the fuel (and emission)-saver configuration. The news summarized in the Attachments to this Petition for Review strongly supports the contention of Petitioner Glustrom. Consequently, it was arbitrary and capricious of EPA not to ensure that a thorough and up-to-date review of the potential of CSP was conducted before issuing the PSD permit for the Desert Rock coal plant.

Since EPA failed to ensure that a complete analysis of the potential of CSP was done, the EAB must now remand the Desert Rock PSD permit to the EPA with instructions to conduct a thorough assessment of the potential of Concentrating Solar Power (both as a stand-alone technology and in the "fuel-saver" configuration) to achieve the "the maximum degree of reduction of each pollutant subject to regulation…through application of production processes and available methods systems and techniques…" in accordance with 42 U.S.C. § 7479 (3),

VI. ERRORS OF LAW IN EPA'S RESPONSE TO PETITIONER'S COMMENTS

On pages 13-21 and in Appendix A (pages 220-226) of its Response to Public Comments (Document # 0120), EPA attempts to explain why it does not need to consider

alternatives to the proposed facility. EPA's arguments are flawed in numerous respects and make several errors of law including:

- Assuming that the Clean Air Act is ambiguous when it is not;
- Assuming that the EPA is entitled to *Chevron* deference with respect to consideration of alternatives, which it clearly is not;
- Attempting to draw a distinction between the consideration of alternatives in Section 165 of the Clean Air Act and the determination of Best Available Control Technology in Section 169 of the Act in a manner that leads to an impermissible and absurd interpretation of the Clean Air Act.
- Assuming that EPA's "policy" on redefining the source takes precedence over the clear mandates of the Clean Air Act—which it does not.
- Assuming that the proposed facility is defined by the proposal to burn coal—rather than by the proposal to build an electric generating station.
- Assuming that EPA does not have the ability to alter the purpose or equipment of a proposed facility.

Each of these assumptions leads to important errors of law which are discussed further below.

VII. EXERCISE OF DISCRETION AND IMPORTANT POLICY ISSUES RAISED BY EPA WHICH THE ENVIRONMENTAL APPEALS BOARD SHOULD USE ITS DISCRETION TO REVIEW

Before beginning, this Petitioner would like to acknowledge her belief that many, if not most, EPA employees are anxious to find ways to avoid air pollution but under the

present Administration (that of President George W. Bush), there are more than a few decisions that come down from the top that stand in the way of the EPA working vigorously to live up to its name as the *Environmental Protection* Agency. It is this Petitioner's hope that these dedicated employees will "hang in there." Hopefully it won't be long before your agency once again leads the way in efforts to protect the fragile environment of our unparalleled planet and where the kind of logic used in recent EPA and EAB decisions will be seen as an unfortunate chapter in your agency's history.

A. EPA Has Erred in Claiming that the Clean Air Act is Ambiguous When It is Not

On pages 13-21 of EPA's Response to Public Comment, the EPA provides a long (and I must say tortured) explanation of why it won't use "the BACT requirement as a means to fundamentally redefine the basic scope of a proposed project." (page 13 of Document # 0120 i.e. EPA-R09-OAR-2007-1110-0120) This discussion depends on EPA's assertion that the Clean Air Act is ambiguous and so the agency is therefore entitled to develop its own policy. This is a false assumption. The Clean Air Act is very clear on the following points:

- **Pollution Prevention is a Primary Goal of the Clean Air Act**

  A primary goal of this chapter is to encourage or otherwise promote reasonable Federal, State and local government actions, consistent with the provisions of this chapter, for pollution prevention. (42 U.S.C. § 7401 (c))

- **The BACT Analysis is to Determine the Maximum Reduction of Pollutants**

  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….(42 U.S.C. § 7479 (3))

- **The Permitting Authority is to Consider "Production Processes and Available Methods, Systems and Techniques" that Can Help Achieve the Maximum Reduction of Pollutants**

  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 pollutant. (42 U.S.C. § 7479 (3), emphasis added)

Congress can not anticipate every new technological development that will occur, but the clear terms of the Clean Air Act specify that the EPA should a) make pollution prevention a primary goal, b) use the BACT analysis to achieve the "maximum degree of reduction of each pollutant subject to regulation," and c) determine what is achievable through "application of production processes and available methods, systems and techniques." (42 U.S.C. § 7401(c) and § 7479 (3)).

Efforts by the EPA to read ambiguity into the clear direction of the Clean Air Act are reminiscent of a teenager trying to interpret clear direction from his or her parents on not drinking and driving in a manner that does not apply in an "inconvenient"situation when it doesn't suit the teenager to comply….In this case, Congress has spoken clearly, and all of EPA's efforts to avoid complying with the clear direction of the Clean Air Act are just an embarrassing display of twisted "juvenile" logic.

B. EPA Has Erred in Assuming that it is Entitled to Chevron Deference, When It Is Not

Throughout the discussion of "redefining the source" on pages 13-21 of its Response to Public Comments, EPA claims that it is making a "permissible and reasonable" interpretation of the Clean Air Act. (e.g. on page 14 of Document # 0120).

This claim of making a "permissible and reasonable" interpretation refers to the deference given agencies under what is known as the *"Chevron Test"* as enunciated by the U.S. Supreme Court in *Chevron U.S.A. v. Natural Res. Def. Council,* 467 US 837, 81 L Ed 694, 104 S Ct 2778. (See e.g. page 16 in EPA's Response to Public Comments, Document # 0120).

The so-called *Chevron Test* is a two-part test described by the Supreme Court as follows:

> When a court reviews an agency's construction of the statute which it administers, it is confronted with two questions. First, always, is the question whether Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress. If, however, the court determines Congress has not directly addressed the precise question at issue, the court does not simply impose its own construction on the statute, as would be necessary in the absence of an administrative interpretation. Rather if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute. (*Chevron U.S.A. v Natural Res. Def. Council* 81 L Ed 2d 694 at 702-3)

As the Supreme Court stated in *Chevron*, "If the intent f Congress is clear, that is the end of the matter; for the court as well as the agency must give effect to the unambiguously expressed intent of Congress." As described above, the intent of Congress is clear. Under the Clean Air Act, the EPA should a) make pollution prevention a primary goal, b) use the BACT analysis to achieve the "maximum degree of reduction of each pollutant subject to regulation," and c) determine what is achievable through "application of production processes and available methods, systems and techniques." (42 U.S.C. § 7401(c) and § 7479 (3)).[9]

[9] It is worth noting that even if the Supreme Court somehow were to find that the terms of the Clean Air Act are not clear, the interpretation given by the agency must be "based on a permissible construction of a statute." As discussed in this Petition, the EPA's interpretation leads to an absurd result (i.e. the perpetual

Using the unambiguous direction provided by the Clean Air Act, it is clear that the EPA must conduct an analysis of a technology such as Concentrating Solar Power that can supply electricity in a manner that prevents massive amounts of pollution and achieves the "maximum degree of reduction of each pollutant that is regulated," whether it is used as a complete replacement for a proposed facility such as Desert Rock or whether it is used in the fuel(and emission)-saver configuration discussed above and in the reports attached to Petitioner Glustrom's comments.

C. EPA Has Erred in Attempting to Draw a Distinction Between the Consideration of Alternatives in Section 165 of the Clean Air Act and the Determination of Best Available Control Technology in Section 169 of the Act in a Manner that Leads to An Absurd and Impermissible Interpretation of the Statute

In its Response to Public Comments (Document # 0120), EPA attempted to draw a distinction that between the consideration of alternatives under Section 165 of the Clean Air Act (42 U.S.C. 7475 (a) (2)) and the determination of Best Available Control Technology under Section 169 of the Act (42 U.S.C. § 7479 (3)) (e.g. see pages 14 and 15 in Document # 0120). This effort leads to a false distinction and an impermissible and absurd interpretation of the Clean Air Act.

Under the EPA's interpretation, "interested persons" would have the opportunity to "submit written or oral presentations on the air quality impact of such a source, alternatives thereto, control technology requirements, and other appropriate considerations;" (42 U.S.C. § 7475 (a) (2)), but the EPA would not consider these as part of the BACT analysis. (See e.g. EPA's reasoning on pages 14 and 15 of the Response to Public Comments, Document # 0120). If EPA's reasoning were to hold that Congress

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permitting of coal plants no matter what other production processes or methods are available) and absurd results are not permissible when construing a statute.

intended interested persons to present information on alternatives, but EPA would not consider that in conducting the BACT analysis, then this would be an absurd result since the information provided by "interested persons" would have no purpose—and it is axiomatic that the Courts are not to interpret statutes in a manner that leads to an absurd result or render a statutory term superfluous. (See e.g. *Dole Food Co. v. Patrickson,* 123 S. Ct. 1655 (2003) at 1661 and cases cited therein.)

D. EPA Has Erred in Assuming that its "Policy" on Redefining the Source Takes Precedence Over the Clear Terms of the Clean Air Act—Which It Doesn't

On pages 13-21 of EPA's Response to Public Comment (Document #0120), the EPA repeatedly attempts to defend its "policy against redefining the proposed source through the BACT analysis." (e.g. see page 14 in Document #0120). EPA's "policy on not redefining the source" dates to the 1990s yet it has never been codified as part of a formal rule-making and to the best of this Petitioner's knowledge there is no direction in the Clean Air Act directing the EPA not to "redefine the source." A policy that does not appear in statute or has not been adopted as a regulation does not have the force of law.

To the contrary, the clear terms of the Clean Air Act direct EPA to a) make pollution prevention a primary goal, b) use the BACT analysis to achieve the "maximum degree of reduction of each pollutant subject to regulation," and c) determine what is achievable through "application of production processes and available methods, systems and techniques." (42 U.S.C. § 7401(c) and § 7479 (3)).

It is both inappropriate and illegal for the EPA to assert that its "policy," that is found neither in statute nor regulation, takes precedence over the clear language of the Clean Air Act. The EAB must use its discretion under 40 C.F.R. § 124.19 (a) to review

the claims of EPA and remand the decision back to the EPA with a direction to follow the clear terms of the Clean Air Act.

Concentrating Solar Power provides a way to produce electricity in a manner that prevents pollution and leads to a "maximum degree of reduction" in emissions of pollutants subject to regulation under the Clean Air Act (including carbon dioxide).[10] Our planet is in crisis (see e.g. Document EPA-R09-OAR-2007-1110-0054 in the Administrative Record), and it is long past time for the EPA to follow the clear direction of the Clean Air Act and to consider technologies that can lead to significant reductions (or elimination) of air pollutants. Making pollution prevention a primary goal is the clearly stated intention of Congress and now the EPA has the duty—and pleasure—of implementing the will of Congress. Just imagine what will happen to air pollution levels and what the sky will look like when we use the abundant energy of the sun to boil our water, produce our electricity, and ultimately to power our (electric) vehicles. Does EPA really want to continue to stay on the wrong side of the future—and the law—as we move into the Solar Era?

E. EPA Has Erred in Assuming that Coal Plants are Defined by The Intention to Burn Coal Rather than To Produce Electricity

Throughout the discussion of "redefining the source" on pages 13-21 of its Response to Public Comments, EPA claims that the "proposed facility" refers to a "specific facility proposed by the applicant which has inherent design characteristics." (e.g. see page 15 in EPA's Response to Public Comments, Document # 0120).

In the present case, EPA notes that "Sithe has applied to construct a facility that fires pulverized coal in a boiler to generate steam to drive an electric turbine." (See page

[10] See *Massachusetts v. E.P.A.* 127 S. Ct. 1438 (2007)

19, EPA Response to Public Comments, Document # 0120) As a result, the EPA concluded that if the use of a different technology would "necessitate different types of expertise to operate the [Desert Rock Energy Facility] to produce the desired product (electricity)" then this would "redefine the proposed source" and EPA is not obligated to consider the alternative technology in the BACT analysis.[11] (See pages 18-20 in Document # 0120.) Once again, EPA's logic is tortured and its conclusion defeats the purpose of the Clean Air Act. Indeed, with logic like this, we'd all still be living in caves for fear that we might need to use "different types of expertise!" Defeating the introduction of new production processes and methods and techniques that can reduce air pollution was clearly not the goal of Congress in enacting the Clean Air Act and the EAB must exercise its discretion to correct this error of law on EPA's behalf.

EPA has acknowledged that the purpose of the Desert Rock Energy Facility is to "produce the desired product (electricity)," (See page 20 in Document #0120), yet the EPA seems to have assumed that the purpose of the facility is to burn pulverized coal—and that the burning of pulverized coal that should not be redefined. Once again, this clearly defies the clear mandates of the Clean Air Act to a) make pollution prevention a primary goal, b) use the BACT analysis to achieve the "maximum degree of reduction of each pollutant subject to regulation," and c) determine what is achievable through "application of production processes and available methods, systems and techniques." (42 U.S.C. § 7401(c) and § 7479 (3)).

If there is a better, cleaner way to make electricity, whether it is through coal gasification or Concentrating Solar Power, the EPA is obligated by the clear terms of the

[11] In the case under discussion on pages 18-20 of Document # 0120, the alternative technology is coal gasification, also referred to as "IGCC" or Integrated Gasification and Combined Cycle.

Clean Air Act to ensure that an analysis of that practice is included in the BACT analysis. In the present case, the EAB needs to remand the permit to the EPA for an analysis of Concentrating Solar Power both as a potential replacement for the Desert Rock coal plant as well as in the fuel (and emission)-saver mode described above and in the documents attached to Petitioner Glustrom's comments. It isn't necessary for EPA to actually conduct the analysis—rather the EPA merely needs to assure that the applicant conducts the analysis—using a qualified contractor if necessary—just as the applicant typically does for an air pollution analysis.

Under EPA's present policy an application for a coal-fired electric generating plant would always have to be granted because the agency has a policy that says it is incapable of "redefining the facility," and the facility has been defined by the applicant as a coal burning facility. A continuation of this "policy" would lead to an absurd result since the agency would be obligated to always grant permits for coal-fired electric generating stations—no matter how much better we become as a society at producing emission-free electricity using sources such as the sun and the wind. So there we would be in 2050, granting permits to coal plants because poor, impotent EPA can't "redefine the facility" no matter how cheap or ubiquitous solar and wind technologies had become. This is obviously an absurd result—and absurd results are not allowed when construing a statute.

What is exciting and impressive, is that we already have a carbon- and emission-free technology "to generate steam to drive an electric turbine" (which is how the Sithe process is described on page 19 of EPA's Response to Public Comments, Document #

0120). Concentrating Solar Power technologies typically[12] use "sunlight and mirrors" to produce the steam that will drive the turbine that generates the electricity. As shown in the reports submitted with Petitioner Glustrom's comments (as well as in the Attachments to this Petition) these CSP technologies are clearly commercially available and can produce copious quantities of electricity while greatly reducing emissions of air pollution since they can, in whole or in part, displace the burning of coal "to generate the steam to drive an electric turbine."

With readily available technologies for producing steam without emitting all the pollution that goes with burning coal, it would be both absurd and illegal for the EAB not to require the EPA to ensure a complete analysis of Concentrating Solar Power[13] technologies to either replace the Desert Rock facility or to be used in the fuel (and emission)-saver mode discussed in the reports submitted with Petitioner Glustrom's comments.

E. EPA Has Erred in Assuming that It Does Not Have the Ability to Alter the Purpose or Equipment of a Proposed Facility

In its response to Public Comments, EPA cites back to the 1989 Hibbing decision (*Hibbing Taconite Company* 2 E.A.D. 838, 843 (1989)) and the consideration of whether the option in question would "require any fundamental change to Hibbing's product, purpose, or equipment." While it will not typically be appropriate for EPA to require a

[12] Some Concentrating Solar Power technologies use concentrating photovoltaic technologies to produce the electricity directly.

[13] EPA makes much of the "case-by-case" language in the definition of BACT at 42 U.S.C. § 7479 (3). As an example of how this language might be used, it probably doesn't make sense at this time to consider Concentrating Solar Power technologies as alternatives to coal plants proposed for Alaska-though as solar technologies follow their impressive trajectory and as Germany (which typically has the solar resource of Alaska) continues to install over 500 MW of photovoltaic panels each year, the consideration of solar technologies for electric production in Alaska is not too far down the road—especially when considering all the costs of coal supply, emissions control and the health impacts of air pollution emissions including the criteria pollutants, hazardous pollutants and carbon dioxide as well as coal combustion wastes etc.

fundamental change in an applicant's product (e.g. requiring an applicant to make steel instead of electricity).[14] It is however, rather absurd for EPA to harken back to this 1989 decision as proof of its impotence when it comes to requiring changes to purpose or equipment. Indeed, the Clean Air Act gives the EPA clear authority to a) make pollution prevention a primary goal, b) use the BACT analysis to achieve the "maximum degree of reduction of each pollutant subject to regulation," and c) determine what is achievable through "application of production processes and available methods, systems and techniques." (42 U.S.C. § 7401(c) and § 7479 (3)).

For the EPA to assume that it does not have the authority granted in 42 U.S.C. § 7479 (3) to require improvements in "production processes and available methods, systems and techniques," (including equipment and expertise) is to thwart the purpose of the Clean Air Act, for as the Supreme Court stated in *Chevron*, "If the intent of Congress is clear, that is the end of the matter; for the court as well as the agency must give effect to the unambiguously expressed intent of Congress." (*Chevron U.S.A. v Natural Res. Def. Council* 81 L Ed 2d 694 at 702-3)

Once again, the EAB must exercise its discretion and remand the permit to the EPA for an analysis of Concentrating Solar Power both as a potential replacement for the Desert Rock coal plant as well as in the fuel (and emission)-saver mode described above and in the documents attached to Petitioner Glustrom's comments.

[14] It may, however, be appropriate to consider whether the product is really needed in accordance with the provisions in 42 U.S.C. § 7475 (a) (2) to consider alternatives to the proposed project. It is possible to imagine (as in the present case) that if an applicant is proposing to make a product that no one will want or which will have pernicious impacts that are not outlawed by other statutes, then EPA would be justified in considering alternatives to the product which would be produced by the proposed facility. One could imagine such a case in the case of making a noxious chemical whose sole purpose was to use in terrorist acts or in unlawful chemical or biological warfare. In the present case, it isn't at all clear who will purchase the "black electrons" being proposed by Sithe since most southwestern states have enacted statutes or other policies directed to addressing climate change and reducing carbon emissions.

VIII. CONCLUSION

Petitioner Glustrom's comments clearly established the case that Concentrating Solar Power can produce electricity either in a stand-along application or as an "add-on" that is referred to as a "fuel (and emission)-saver" mode. The EPA committed many errors of fact, law and policy in rejecting the Petitioner Glustrom's call for a complete analysis of the use of Concentrating Solar Power during the BACT analysis for the Desert Rock Energy Facility. The EAB must exercise its discretion under 40 C.F.R. § 124. 19(a) and remand the permit to the EPA for an analysis of Concentrating Solar Power both as a potential replacement for the Desert Rock coal plant as well as in the fuel (and emission)-saver mode described in this Petition and in the documents attached to Petitioner Glustrom's comments.

Respectfully submitted this 2nd day of September, 2008 by:

_____

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List of Attachments to the Petition for Review of the Desert Rock PSD Permit (Permit AZP 04-01) :

1) "Mining for Solar Resources: U.S. Southwest Provides Vast Potential," by Mark Mehos and Richard Perez, *Imaging Notes,* Summer 2005

2) News Release: "PG&E Signs Agreement with Solel for 553 Megawatts of Solar Power," July 25, 2007, PG&E News Department

3) News Release: "PG&E and Ausra Announce 177 Megawatt Solar Thermal Power Agreement," November 5, 2007, Ausra News Release

4) News Release: "APS Announces New Solar Power Plant, Among World's Largest," February 21, 2008 Arizona Public Service News Release

5) News Release: " eSolar and Southern California Edison to Produce 245 MW of Solar Power," June 3, 2008 eSolar News Release

6) News Release: "Ausra Opens for Business in Australia," July 15, 2008 Ausra Press Release

Attachment 1

Petition for Review by Leslie Glustrom
Desert Rock Air Permit
PSD Permit AZP 04-01

Mining for Solar Resources

U.S. Southwest Provides Vast Potential

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THE BAD NEWS IN ELECTRICAL ENERGY production is that prices of conventional energy sources such as natural gas and coal continue to increase. The good news, however, is that these escalating prices are spurring a renewed interest in the large-scale generation of electricity from renewable resources.

One of the primary renewable energy resources is solar energy, which is a vast, largely untapped resource, especially in the U.S. Southwest — a region deemed by some as the "Saudi Arabia of solar energy potential." Because of this potential, Congress requested the U.S. Department of Energy to research and develop an initiative to fulfill a preliminary goal of establishing 1,000 megawatts of concentrating solar power (CSP) to supply electricity to the southwestern United States. Subsequently, the Western Governors' Association (WGA) formally adopted a resolution that called for 30,000 megawatts of clean, diversified energy, including solar energy, for the western United States by 2015.

CSP technologies concentrate sunlight to provide heat to conventional power cycles such as steam-Rankine turbines, which are typical of coal-fired power plants and are most economical for large-scale installations of hundreds of megawatts. CSP is unlike other solar technologies that are based on flat-surface collectors, such as rooftop solar-electric systems and solar water heaters. In contrast, CSP requires "direct-normal" solar radiation — the component of sunlight that emanates directly from the solar disk — and excludes diffuse, or "blue-sky" radiation.

Direct-normal solar radiation values can be derived from satellite data. An analysis of these data, combined with geographical information system (GIS) data, has quantified the solar resource potential for large-scale power generation using CSP technologies. Specifically, the National Renewable Energy Laboratory (NREL), collaborating with the State University of New York (SUNY) in Albany, used this combination as an efficient, effective means for quantifying and communicating the vast solar resource potential in the U.S. Southwest. Prime locations for future solar power plants can also be identified by factoring in information on constraints on electricity transmission and access to load centers, which are the regions where electricity is consumed.

SATELLITE-DERIVED SOLAR RESOURCE DATA

Geostationary weather satellites, such as GOES (Geostationary Operations Environmental Satellite), continuously monitor the Earth's cloud cover on a time and location basis. The ground resolution approaches one kilometer for the satellite's visible-radiation sensors. This information can be used to generate solar irradiance data that are time and site specific, leading to the generation of high-resolution maps of solar radiation. Scientists have concluded that beyond 25 kilometers of ground stations, satellite-derived hourly irradiances are the most accurate data.

Researchers from the University at Albany, New York, and the University of Geneva, Switzerland, have developed a new semi-empirical model for deriving global (i.e., direct-normal + diffuse) and direct-normal solar irradiances from the visible-radiation channel of geostationary weather satellites (Perez et. al. 2002, 2003). This model evolved from the European Heliosat-1 methodology (Cano et. al. 2003), which postulates that the Earth's radiance, as seen from space, is proportional to cloud transmissivity, and hence, to the amount of solar radiation reaching the ground.

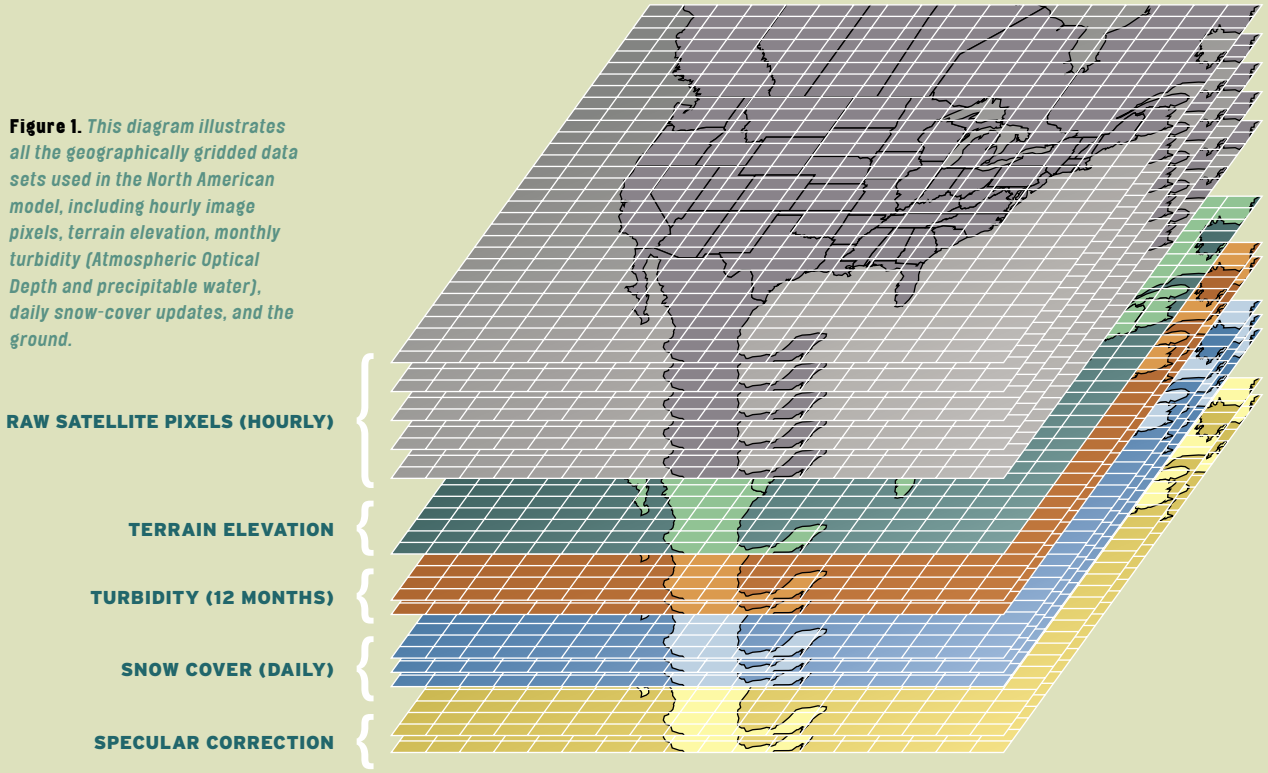


Figure 1. *This diagram illustrates all the geographically gridded data sets used in the North American model, including hourly image pixels, terrain elevation, monthly turbidity (Atmospheric Optical Depth and precipitable water), daily snow-cover updates, and the ground.*

The model consists of two main parts: (1) determining a cloud index from the satellite image, and (2) using this factor to modulate global and direct-normal clear-sky radiation envelopes. The cloud index is determined for each individualized ground location (or image pixel) being calculated from the "relative normalized pixel brightness" for a specific location. This brightness factor is the brightness of a pixel in relation to its possible maximum and minimum values at that location, where the maximum value represents cloudy conditions (or the brightness of thick cloud tops) and the minimum value represents clear conditions (or the brightness of the ground).

Because this process is individualized for each pixel, it accounts for differences in ground reflectivity over space and time and does not require an absolute knowledge of the calibration of satellite sensors. The model also accounts for site-specific characteristics for ground bi-directional (or specular) reflectance and for snow cover when present. The clear-sky radiation envelopes, which represent the upper limit of modeled irradiances, are a function of ground elevation and atmospheric transmissivity as quantified by precipitable water, ozone, and atmospheric optical depth (AOD).

The operation of the model on a geographic scale, either for preparing maps or site/time-specific time series, requires some degree of logistics and information processing. ***Figure 1*** summarizes this logistical approach and includes several layers of gridded information. The grid size of our current archive is 0.1 degree latitude-longitude, but the ultimate achievable resolution of a visible-channel GOES image can approach 0.01 degree. The gridded information layers include the following:

a. Raw satellite pixels (visible channel) — obtained via direct processing of primary GOES-EAST and GOES-WEST satellite images. Gridded raw pixel frames are archived on an hourly basis.

b. Terrain elevation.

c. Climatological AOD and water — 12 monthly layers — derived from previously gridded atmospheric optical depth data.

d. Snow cover — daily gridded frames from the National Operational Hydrologic Remote Sensing Center.

e. Specular correction factor — 216 layers (12 months by 18 hours) derived from the hourly processing of five years' worth of raw pixel data.

Table 1. *Results of satellite/GIS analysis showing area of land and associated power capacity for seven states in U.S. Southwest.*

STATE	AVAILABLE AREA (MI²)	CAPACITY (MW)*
Arizona	*19,300*	*2,467,700*
California	*6,900*	*877,200*
Colorado	*2,100*	*271,900*
Nevada	*5,600*	*715,400*
New Mexico	*15,200*	*1,940,000*
Texas	*1,200*	*148,700*
Utah	*3,600*	*456,100*
Total	**53,900**	**6,877,000**

**CSP power plants require about 5 acres of land area per megawatt of installed capacity. Solar generation can be estimated by assuming an average annual solar capacity factor of 25%-50%, depending on the degree of thermal storage used for a plant.*

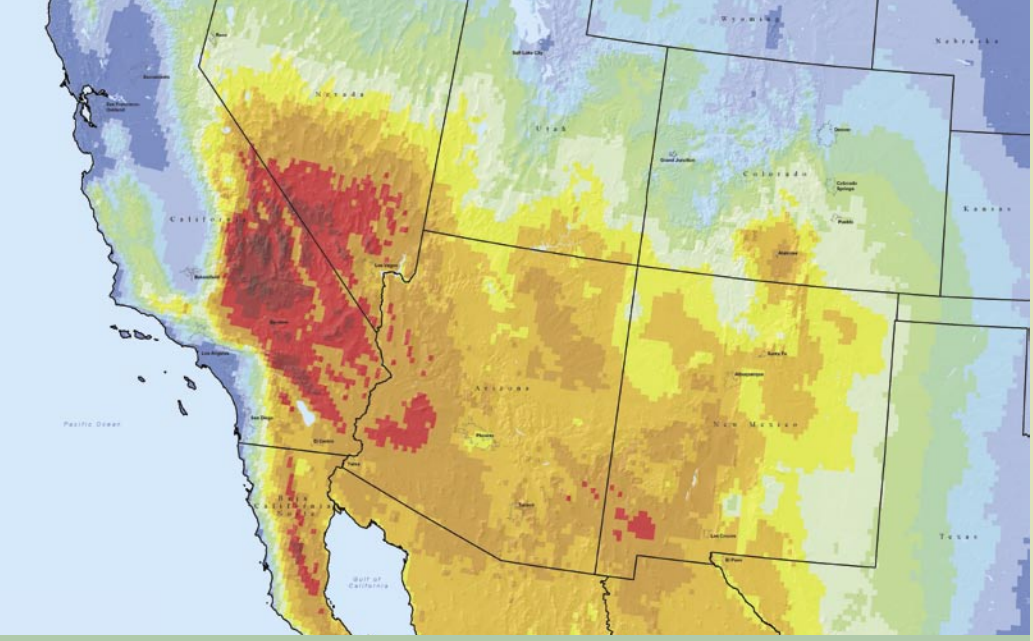


Figure 2. *Direct-normal solar radiation map is derived from 10-km resolution satellite data source. The solar resource in the southwestern United States is vast and largely untapped. Model estimates monthly average daily total radiation, averaged from hourly estimates of direct-normal irradiance over 5 years (1998-2002).*

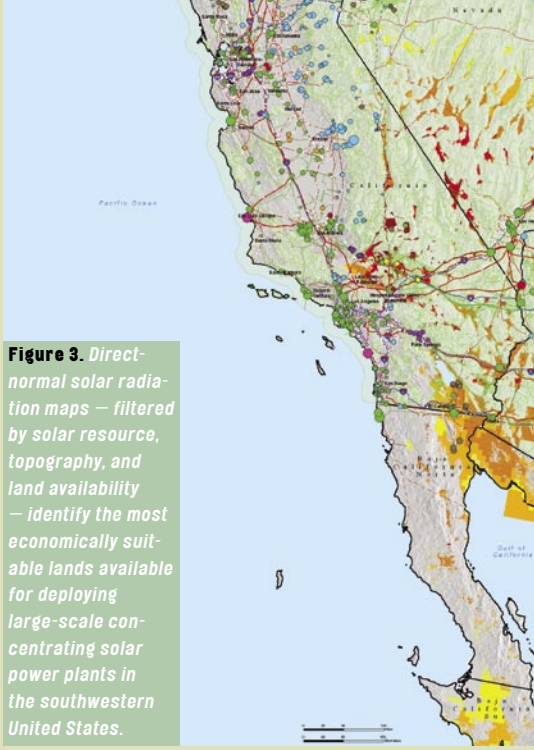


Figure 3. *Direct-normal solar radiation maps — filtered by solar resource, topography, and land availability — identify the most economically suitable lands available for deploying large-scale concentrating solar power plants in the southwestern United States.*

GIS ANALYSIS OF CSP GENERATING POTENTIAL

The direct-normal resource map shown in ***Figure 2*** was developed using the above methodology for deriving high-resolution solar resource data. However, not all the land area shown in ***Figure 2*** is suitable for large-scale CSP plants because such plants require relatively large tracts of nearly level open land with economically attractive solar resources.

To address some of the siting issues related to power plants, GIS data were applied to land type (e.g., urban, agricultural), ownership (e.g., private, state, federal), and topography. The terrain available for CSP development was conservatively estimated with a progression of filters as follows:

a. Lands with less than 6.75 kWh/m²/day of average daily direct-normal resource were eliminated to identify only those areas with the highest economic potential.

b. Lands with land types and ownership incompatible with commercial development were eliminated. These areas include national parks, national preserves, wilderness areas, wildlife refuges, water, and urban areas.

c. Lands with slope greater than 1% and with contiguous areas smaller than 10 km² were eliminated to identify lands with the greatest potential for low-cost development.

Even if we consider only the high-value resources, nearly 7 million megawatts of solar generation capacity exist in the U.S. southwest.

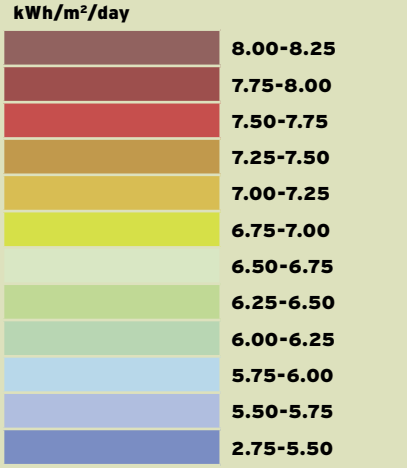
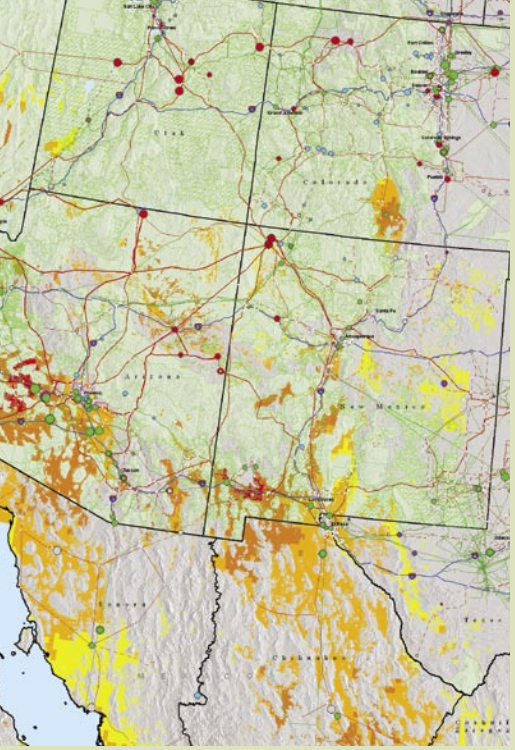


Figure 3 shows the resulting land area when all of these filters are applied, and ***Table 1*** (on page 13) provides the resulting land area and associated CSP generation capacity. This table shows that, even if we consider only the high-value resources, nearly 7 million megawatts of solar generation capacity exist in the U.S. Southwest. According to the Energy Information Agency, in 2003 about 1 million megawatts of generation capacity existed in the entire United States. Each state in the table has sufficient land illuminated by the highest levels of solar radiation such that tapping only a small portion could generate enough electricity to meet its current needs.

CONSIDERING TRANSMISSION CONSTRAINTS AND POPULATION CENTERS

The United States is divided into a number of electricity transmission control regions. The largest region, the Western Electricity Coordinating Council (WECC), covers the western third of the United States and is essentially isolated from the rest of the nation's grid. Apart from Texas, most of which lies within the Electric Reliability Council of Texas (ERCOT) control region, the states in our assessment are part of the WECC control system and have high-voltage transmission lines that interconnect the states to move power from regions with conventional and renewable resources to population centers.



A new solar power plant must fit into the transmission system. NREL, working with Platts Research and Consulting, has conducted a preliminary assessment that takes into account these additional transmission constraints. Ideal locations have been identified for many of the states described in ***Table 1*** (Mehos and Owens, 2004) and several potential sites were identified for each of the states of California, Arizona, New Mexico and Nevada. Future analysis will likely identify promising sites in Colorado, Texas and Utah.

To fully identify favorable opportunities for siting solar power plants, additional factors — land ownership, road access, and local transmission infrastructure capabilities and loadings — must be examined in greater detail and discussed with local experts and utility specialists. Preliminary discussions with these stakeholders and visits to potential sites have demonstrated the effectiveness of this methodology in identifying and communicating prospective locations for large-scale concentrating solar power plants.

Satellite imaging, combined with screening through GIS analysis, has proven to be a very cost-effective approach for quantifying the solar resource potential and identifying potential CSP generation sites in the U.S. Southwest. Analytical results indicate that the solar resource is enormous and largely untapped. «

The authors would like to acknowledge the NREL resource assessment and GIS teams for their extensive analysis in support of this work.

REFERENCES

Perez R., P. Ineichen, K. Moore, M. Kmiecik, C. Chain, R. George and F. Vignola (2002). A New Operational Satellite-to-Irradiance Model. ***Solar Energy, 73 (5), pp. 307-317.***

Perez R., P. Ineichen, M. Kmiecik, K. Moore, R. George and D. Renné (2004). Producing Satellite-Derived Irradiances in Complex Arid Terrain. ***Solar Energy, 77 (4), pp. 357-373.***

Cano, D., J.M. Monget, M. Aubuisson, H. Guillard, N. Regas and L. Wald (1986). A Method for the Determination of Global Solar Radiation from Meteorological Satellite Data. ***Solar Energy, 37, pp. 31-39.***

Mehos, M. and B. Owens (2004). An Analysis of Siting Opportunities for Concentrating Solar Power Plants in the Southwestern United States, ***World Renewable Energy Conference VIII, Denver, Colo., August 29-September 4, 2004.***

Attachment 2

Petition for Review by Leslie Glustrom
Desert Rock Air Permit
PSD Permit AZP 04-01

http://www.pge.com/about/news/mediarelations/newsreleases/q3_2007/070725a.shtml

News Release

Release Date: July 25, 2007
Contact: PG&E News Department (415) 973-5930

PG&E Signs Agreement With Solel for 553 Megawatts of Solar Power

SAN FRANCISCO, CA -- Pacific Gas and Electric Company announced today that it has entered into a landmark renewable energy agreement with Solel-MSP-1 to purchase renewable energy from the Mojave Solar Park, to be constructed in California's Mojave Desert. The project will deliver 553 megawatts of solar power, the equivalent of powering 400,000 homes, to PG&E's customers in northern and central California. The Mojave Solar Park project is now the world's largest single solar commitment.

"The solar thermal project announced today is another major milestone in realizing our goal to supply 20 percent of our customers' energy needs with clean renewable energy," said Fong Wan, vice president of Energy Procurement, PG&E. "Through the agreement with Solel, we can harness the sun's climate-friendly power to provide our customers with reliable and cost-effective energy on an unprecedented scale."

The plant utilizes Solel's patented and commercially-proven solar thermal parabolic trough technology. Over the past 20 years, the technology has powered nine operating solar power plants in the Mojave Desert and is currently generating 354 MW of annual electricity. When fully operational in 2011, the Mojave Solar Park plant will cover up to 6,000 acres, or nine square miles in the Mojave Desert. The project will rely on 1.2 million mirrors and 317 miles of vacuum tubing to capture the desert sun's heat.

"We are thrilled to bring 553 MW of clean energy to California," said Avi Brenmiller, chief executive officer of Solel Solar Systems. "Our proven solar technology means Solel can economically turn the energy of the warm California sun into clean power for the state's homes and businesses."

Solel Solar Systems of Israel, the world's largest solar thermal company, is the parent company of Solel-MSP-1 LLC. Solel's leading technology utilizes parabolic mirrors to concentrate solar energy onto its patented UVAC 2008 solar thermal receivers. The receivers contain a fluid that is heated and circulated, and the heat is released to generate steam. The steam powers a turbine to produce electricity, which can be delivered to a utility's electric grid. The electricity generated by Mojave Solar Park will use some of the

transmission infrastructure originally built for the now dormant coal-fired Mojave Generation Station to deliver the power to PG&E's customers.

The agreement filed today with the California Public Utilities Commission is part of PG&E's broader renewable energy portfolio. PG&E currently supplies 12 percent of its energy from qualifying renewable sources under California's Renewable Portfolio Standard (RPS) program. With more than 50 percent of the energy PG&E delivers to its customers coming from generating sources that emit no carbon dioxide, PG&E provides among the cleanest energy in the nation.

PG&E is aggressively adding renewable electric power resources to its supply and is on target to exceed 20 percent under contract or delivered by 2010. With the Solel-MSP-1 announcement, and other recently signed renewable agreements, PG&E now has contracts to provide18 percent of its future energy supply from renewable sources. PG&E has recently signed several other renewable energy agreements including an 85 MW wind project with PPM Energy, 7 MW of utility-scale solar projects with Cleantech America and GreenVolts, and a 25.5 MW contract with Western GeoPower, Inc. for a new geothermal energy facility in Sonoma County, California. PG&E is seeking regulatory approval of these five renewable energy contracts.

California's RPS Program requires each utility to increase its procurement of eligible renewable generating resources by one percent of load per year to achieve a twenty percent renewables goal by 2010. The RPS Program was passed by the Legislature and is managed by California's Public Utilities Commission and Energy Commission.

Solel Solar Systems also provides key technology components for new solar thermal plants currently under construction in the U.S. and in Spain. In addition, Solel and Sacyr-Vallehermoso are jointly building solar power plants in Spain and Solel recently completed the upgrading of more than 100 MW of solar facilities in California. Solel's headquarters, manufacturing plant, research and development center are in Beit Shemesh, Israel with its U.S. development office in Los Angeles, California. For more information about Solel, please visit the website at www.Solel.com.

For more information about Pacific Gas and Electric Company, please visit the company's website at www.pge.com.

Attachment 3

Petition for Review by Leslie Glustrom
Desert Rock Air Permit
PSD Permit AZP 04-01

http://ausra.com/news/releases/071105.html

PG&E and Ausra Announce 177 Megawatt Solar Thermal Power Agreement

SAN FRANCISCO, Calif.—Nov. 5, 2007—Pacific Gas and Electric Company today announced that it has entered into a 177 megawatt solar thermal power purchasing agreement with Ausra Inc. The project, to be located in central California, is being developed by Ausra.

"Today's agreement between PG&E and Ausra highlights how clean energy will create jobs in California while delivering a reliable source of renewable energy," said Governor Arnold Schwarzenegger. "I'm pleased to see California companies rising to the challenge of AB 32, California's historic initiative to reduce carbon emissions and combat climate change. Clearly, California continues to lead the nation in clean energy research, development and generation."

The plant, to be located in San Luis Obispo County, Calif., is expected to begin generating power in 2010. Ausra has filed its Application for Certification for this plant with the California Energy Commission, which must grant approval before construction begins.

"Solar thermal technology provides our customers with a reliable source of clean renewable energy that is ideally suited to meet peak energy loads," said Fong Wan, vice president of energy procurement, PG&E. "By partnering with Ausra, we are taking another significant step in providing our customers with some of the cleanest energy in the nation."

Ausra projects that the power plant will create over 350 skilled jobs on-site during construction, and an additional 100 permanent jobs in the area. The plant will burn no fuel, use minimal water, and have no air or water emissions. At 177 megawatts of capacity, the project will use only one square mile (640 acres) of land due to the exceptional area efficiency of Ausra's collector technology.

"This 177-megawatt plant is the first manifestation of Ausra and PG&E's shared vision of competitively priced, large-scale solar electric power," said Glen Davis, executive vice president and chief commercial officer of Ausra. "We're excited to be partnering with PG&E to deliver clean power at hours of peak demand."

Ausra's new Compact Linear Fresnel Reflector (CLFR) solar technology utilizes the heat from the sun's rays to create steam. Solar collectors boil water at high temperatures to power steam turbine generators, in much the same way as traditional fossil-fuel power plants, but without use of fuels or emissions.

At the Clinton Global Initiative annual meeting in September, PG&E and Ausra announced separate commitments to build and purchase 1,000 MW of solar thermal power over the next five years.

The agreement filed today with the California Public Utilities Commission is the latest example of PG&E's commitment to solar thermal technology. PG&E currently has 553 MW of solar thermal power under contract and is seeking regulatory approval of these purchasing agreements.

PG&E's solar thermal commitments are part of the company's broader renewable energy portfolio. PG&E currently supplies 12 percent of its energy from qualifying renewable sources under California's Renewable Portfolio Standard (RPS) program. PG&E continues to aggressively add renewable electric power resources to its supply and is on target to exceed 20 percent under contract or delivered by 2010. On average, more than 50 percent of the energy PG&E delivers to its customers comes from generating sources that emit no carbon dioxide, providing among the cleanest energy in the nation.

California's RPS Program requires each utility to increase its procurement of eligible renewable generating resources by one percent of load per year to achieve a 20 percent renewables goal by 2010. The RPS Program was passed by the Legislature and is managed by California's Public Utilities Commission and Energy Commission.

About Ausra
Ausra Inc. develops and deploys utility-scale solar thermal power technology to serve global electricity needs in a dependable, market-competitive, environmentally responsible manner. Located in Palo Alto, Calif., Ausra is a privately held company funded by Khosla Ventures and Kleiner, Perkins, Caufield & Byers. To learn more about Ausra and solar thermal electric power, visit www.ausra.com.

For more information about Pacific Gas and Electric Company, please visit the company's website at www.pge.com.

Attachment 4

Petition for Review by Leslie Glustrom
Desert Rock Air Permit
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http://www.aps.com/main/news/releases/release_440.html

APS Announces New Solar Power Plant, Among World's Largest

February 21, 2008

Phoenix, AZ - Arizona Public Service Co. (APS) today announced plans for one of the world's largest solar facilities – a 280-megawatt (MW) concentrating solar power (CSP) plant to be built 70 miles southwest of Phoenix, near Gila Bend, Ariz.

The Solana Generating Station will produce enough energy to serve 70,000 APS customers when operating at full capacity. The plant will be built by Abengoa Solar Inc., and is scheduled to provide renewable energy beginning in 2011. Spanish for "sunny place," Solana will not emit greenhouse gases and will provide APS with more solar electricity per customer than any utility in the U.S. The facility also would be the largest solar power plant in the world if in operation today.

"APS is committed to making Arizona the solar capital of the world and bringing affordable renewable energy to all our customers," said APS President Don Brandt. "The Arizona Corporation Commission has challenged Arizona utilities to be leaders in renewable energy, and we are responding aggressively."

Arizona Gov. Janet Napolitano praised APS today at an event announcing plans for the project. "This is a major milestone for Arizona in our efforts to increase the amount of renewable energy available in the United States," the Governor said. "Arizona is leading the way in protecting our world for future generations through combating climate change, fighting for air quality and much more. This plant will offer Arizonans a clean and efficient source of energy."

Brandt said APS chose Abengoa Solar because of its extensive experience constructing, owning and operating solar power plants. Abengoa Solar deploys CSP technologies across the world, including large-scale facilities under construction or development in the U.S., Spain, Algeria and Morocco.

Solana will employ proven, state-of-the-art technology that can both produce and store energy during the day, and then provide that energy for use by APS customers across periods of peak demand. APS will purchase 100 percent of the plant's energy output, pending approval from the Arizona Corporation Commission. The value of the produced energy will be about $4 billion over 30 years.

Unlike traditional solar-photovoltaic plants, which use direct sunlight to produce electricity, concentrating solar power uses the sun's heat. Parabolic mirrors track the sun and focus solar energy on a heat transfer fluid. Once heated, the liquid converts water into steam, which turns the plant's turbines to create electricity. This technology allows the plant to produce more energy for customers than a traditional solar power plant which only produces electricity when exposed to direct sunlight.

Solana Generating Station will create about 1,500 construction jobs and, when completed, will employ about 85 highly-skilled technicians. APS and Abengoa Solar estimate the project will bring more than $1 billion in economic benefits to the state of Arizona.

"We are pleased to locate this facility in Arizona and to work with APS. Our partnership is based on a bold commitment to power the future with clean, affordable solar energy," said Abengoa Solar CEO

Santiago Seage. “In addition to possessing 300 sunny days a year, Arizona provides a business climate that encourages collaboration and the types of technology and innovation required to build a project of this scale.”

Within the last 90 days, APS has announced two major solar projects. The Company recently announced that it is has joined a multi-state consortium of southwestern utilities that have an interest in contracting for a separate 250-MW solar power plant. Should that project proceed to completion, APS customers will receive a portion of the energy from the joint development project, as well as all of the energy from the Solana facility.

The new solar plants, along with other renewable energy facilities, provide APS with an increasingly diverse array of energy resources. In total, these will help APS meet the Renewable Energy Standard set by the ACC in November 2006. One of the most progressive in the nation, the Standard calls for Arizona’s regulated utilities to obtain at least 15 percent of their total electricity sold from renewable energy sources by 2025.

APS currently provides its customers with 131.5 MW of renewable energy, enough to power more than 37,000 homes. With the addition of Solana, APS will provide enough renewable energy to serve 100,000 homes. As APS’ largest source of renewable energy, Solana will more than triple the Company’s renewable energy resources. APS’ green energy portfolio includes wind, geothermal and solar energy.

Abengoa Solar develops and applies technologies to generate clean electricity from the sun. Abengoa Solar is part of Abengoa, a technology company that applies innovative solutions to ensure sustainability. It is quoted in Spain, and with over 20,000 employees, is present in more than seventy countries through its five business units: Solar, Bioenergy, Environmental Services, Information Technologies and Industrial Engineering and Construction.

APS, Arizona’s largest and longest-serving electricity utility, serves about 1.1 million customers in 11 of the state’s 15 counties. With headquarters in Phoenix, APS is the largest subsidiary of Pinnacle West Capital Corp. (NYSE: PNW).

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Attachment 5

Petition for Review by Leslie Glustrom
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http://www.esolar.com/news/press/2008_06_03

eSolar and Southern California Edison to Produce 245 MW of Solar Power

Series of Pre-Fab Solar Plants To Provide Clean Electricity to Communities in Southern California

Pasadena, Calif. – June 3, 2008 – Today, eSolar™, a producer of scalable solar thermal power plants, announced that it has signed a power purchase agreement with Southern California Edison (SCE) to build a total of 245 megawatts (MW) of concentrating solar plants in the Antelope Valley region of Southern California. The series of fully operational plants will begin production in 2011.

"SCE is committed to providing renewable energy generation at competitive costs – to this end, we review all of the possible sources to meet the growing demand for clean power," said Stuart Hemphill, SCE vice president, Renewable and Alternative Power. "eSolar's proposed solar projects promise to be modular, scalable, and easily and rapidly deployed. SCE is excited about the prospects of eSolar's unique solar technology and the potential benefits it can bring for our customers."

On the heels of its $130 million funding round in April led by Idealab, Google.org, and Oak Investment Partners, eSolar is aggressively pursuing a novel approach to large or utility-scale solar projects. Leveraging a proprietary combination of optics and software in a pre-fabricated form factor, eSolar achieves economies of scale with a modular design that focuses on the key business obstacles that have characterized large solar installations – price, scalability, speed of deployment and grid impact.

"eSolar's proprietary approach to solar thermal generation can be designed to meet the needs of utilities large and small – a smarter-sized footprint and variable configurations ensure power can be delivered where it is needed most," said Asif Ansari, CEO of eSolar. "We are proud to be supporting SCE in its commitment to delivering clean, reliable electricity to its customers."

About eSolar
eSolar is an Idealab company founded by CEO Asif Ansari in 2007 to develop, construct and deploy modular, scalable solar thermal power plants. eSolar's approach marries a low-impact, pre-fabricated form factor with advanced optics and computer software engineering to meet the demands of utilities of any size for clean, renewable and cost-competitive solar energy. By focusing on the key business obstacles that have characterized large solar installations – price, scalability, speed of deployment and grid impact – eSolar has developed a proprietary solution to make a dramatic reduction in the

cost of solar thermal technology. eSolar is based in Pasadena, California and has 76 employees. For more information please visit www.esolar.com.

About Southern California Edison
An Edison International (NYSE:EIX) company, Southern California Edison is the largest electric utility in California, serving a population of more than 13 million via 4.8 million customer accounts in a 50,000-square-mile service area within Central, Coastal and Southern California.

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Attachment 6

Petition for Review by Leslie Glustrom
Desert Rock Air Permit
PSD Permit AZP 04-01

EMBARGO: 15 JULY 2008
PRESS RELEASE

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AUSRA OPENS FOR BUSINESS IN AUSTRALIA

Utility-scale solar thermal technology ready to serve Australia's energy needs

Sydney, Australia – July 15, 2008 – Ausra, Inc., the designer, manufacturer and developer of solar thermal technology for utility-scale solar power and steam applications, today officially announced the opening of Ausra Pty Limited in Australia. The company, headquartered in Palo Alto, California, will build upon Ausra's first-generation technology developed in New South Wales and deploy it on a large-scale basis, providing electricity and steam for utilities and industrial customers.

"Australian innovation has created several clean technologies, including Ausra's own solar thermal technology. Now it is Australia's time to lead the world, deploying zero carbon power generation and securing its energy needs now and into the future," said Ausra President and CEO Robert E. Fishman.

Ausra's pioneering solar thermal technology was developed and first deployed in Australia by the company's founder Dr. David Mills. Leading US venture capital firms financed rapid expansion of the company in the United States, where it has announced a major power purchase agreement with California's Pacific Gas and Electric Company and recently opened a solar thermal power manufacturing facility – the first of its kind in the United States.

During today's announcement of the company's expansion and readiness to serve the Australian market, Fishman also announced the appointment of utility power industry leader Bob Matthews president of the company's Australian operations.

"Bob Matthews has many years of experience managing and working in large-scale power facilities in Australia, and he has a crucial understanding of what power companies, government and industry need to manage power generation."

Matthews said he is already inundated with inquires across Australia for business opportunities to build and provide power on a large scale.

-- more --

"Ausra is now growing beyond its original Australian pilot project and is open for business to supply clean, cost-effective solar power and process steam for customers and communities at the largest scale. We are excited to be bringing Australian-originated technology to power utility-scale facilities back home," said Matthews.

"One of the real benefits of the Ausra solution is that Ausra solar farms can be retro-fitted or "bolted" onto existing coal-fired power stations, or operate on a hybrid basis alongside fossil fuel generation – reducing carbon emissions," added Matthews.

Ausra's unique solar collector design is exceptionally space-efficient. The company's 177-megawatt facility under development in the USA will power 120,000 homes and occupy only one square mile (640 acres) of land.

Ausra currently has solar steam production fields and power plants in construction and development in Australia and the USA, and has just this month opened the reflector production line of its first North American manufacturing and distribution center in Las Vegas. Ausra's manufacturing facility will produce solar equipment for power plants throughout the American Southwest and for Ausra's process steam customers, who are adopting solar thermal power to lower their fuel costs and emissions in their operations, including food processing, enhanced oil recovery and refining, and pulp and paper manufacturing.

The 130,000-square-foot, highly automated manufacturing and distribution center will supply the reflectors, absorber tubes, and other key components of the company's solar thermal power plants to the rapidly growing Southwestern solar power industry. In Southern Nevada alone, developers are planning more than $50 billion of future solar power plants.

U.S. Senate Majority Leader Harry Reid (D-NV) and Ausra President and CEO Robert Fishman officially opened the new solar manufacturing plant. They were joined by Solar Energy Industries Association President Rhone Resch, Nevada Development Authority President and CEO Somer Hollingworth, and southern Nevada government and business leaders in opening the factory.

"Nevada is poised to be a leader in the clean energy revolution," said Reid.

Earlier this month, Australian Premiers John Brumby and Anna Bligh, and New South Wales Minister for Climate Change and the Environment Verity Firth visited the Ausra factory for a pre-opening tour and briefing on Ausra's plans and capabilities in Australia. [images available]

Ausra uses Compact Linear Fresnel Reflector technology to capture the sun's power to produce electric and thermal energy without pollution. Mirrors focus sunlight to heat water pipes, and the resulting steam drives a turbine to generate electricity or steam for industrial processing.

About Ausra
Ausra, Inc. and Ausra Pty Limited develop and deploy utility-scale solar thermal steam and power technology to serve global electricity needs in a dependable, market-competitive and environmentally responsible manner. Headquartered in Palo Alto, Calif., Ausra is a privately held company funded by Khosla Ventures and Kleiner, Perkins, Caufield & Byers. To learn more about Ausra and solar thermal power in general, visit www.ausra.com.

# # #