

Thank you for your comment, Marshall Magruder.

The comment tracking number that has been assigned to your comment is SolarS50671.

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Solar Energy Development PEIS
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Attachment: 080715-BLM Solar PEIS.doc

Comment Submitted:

This is my "scoping comments" letter, with Attachment (1) within the letter. Attachments (2) and (3) are submitted separately. All three compose this submission. [See Attachment.](#)

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15 July 2008

Solar Energy Programmatic EIS Scoping
Argonne National Laboratory
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Subject: DOE/BLM Solar Energy Projects PEIS Scoping Comments by Marshall Magruder

References:

- (a) *Federal Register*, Vol. 73, No. 104, Department of Energy/Department of Interior, Bureau of Land Management, "Notice of Intent to Prepare a Programmatic Environmental Impact Statement to Evaluate Solar Energy Development, Develop and Implement Agency-Specific Programs, Conduct Public Scoping Meetings, Amend Relevant Agency Land Use Plans, and Provide Notice of Proposed Planning Criteria, Pp. 30908-30912 of 29 May 2008.
- (b) Solar Energy Development Programmatic EIS Information Center, homepage, <http://solareis.anl.gov/index.cfm> (last accessed 14 July 2008)

Attachments:

- (1) Guiding Principles for ACC Staff Determination of Electrical System Adequacy and Reliability, Arizona Corporation Commission Utility Division, 8 February 2000. (excerpt)
- (2) "The Last Straw: Water Use by Power Plants in the Arid West," by The Hewlett Foundation and The Energy Foundation, Clean Air Task Force, April 2003.
- (3) FERC Order 689, Final Rule, "Regulations for Filing Applications, for Permits to Site Interstate Electric Transmission Facilities." 16 November 2007.

Summary.

These comments are intended to ensure the process of siting various solar and other renewable energy projects on Bureau of Land Management (BLM) is accomplished in a manner to benefit the project developer, the landowner's stewardship responsibilities, and the anticipated customers.

- a. All energy generation projects, including solar, require a way to deliver that energy to customers, therefore, no projects should be considered that do not account for the delivery aspect necessary for that project.
- b. It is anticipated that coordination with other Energy Policy Act of 2005 (EPAAct) have been coordinated with siting under section 221 in this PEIS, namely, the siting projects under sections 368 and 1221(a).
- c. Since the end users (customers) most likely are not on BLM lands, then direct involvement of the state, tribal, county and local government entities as "cooperating" partners in the site-specific EIS should be mandatory so that all decision makers can use the same objective environmental analyses in making their decisions.
- d. As a part of the site-specific EIS, certain planned cumulative environment factors should be very important for decision makers, which needs to include all six of the known green house gases (GHG), water consumptions, and resultant changes in air and water quality impacted by the project, even when hundreds of miles away.

- e. In the western US, water consumption is of such importance, that mandatory use of “dry” cooling should be the normal for any projects that consume more than minimal water quantities.

Issue 1 – Siting Must Include all the Delivery Infrastructure.

Electricity generation systems without a integrated delivery infrastructure to customers is useless. Electricity deliveries by transmission and/or distribution lines directly impact the generation system and vice versa. Neither can be developed without major considerations, as there are cost, electrical, environmental, and other factors essential for a total system.

Electricity delivery by transmission and/or distribution line costs vary based on location, cost of rights of way, and energy losses (also known as transmission loss) between the generation site and customers. Energy losses are wasted and lost electricity. The continually loss of efficiency due to longer lines or by inefficient infrastructure design will continue for the life of the project. Energy loss should be an important decision factor when siting a solar power plant. It must be provided to the decision maker during the EIS process.

Electrical reliability is another critical decision factor involved in siting any power plant. At least two ways to deliver the full generation capabilities are essential to ensure delivery to customers. If only one set of wires connects a generation plant, and that set fails, then the plant fails. As a minimum, redundant delivery means must always be provided and known during the EIS process. Therefore, siting is for the system, both the plant AND the completed delivery infrastructure.

Environmental factors are always considered when siting a power plant; however, those significant environmental factors associated with delivery will not be considered unless the entire delivery system is included in the decision making process.

Other “system” factors include visual impacts, water and air impacts, social economic and cultural resource impacts, land impact and flora and fauna impacts. Without all factors being considered at one time, in the site-specific EIS, then there is a high probability that bad decisions will result, the process will be litigated, and/or the siting process repeated until the optimal decision results.

The above comments are based on a problem we had in Arizona several years ago. At one time some 19 power plants were being proposed; however, most did not include delivery systems. Some were built without any “wires” leading to customers because the developer “assumed” that once there was a power plant, which transmission would have to be developed to connect that new plant. This did not happen but was threatened so some plants were never build The Arizona Corporation Commission (ACC) Utility Division, the state utility regulator) established firm requirements that are quoted in Attachment (1). Since these “guiding principles” were issued, all siting applications to the Arizona Power Plant and Line Siting Committee have met these principles.

Recommendations:

1. That an integrated solar plant and customer delivery infrastructures be required for all site-specific EIS and permit request that use this PEIS.
2. That any “power plant-only” applications not be accepted without meeting similar requirements, similar to Attachment (1), for redundant, full-capacity connections.

Issue 2 – Avoid Right of Way Conflicts between EPAAct Sections 211, 368, and 1221(a).

Since August 8, 2005 and the implementation of the Energy Policy Act of 2005 (EPAAct), there has been a serious movement to coordinate and facilitate rights of way or siting permit

(land use) applications on private and federal lands, mostly in the western United States. Many different federal and some state, governmental agencies have worked together to designate multi-commodity utility corridors in western states on federal lands (Sec. 368) and national interest electrical transmission corridors (NIETCs, also called National Corridors) (Sec. 1221(a)). Section 211, for which this PEIS is being developed, involves only the BLM and only utility-scale (large) solar plants. The other two have already issued either siting guidelines (see FERC Order 689, Attachment (3)), draft National Corridors or draft PEIS corridors for public review. Since BLM is directly involved with the Sec. 368 process and can observe the Sec. 1221(a) process, using lessons learned from these two “siting” actions should benefit BLM’s efforts for this PEIS.

FERC has tailored its long-time and experiences in siting pipelines and hydroelectric projects to develop both a process and application requirements for its role in siting transmission lines (NIETCs). This process is thorough, understood by the industry, and will be applicable throughout the United States.

Recommendations:

1. That this PEIS closely coordinate its efforts with the ongoing EPCA 368 and 1221(a) PEIS and siting activities so that “disconnects” are avoided in policies, physical rights of way, and completeness required by applicants in the site-specific EIS submissions.
2. That FERC Order No. 689 is considered as a “first draft” of the resultant application to be used for siting solar plants and associated delivery (transmission and distribution lines) systems.

Issue 3 – Cooperating Agencies must participate in Site-Specific EIS.

The national policies associated with the National Environmental Protection Act (NEPA) are designed to provide all decision makers with an objective assessment of several alternatives so decision makers can use the same objective reference to base their resultant decisions. This is of critical importance for any site-specific EISs. Federal decision makers, in this case, BLM, needs to work diligently with the states involved, including tribal, county and municipal governments and local organizations impacted by the project. All need to participate during the scoping and drafting of the EIS. All need to participate in order to understand how assessments were derived. In Arizona, we have the Arizona Corporation Commission (ACC, utility commission), Arizona Power Plant and Transmission Line Siting Committee, and Departments of Environmental Quality (ADEQ), Water Resources (ADWR), Transportation (ADOT), Fish and Game (AFG), State Historic Preservation Office (SHPO), plus Tribal equivalents, Counties, Cities and Towns along with historical societies, environmental groups, hiking clubs, and many others. All of these are candidates to be “cooperating agencies”. This PEIS should be inclusive, by listing state, tribal, and large county anticipated agencies that should cooperate during development of general site-specific EIS and re-affirm that when issuing a Notice of Intent.

It only appears that three California agencies are directly participating at present in this PEIS. Much wider participation is essential as local inputs from those most knowledgeable are always relevant. When just the federal government is involved, local credibility is lost, because “how can those helping us in Washington have any idea of our concerns?” Unless there are diverse, respected, and realistic local participants, most EIS results will be ignored at levels below the federal government. This is contrary to NEPA, contrary to good business, regulatory process, and leads to more misunderstanding than understanding.

Politicians make many premature decisions based on biased, non-objective inputs that have not been reviewed by experts. Inputs, such as this one during public scoping hearings, lead to coverage of diverse and relevant issues in the resultant PEIS/EIS/EA.

Recommendations:

1. That the BLM require an extensive series of pre site-specific EIS development so that relevant contacts with state, tribal, county, municipal and non-governmental local organizations in order to ensure wide-scale participation. Further, the BLM needs to caution local policy makers that premature decisions may prove to be faulty unless they participate in the EIS process before declaring their position.
2. That the PEIS include a preliminary listing of recommended and relevant state and large county organizations that should be “cooperating agencies” during site-specific EIS development.

Issue 4 – Environmental Impact Reporting in the Site-Specific EIS.

When a decision maker reviews any EIS, important statistics should be present for each alternative. There are six green house gasses. All electricity generation plants will or may impact each of these six gasses.¹ How each impacts is a critical element in making the decision as to which alternative is the best and may also directly be reflected in various mitigation measures required by the Bureau. These assessments must be included in the site-specific EIS and compared to other alternatives, including various changes in the proposed action that impact each of these factors.

In the western states for which this PEIS is being developed, water is always a significant issue. Each type of power plant may withdraw water for cooling and processing and consume water during cooling. The process of condensing steam for solar concentrated plants (CSP) may use almost as much water per kilowatt as a coal-fired plant. Attachment (2) points out these differences (use “steam” values for CSP withdrawl and consumption). For steam-generated electricity, cooling the steam (water vapor) to condensate (water) uses one of three cooling plant systems: “once-through” (also called “wet cooling”), re-circulating (two or more passes), or “dry-cooling.” In Table 1 below, from Attachment (2) Figure 9, we see the differences between these three types of cooling:

Table 1 – Cooling Water Withdrawl and Consumption in gallons/kWh.

Plant & Cooling System	Withdrawl (cooling & process)	Consumption (cooling)
FOSSIL		
Steam		
Once-through	20-50	~0.3
Re-circulating	0.3-0.8	0.24-0.64
Dry-cooling	~0.04	0
Combined Cycle		
Natural gas, once-through	7.5-20.0	~0.1
Natural gas, re-circulating	~0.23	~0.18
Natural gas, dry cooling	~0.04	0
Coal, re-circulating	~0.38 ²	~0.2
RENEWABLES		
Wind		
	~0.001	0
Solar – photovoltaic		
	~0.004	0
Solar – parabolic through		
	~0.83	~0.76

¹ Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Sulfur Hexafluoride (SF₆), Hydrofluorocarbons (HFC), and Perfluorocarbons (PFC)

² Includes gasification process water.

Table 1 – Cooling Water Withdrawl and Consumption in gallons/kWh.

Plant & Cooling System	Withdrawl (cooling & process)	Consumption (cooling)
Geothermal	³	0-1.0
Biomass		
Steam, Once-through	23-55	~0.35
Steam, Re-circulating	0.35-0.9	0.35-0.9
Steam, Dry-cooling	~0.05	0

The water used for electricity production is “treated” with various chemicals, some extremely toxic. For example, Treutlen (TBT) is banned in ship-bottoms but is fine to be used in cooling towers. Many evaporation ponds leak chemicals, pipes leach copper and many other minerals, as described in Enclosure (2).

For renewable energy power plants, the total environmental footprint should be reported, in terms of the equivalent electrical sources if the renewable energy plant was not installed minus the environmental footprint required to manufacture and operate the proposed new plant. Whenever this change is insignificant, a decision maker might want to seriously consider if the benefit is worth the cost.

Recommendations:

1. That impact of all green house gasses and other air pollutants be considered significant data in site-specific EIS development.
2. That direct and cumulative indirect water withdrawl and consumption be considered significant in site-specific EIS development.
3. That water pollutants from chemical treatments, pipe leaching, evaporation pond leakage and any potential contamination be considered significant in site-specific EIS development.

Issue 5 – Dry Cooling should be mandated in these six states.

As discussed in Issue 4 above, water withdrawl and consumption for “dry cooling” is significantly less than using “wet” cooling systems. The cost is higher for “dry” compared to “wet” and this will be the primary argument against using “dry” cooling. Unfortunately, the total cumulative impacts should be decisive, and to generalize, that “dry” cooling is always the preferred option, and unless other compelling reasons exist, then “dry” cooling should be mandated for all power plants, when such cooling is required, in these six western states.

Recommendation:

1. That “dry” cooling, when cooling is required to condense steam, is not only the preferred cooling process, but is mandated unless compelling reasons can be shown otherwise.
2. That compelling reasons must be environmentally and not economically significant.

Sincerely,

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³ If plants require cooling water, it is typically obtained from geothermal heating fluid.

Attachment (1)⁴

Appendix A: Guiding Principles for ACC Staff Determination of Electric System Adequacy and Reliability

This document serves the dual purpose of providing the guiding principles for ACC Staff determination of electric system adequacy and reliability in the two areas of transmission and generation.

Transmission

A.R.S §40-360.02E obligates the Arizona Corporation Commission (ACC) to biennially make a determination of the adequacy and reliability of existing and planned transmission facilities in the state of Arizona. Current state statutes and ACC rules do not establish the basis upon which such a determination is to be made. Therefore, ACC Staff will use the following guiding principles to make the required adequacy and reliability determination until otherwise directed by state statutes or ACC rules.

1. Transmission facilities will be evaluated using Western Systems Coordinating Council (WECC), or its successor's, Reliability Criteria for System Planning and Minimum Operating Reliability Criteria.
2. Transmission planning and operating practices traditionally utilized by Arizona electric utilities will apply when more restrictive than WECC criteria.
3. Compliance with A.C.C. R14-2-1609.B⁸⁰ will be established by analysis of power flow and transient stability simulation of single contingency outages (N-1) of generating units, EHV and local transmission lines of greater than 100 kV nominal system voltage, and associated transformers. Reliance on remedial action such as generator unit tripping or load shedding for single contingency outages will not be considered an acceptable means of compliance with this rule.

Generation

Pursuant to A.R.S. §40-360.07, the ACC must balance, in the broad public interest, the need for adequate, economical, and reliable supply of electric power with the desire to minimize the effect on the environment and ecology of the state when considering the siting of a power plant or transmission line. The laws of physics dictate that generation and transmission facilities are inextricably linked when considering the reliability of service to consumers. Therefore, it is appropriate that both components must be considered when siting a power plant. ACC Staff will use the following guiding principles to make the required adequacy and reliability determination for siting generation until otherwise directed by state statutes or ACC rules.

The best utility practices historically exhibited in the evolution of Arizona's generation and transmission facilities should be continued in order to promote development of a robust energy market. Non-

⁸⁰ R14-2-1609.B refers to the obligation of Utility Distribution Companies to assure that adequate transmission import capability and distribution system capacity are available to meet the load requirements of all distribution customers within their service area.

⁴ From the ACC "Third Biennial Transmission Assessment, 2004-2013, Appendix A, Pp. 127-128.

discriminatory access to transmission and fair and equitable business practices must also be maintained and the service reliability to which the state is accustomed must not be compromised. Therefore, Staff support of power plant Certificate of Environmental Compatibility applications will be conditioned as set forth below.

ACC Staff support of power plant Certificate of Environmental Compatibility applications will be contingent upon the applicant providing, either in the application or at the hearing, evidence of items 1-3 below:

1. Two or more transmission lines must emanate from each power plant switchyard and interconnect with the existing transmission system. This plant interconnection must satisfy the single contingency outage criteria (N-1) without reliance on remedial action such as generator unit tripping or load shedding.
2. A power plant applicant must provide technical study evidence that sufficient transmission capacity exists to accommodate the plant and that it will not compromise the reliable operation of the interconnected transmission system.
3. All plants located inside a transmission import limited zone “must offer” all Electric Service Providers and Affected Utilities serving load in the constrained load zone, or their designated Scheduling Coordinators, sufficient energy to meet load requirements in excess of the transmission import limit.

ACC Staff support of power plant Certificate of Environmental Compatibility applications will further be contingent upon the Certificate of Environmental Compatibility being conditioned as provided in items 4-6 below:

4. The Certificate of Environmental Compatibility is conditioned upon the plant applicant submitting to the ACC an interconnection agreement with the transmission provider with whom they are interconnecting.
5. The Certificate of Environmental Compatibility is conditioned upon the plant applicant becoming a member of WECC, or its successor, and filing a copy of its WECC Reliability Criteria Agreement or Reliability Management System (“RMS”) Generator Agreement with the ACC.
6. The Certificate of Environmental Compatibility is conditioned upon the plant applicant becoming a member of the Southwest Reserve Sharing Group, or its successor, thereby making its units available for reserve sharing purposes.

Approved by:

(Original Signed by Deborah R. Scott)

Deborah R. Scott
Director
Utilities Division

Attachment (2)

“The Last Straw: Water Use by Power Plants in the Arid West,”

**by
The Hewlett Foundation
and
The Energy Foundation, Clean Air Task Force
April 2003.**