WELCOME

Solar Energy Development

Programmatic Environmental Impact Statement
Programmatic EIS on Solar Energy Development Funded by DOE or Occurring on BLM-administered Lands in Six Western States

Public Scoping Meetings
June – July 2008
Overview of DOE’s Solar Energy Program

• **DOE goals**
  – Add energy supply from diverse sources … making greater use of renewable sources.
  – Improve the quality of the environment by reducing greenhouse gas emissions and environmental impacts to land, water, and air from energy production and use.

• **Solar Program Goal**
  – Increase the use of solar power (it’s renewable and emits no greenhouse gases)

• **Solar Program Resources in 2008**
  – Research and development - $152M
  – Market transformation - 18M

- Photovoltaics
- Concentrating Solar Power
- Distributed Generation, on-site or near point of use
- Centralized Generation, large-scale or utilities scale
Why is DOE Co-leading Preparation of this Programmatic EIS with BLM?

- A utility scale solar project, which generates enough power for tens of thousands of homes:
  - Requires intense solar radiation and the 6 states included in the Programmatic EIS (AZ, CA, CO, NV, NM, UT) have the best solar resource in the U.S.
  - Requires at least 5 acres for each MW – a 250 MW project needs 1,250 acres or 2 square miles.
- BLM manages 119 million acres of Federal land in the 6 states.

150 MW at Kramer Junction, CA
What Results DOE Expects from the Programmatic EIS?

• Identification of land that is appropriate for solar deployment (technically and environmentally)
• Establishment of policy that would apply to solar energy projects supported by DOE:
  – Best practices for deploying solar projects,
  – Methods to minimize impact to natural and cultural resources.
• Tiering of future site-specific assessments to the PEIS.
• More accurate model for predicting the potential for solar energy development to provide power, create jobs, and mitigate climate change.
BLM’s Role and Interests in Solar Energy Development Program

- BLM manages approximately 258 million acres of Federal land across the U.S.
BLM’s Role and Interests in Solar Energy Development Program, cont.

- In the 6-state study area, BLM manages 119 million acres of Federal land.
Why is BLM Involved in Preparation of this Programmatic EIS?

• Executive Order 13212, *Actions to Expedite Energy-Related Projects*, requires Federal agencies to expedite review of energy project applications.

• The Energy Policy Act of 2005 (Title II, Sec. 211) requires the DOI to approve at least 10,000 MW of renewable energy on public lands by 2015.
What are BLM’s Programmatic Goals?

- Establish a Solar Energy Development Program
- Identify BLM-administered lands suitable for utility-scale solar development
- Consider the need for additional transmission corridors crossing BLM-administered lands
- Amend BLM land use plans in the six-state area to address solar energy development
Overview of Solar Technologies, Solar Resources, and Market Penetration

- Brief introduction of utility-scale solar technologies
  - (Proposed for Solar PEIS: utility scale \( \geq 10 \text{ MW} \))
- Geographic Information System (GIS) based solar resources in Southwest U.S.
- Federal policies that facilitate deployment
Solar Technologies and Market Sectors

- Solar with storage (Dispatchable)
  - Parabolic trough
  - Power tower
  - Linear Fresnel

- Solar without Storage (Non-Dispatchable)
  - Dish/Engine
  - Concentrating PV
  - Flat-plate PV
Concentrating Solar Power: Dispatchable Power

**Parabolic Troughs:** Commercial, utility-scale deployments

**Central Receiver:** Pre-commercial, pilot-scale deployments

- Up to 250 MW plants (or multiple plants in power parks) for peaking and bulk power
- Moderate solar-to-electric efficiency
- Thermal storage offers load following and capacity factors up to 70%
Value of Dispatchable Power? Meeting Utility Power Demands

Storage provides:

- higher value 
  because power production can match utility needs

- lower costs 
  because storage is cheaper than incremental turbine costs
Concentrating Solar Power: Non-Dispatchable Central Station/Distributed Power

**Dish/Stirling:** Pre-commercial, pilot-scale deployments

**Concentrating PV:** Pre-commercial, pilot-scale deployments

- Modular (3-25kW)
- High solar-to-electric efficiency
Concentrating PV Systems: Non-Dispatchable Central Station/Distributed Power

Reflective

Refractive

Reflective + optical rod
Direct Normal Insolation Solar Resource > 5.0 kWh/m²-day
PV Flat Plate Systems
Tracking & Fixed

Nellis AFB – 14.2 MW
Flat Plate - Single Axis Tracking

11MW Flat Plate Fixed Tilt
Serpa, Portugal
Global Solar Resource for PV > 5.0 kWh/m²-day
Federal Policy Analysis
Federal Investment Tax Credit

![Bar Chart]

- **Federal ITC**
  - 10%: Relative LCOE 100%
  - 30%: Relative LCOE 83%
Cumulative CSP Capacity
No Extension of Solar ITC

20 year scope of PEIS

- Used Inregion
- New Transmission
- Existing Grid
Cumulative CSP Capacity
8-year extension with declining ITC

20 year scope of PEIS

GW
Overview of the NEPA Process

• What is in an EIS?
  – An EIS provides a comprehensive analysis of environmental and socioeconomic impacts
  – Describes the purpose and need for the proposed program
  – Identifies environmental impacts and mitigation
  – Analyzes alternatives to a proposed action
  – Analyzes the short and long term impacts, cumulative impacts, and the commitment of resources that could result
  – Describes how public concerns were treated in the analysis
Overview of the NEPA Process, cont.

• Why is this EIS being prepared?
  – NEPA requires that an EIS be prepared for major federal actions with the potential for significant impact on the quality of the human environment.
  – The Agencies have determined that a programmatic EIS is appropriate to evaluate establishing specific agency-wide solar energy programs and additional related policy.

• What is a Programmatic EIS?
  – A Programmatic EIS evaluates the environmental impacts of broad agency actions, such as the development of programs or the setting of national policies.
  – It does not evaluate specific projects.
  – Instead, it considers
    • Generic impacts of actions – in this case, of solar energy technologies
    • Potentially applicable mitigation measures
Overview of the NEPA Process, cont.

• What is scoping?
  – Scoping is the first phase of public involvement in an EIS. It is the process by which the Agencies gather information on:
    • Proposed action,
    • Alternatives to be considered,
    • Significant issues to be analyzed,
    • Possible mitigation measures,
    • Availability of data relevant to the analyses, and
    • Interested individuals and organizations and their specific concerns.
Overview of the NEPA Process, cont.

• What alternatives have been identified for evaluation in the Solar Energy PEIS?
  – No action alternative
  – Proposed action
    • Developing and implementing agency-specific programs that would facilitate environmentally responsible utility-scale solar energy development
    • Programs to include policies and mitigation strategies related to solar energy development in the 6-state study area
    • For BLM, amending individual land use plans to adopt the new program.
  – Limited development alternative (BLM only)
    • Limit development to previously proposed solar energy development projects which have complete plans of development and are awaiting application approval.
Public Involvement Opportunities

There are a number of opportunities for public involvement:

• Public Scoping
  – May 29 through July 15, 2008

• Review of Draft EIS
  – Spring 2009

• Review of Final EIS
  – Spring 2010
http://solareis.anl.gov

 Provides access to:

• Information on the EIS process
• Information on solar energy resources and technologies
• EIS-related documents
• Project schedule
• Online comment forms
• Project updates
• Email notifications
How to Provide Scoping Comments

There are 3 ways to provide scoping comments:

• At this scoping meeting
• Via the project website: http://solareis.anl.gov
• Via mail

Scoping comments will be accepted through July 15, 2008.
How to Submit Written Comments

• Use the online comment form on the public Web site: http://solareis.anl.gov/involve/comments

• Fill out a paper comment form
  – Comment forms available at registration desk
  – Mail to address below or leave with a PEIS staff member tonight

• To submit other written comments and/or supplemental material
  – Leave with a PEIS staff member tonight or
  – Mail to:
    Solar Energy PEIS Scoping
    Argonne National Laboratory
    9700 S. Cass Avenue – EVS/900
    Argonne, IL 60439
Providing Oral Comments Tonight

• Sign up to speak at registration desk
  – Speakers will be called in the order they sign up
  – Unregistered speakers will follow

• Making an oral comment:
  – State your name and affiliation
  – 3-minute limit, additional time as schedule allows
  – Limit comments to scope of Programmatic EIS
  – Leave written copies of remarks or any supplemental materials with a Solar Energy PEIS staff member

• Comments will be recorded in transcripts that will be posted on the public Web site.
For More Information

- Visit the public information center:  
  http://solareis.anl.gov

- Contact the Federal agencies:
  - Lisa Jorgensen, Department of Energy, Golden Field Office,  
    lisa.jorgensen@go.doe.gov, 303–275–4906

  - Linda Resseguie, BLM Washington Office,  
    linda_resseguie@blm.gov, 202–452–7774