

Charting a Course to Energy Independence

**Providence, RI
August 9-12, 2009**

Government Solar Installation Program

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Supporting the U.S. DOE Solar Energy Technologies Department
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Agenda

- ☐ DOE Solar Program Market Transformation Efforts
- ☐ Renewable Energy Goals for the Federal Sector
- ☐ Government Solar Installation Program
- ☐ Forrestal PV System
- ☐ Princeton Plasma Physics Laboratory PV System
- ☐ Upcoming work with General Services Administration (GSA)



DOE's Approach to Solar Market Transformation

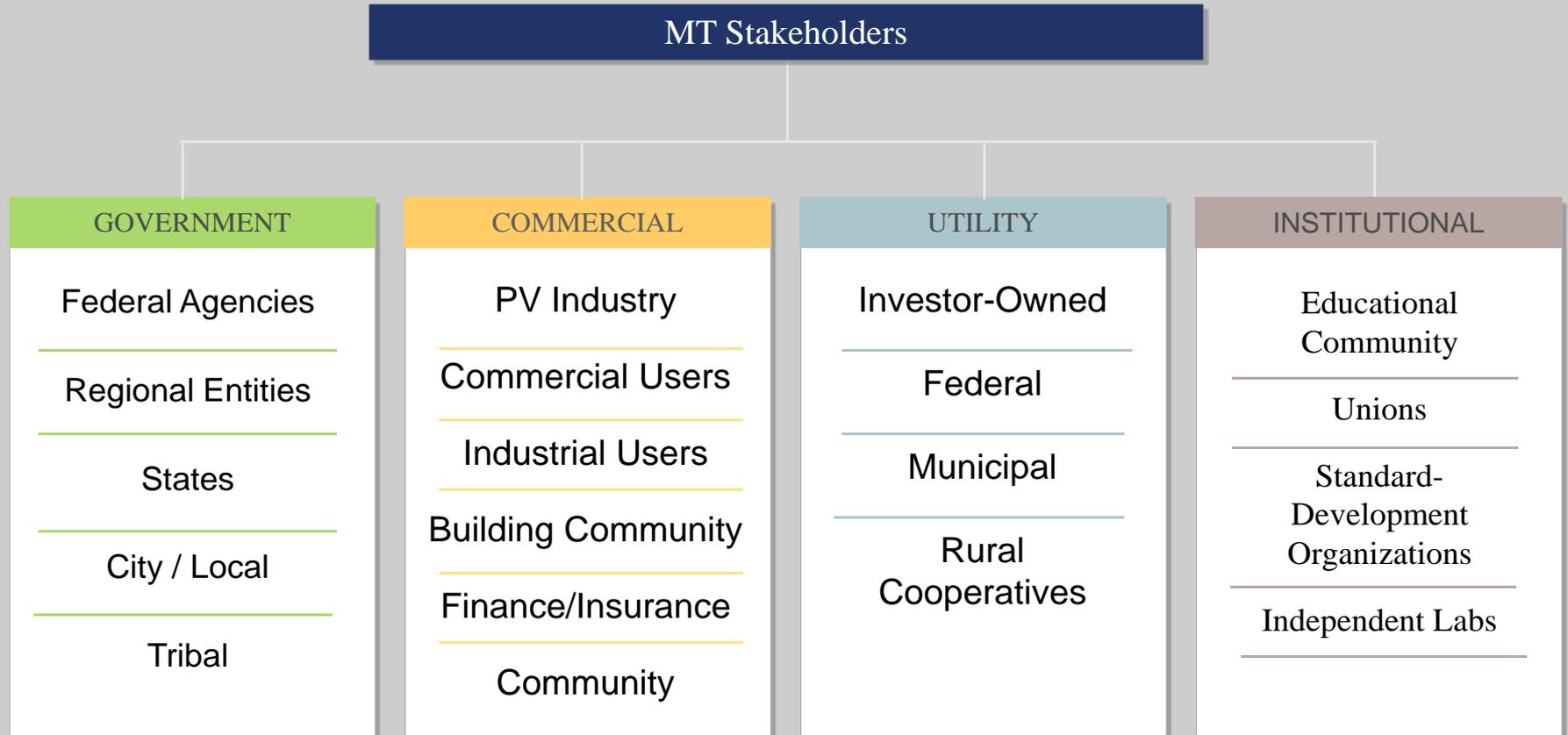
GOAL Reduce market barriers to, and promote market expansion of, solar energy technologies through non-R&D activities.

Activities

- Solar America Board for Codes and Standards
- State & Utility Technical Outreach
- Solar America Showcases
- Solar America Cities
- Government Solar Installation Program



Market Transformation Stakeholders





Key Barriers to Solar Commercialization

- Lack of consumer awareness
- Inconsistent financial incentives
- Inexperience with proven financial approaches
- Complex permitting procedures
- Inadequate codes & standards
- Inconsistent interconnection rules
- Ineffective net-metering policies
- Inappropriate utility rate structures
- Limited solar experience in key building trades
- Shortage of trained technical personnel and installers

Market barriers increase the price of solar systems and the time before use.
Market transformation activities aim to reduce prices and time,
resulting in widespread deployment.



Federal Sector Energy Use

Approximately 4% of the energy used by the Federal Sector was produced from renewable resources in FY08

The Federal Government, as the nation's largest energy consumer, has a tremendous opportunity and clear responsibility to lead by example.



Renewable Energy Goals for Federal Sector

Energy Policy Act (EPACT) of 2005

- 3 % or more in fiscal years 2007 through 2009
- 5 % or more in fiscal years 2010 through 2012
- 7.5 % or more by 2013

Executive Order 13423

- Reinforces the legislative renewable goals
- Adds the mandate that at least half of the requirement must be met with energy from renewable sources placed in service after January 1, 1999



Government Solar Installation Program (GSIP)

Purpose

To work in tandem with the Federal Energy Management Program (FEMP) to provide technical assistance to government entities with the goal of *overcoming market barriers* inhibiting the installation of solar systems at their facilities.

Examples of Technical Assistance

- ☐ Technology Selection
- ☐ User Training
- ☐ System Monitoring
- ☐ Project Financing
- ☐ Preparation of bid-specifications
- ☐ Building Codes Review
- ☐ Structural Analysis



GSIP Projects

- Rooftop Forrestal PV System
- Architect of the Capitol
- Smithsonian Zoo (Elephant House)
- Princeton Plasma Physics Laboratory
- Kennedy Center
- Papago Park Military Reservation
- Federico Degerau Federal Building (Puerto Rico)
- Kauai Test Facility
- EPA Facility in Edison, NJ
- GSA



Forrestal PV System

What

- \$2.3 million procurement
- 205 kW PV system
- 2000 ft.² Technology Showcase (Four 1 kW demonstration systems)
- Educational display in Forrestal lobby





Forrestal PV System

Where

North Forrestal Building at 1000 Independence Ave.

When

Installed August 2008

Why

To demonstrate a variety of new PV technologies and help DOE HQ meet the goals of EPAct 2005 and Executive 13423





Forrestal Technology Showcase

Four 1 kW PV Systems

- Crystalline Silicon from SunPower
- Amorphous Silicon from Kaneka
- Cadmium Telluride (CdTe) from First Solar
- Copper Indium Gallium Diselenide (CIGS) from Global Solar Energy (GSE)



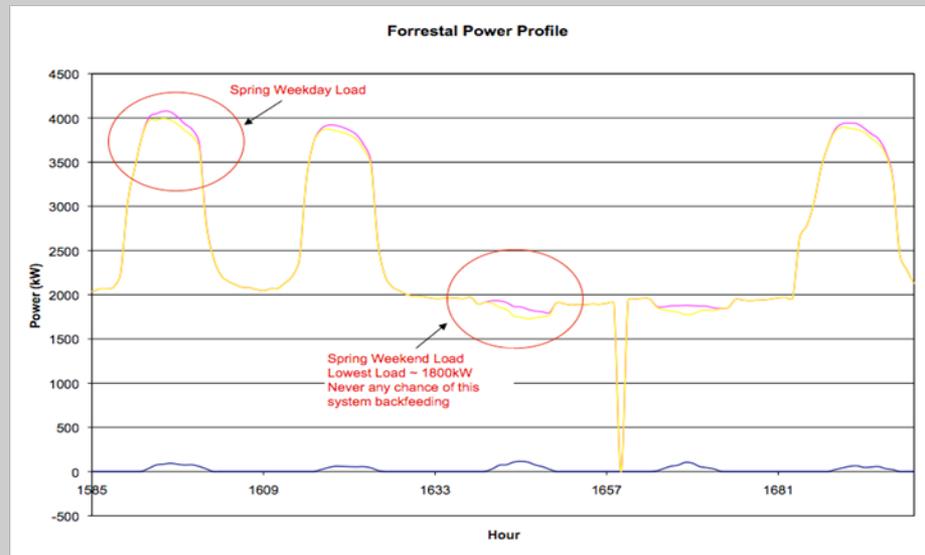


Forrestal PV System

Barrier- Interconnecting a PV system in a spot network

Technical Assistance

- Demonstrated the PV system would never export power
- Modeled the output of the system
- Compared modeled output to building load





Forrestal PV System

Barrier- Understanding performance of several new PV technologies

Technical Assistance

- Side-by-side comparison of performance and durability of competing PV materials and balance of systems will be analyzed

Barrier – Awareness and Education

Technical Assistance

- Lobby display makes systems visible to public despite roof location, with SETP assistance in developing message
- NREL Report: *Photovoltaic Systems Interconnected onto Secondary Network Distribution Systems – Success Stories*



Princeton Plasma Physics Laboratory (PPPL)

What

1 MW of PV to be installed on the Princeton Plasma Physics Laboratory

Where

Princeton, New Jersey

When

Solicitation responses due May 15, 2009

Deployment expected late 2009

Why

To demonstrate a variety of new PV technologies and help DOE HQ meet the goals of EAct 2005 and Executive 13423.





Princeton Plasma Physics Laboratory (PPPL)

Barrier - Finance, 10-year contracting limit

Technical Assistance Provided

- Site Survey and Technical Report
- Financing, procurement strategy
- Develop solicitation and Power Purchase Agreement
- Advice on requirements to claim on-site bonus, retain or swap RECs





Support for General Services Administration

Project

Through the Recovery Act, GSA has received funding of \$4.5B for high-performance buildings, with a portion committed to install photovoltaic systems on multiple buildings.

Barrier

How does GSA quickly develop a RFP process so all PV systems can be installed by next year?

Technical Assistance Provided

- FEMP and DOE Solar Program developed generic technical specification for all facilities to expedite the RFP process.
- DOE Solar provided preliminary site assessments and energy production estimates for all buildings.
- Future technical assistance may include additional support in the RFP process and on-site training of facility managers.



Thank You

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