U.S. Department of Energy
Energy Efficiency and Renewable Energy

# The President's Solar America Initiative

# Technology Acceptance

## Solar Energy Technologies Program
## U.S. Department of Energy
## April 18, 2006

# SAI and Technology Acceptance Missions



## SAI Mission

***Achieve cost-competitiveness of solar energy technologies by 2015 across all market sectors.***

## SAI Technology Acceptance Mission

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

# Two-Pronged Approach to SAI Technology Acceptance



## Infrastructure Development

*Provide technical, regulatory, institutional, financial and educational solutions to technology acceptance barriers.*

- Required for SAI success.
- No or low recipient cost share.
- Enables solar systems to easily reach end-user.

## Market Expansion

*Accelerate demand for solar technologies through provision of technical assistance.*

- Increases chance of SAI success.
- Leverages technical assistance to promote solar installations.
- Creates benefits from economies of scale and consumer awareness.

# Technology Acceptance Pathways



*Infrastructure Development*

Identify barriers to market penetration

Identify methods to minimize or eliminate barriers

**Barriers** → **Methods**

*Market Expansion*

**Opportunities** → **Methods**

Identify opportunities for market expansion

Identify methods to capitalize on opportunities

**Prioritization** → **Implementation**

Technology Acceptance Strategic Plan

Technology Acceptance Implementation Plan

Prioritize activities & return on investment

Identify tasks, performers, metrics, budgets and timelines

# Key Non-R&D Activities

## Focus of SAI Technology Acceptance Efforts



### Infrastructure Development

Provide technical, regulatory, institutional, financial and educational solutions to technology acceptance barriers.

1. Promote codes, regulations and standards that accommodate solar electric systems.
2. Promote the education and certification of solar installers and code officials.
3. Develop and promote national rating system for solar systems.
4. Promote improved financing and insurance options for solar electric systems.

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### Market Expansion

Accelerate demand for new solar technologies through highly cost-shared “market pull” purchase opportunities.

1. Promote large-scale installations of advanced solar power systems.
2. Promote increased use of building-integrated photovoltaics (BIPV).
3. Create and promote “Solar America City” designation.

# Barrier/Opportunity Matrix to Activities



| Activities | Barriers/Opportunities | | | | | | |
|---|---|---|---|---|---|---|---|
| | Misunderstanding of Technologies | Regulatory Barriers | Poor Consumer Confidence | Lack of Trained Installers | Lack of Technical Expertise | Difficult or Costly Transactions | Increased Technology Usage |
| **INFRASTRUCTURE DEVELOPMENT** | | | | | | | |
| Codes & Standards | | X | | | | X | X |
| Installer/Official Training | | | X | X | X | | X |
| PV Rating System | X | | X | | | X | X |
| Financing & Insurance | | | | | | X | X |
| **MARKET EXPANSION** | | | | | | | |
| Large-Scale Installations | X | | | | X | | X |
| BIPV Promotion | X | | | | X | | X |
| Solar America Cities | X | X | | | X | | X |

# SAI Participants

## Potential SAI Technology Acceptance Partners



### Potential DOE Partners: INFRASTRUCTURE DEVELOPMENT

**GOVERNMENT**
- Federal Agencies
- Regional Entities
- States
- City / Local
- Tribal

**COMMERCIAL**
- PV Industry
- Commercial Users
- Industrial Users
- Building Community
- Finance/Insurance Community

**UTILITY**
- Investor-Owned
- Federal
- Municipal
- Rural Cooperatives

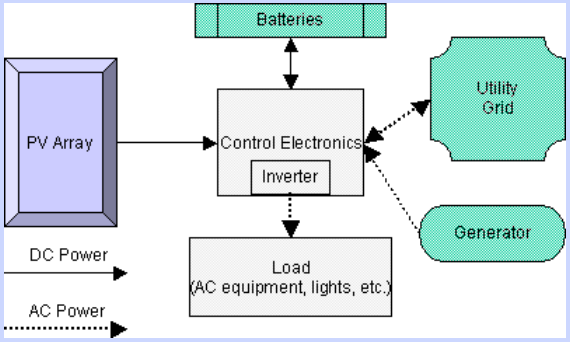
**INSTITUTIONAL**
- Educational Community
- Unions
- Standard-Setting Organizations
- Independent Labs
- NGOs

# Key Activities:
## Infrastructure Development



### 1. Promote codes, regulations and standards that accommodate solar electric systems.

- Assess barriers specific to solar technologies associated with building codes, net metering regulations, and interconnection standards.
- Identify “best in class” model codes, regulations and standards.
- Engage States, utilities, and others for replicable codes, regulations and standards successes.
- Work with international community/organizations (e.g., IEA) to ensure compatibility and to prevent trade barriers.
- Encourage intrastate code and regulation consistency and simplified approval procedures for PV installations.




**End product:** Codes, regulations and standards that are more consistent and accommodating to solar technologies.

# Key Activities:
## Infrastructure Development



### 2. Promote the education and certification of solar installers and code officials.

- Examine current solar education and certification protocols and systems, well as current State requirements.
- Quantify need for installers and code official training to reach SAI targets.
- Create National certification standards for installers and code officials.
- Determine appropriate organizations to coordinate and offer training – States, cities, utilities, non-profit organizations.
- Work with States & unions to promote acceptance of National certifications.

**End product:** National system for educating and certifying solar installers and code officials.

# Key Activities:
## Infrastructure Development



### 3. Develop and promote national rating system for solar systems.

- Create national rating system for turnkey PV systems that conveys accurate **safety, performance, and warranty** information to builders, utilities, and end users.
- Base rating system on standardized testing and evaluation protocols and potentially on regional resource differences.
- Create National positive designation for superior PV systems.
- Focus on systems, not components.
- Engage utilities in rating development process.
- May lead to better financing options.
- Boosts consumer confidence.

**End product:** Nationally-recognized rating system and positive designation for PV systems.

# Key Activities:
## Infrastructure Development



### 4. Promote better financing and insurance options for solar electric systems.

- Provide information and education to builders, utilities, and end users on financing and insurance options for PV systems.
- Work with financial and insurance community to correct misperceptions about solar technology system characteristics and risks, leading to improved financial and insurance instruments.
- National product certification system can promote better financing and insurance options.

**End product:** Improved financing and insurance options for solar electric systems.

# Key Solar Market Participants

## Potential SAI Technology Acceptance Partners



### Potential DOE Partners: MARKET EXPANSION

**GOVERNMENT**
- Federal Agencies
- Regional Entities
- States
- City / Local
- Tribal

**COMMERCIAL**
- PV Industry
- Commercial Users
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# Key Activities:

## Market Expansion



### 1. Promote large-scale purchases of advanced solar power systems.

- Provide technical assistance to high-visibility solar installations by both public and private entities.
  - Federal agencies (e.g., FEMA, DHS, VA facility projects)
  - States and cities (e.g., emergency preparedness plans)
  - Community developers, utilities
- Determine minimum size for project to qualify for technical assistance.
- Require recipients to provide information on solar installation to public.
- Provide opportunities for international projects.

**End Product**: High-visibility solar installation projects.

# Key Activities:

## Market Expansion



## 2. Promote increased use of building-integrated PV (BIPV).

- Engage building, utility and PV industry to identify their concerns with BIPV and work to mitigate them.
- Develop model BIPV guidelines (e.g., whole-building design models) that include both technical and non-technical (aesthetic) considerations.
- Host public workshops to receive input and provide information on critical issues.

**End product:** BIPV information and technical support delivered to greater PV community.

# Key Activities:

## Market Expansion



## 3. Create and promote "Solar America City" designation.

- Similar to "All-America City" designation awarded to cities, towns, counties, neighborhoods and geographic regions.
- Determine benefits to cities that would boost participation.
- Determine requirements needed to gain designation.
  - Meet solar installation requirements.
  - Facilitate PV/building permit processes.
  - Create training and education opportunities.
- Provide a graduated approach to achieving status.
- **Option**: Use prize competition instead of minimum threshold requirement attainment system.

**End Product**: Solar America Cities that assist in market expansion, infrastructure development and communications/outreach.

# Acquisition Schedule



- NOPI Release (April 2006)
- Tech Acceptance Strategic Planning Group (April-June)
- Regional Technical Exchange Meetings (San Francisco, Washington) – (May/June 2006)
- NOPI Close (June 2006)
- Issuance of Tech Acceptance Strategic Plan (July 2006)
- FOA Issuance (June/July 2006)
- FOA Close (August 2006)
- Announcement of Winners (October/November 2006)
- Awards completed (January/February 2007)
- Release of Tech Acceptance Implementation Plan (part of SAI Implementation Plan) (February 2007)