



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

# The President's Solar America Initiative



**Technology Acceptance:**  
**Education and Certification**  
**Solar Energy Technologies Program**  
**U.S. Department of Energy**



- Your verbal comments today will be used to inform our strategic planning process and our solicitation drafting process.
- SENTECH, Inc. is capturing your comments to the greatest extent possible, although their job is to note important points and general discussion trends, not capture every comment by every participant.
- If you wish to provide further comments on any Technology Acceptance topic, please feel free to respond in writing to the Solar America Initiative Technology Acceptance Request for Information (RFI). **COMMENT PERIOD CLOSURES JUNE 30, 2006.**
- A link to the RFI is provided on this website:  
**<http://www.sentech.org/SolarTATEM2006/>**



## SAI Mission

***Reducing Solar Costs to Grid Parity in All U.S. Markets By 2015***

## SAI Technology Acceptance Mission

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

## Education and Certification Mission (Personnel)

***Examine and improve solar education and certification for the Solar Workforce.***



# Education and Certification Topics for Discussion



- **Installer Training**
- **Code Official Training**
- **National Standards for Installers/Inspectors**
- **Installer/Inspector Certification**
- **Organization Qualifications to Provide Training**
- **States and State Program Roles**
- **Trade Unions Roles**



# Tech Acceptance Pathways for Education/Certification



## *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

Technology  
Acceptance  
Strategic Plan

Technology  
Acceptance  
Implementation Plan

**Prioritization**

**Implementation**

Prioritize activities &  
return on investment

Identify tasks,  
performers,  
metrics, budgets  
and timelines



## Infrastructure Development

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

- Promote the education and certification of solar installers and code officials.





# Status of Education & Certification



- Some training programs are being conducted through

- Community colleges
- National Joint Apprenticeship and Training Commission (International Brotherhood of Electrical Workers training)
- Residential Experiment Stations

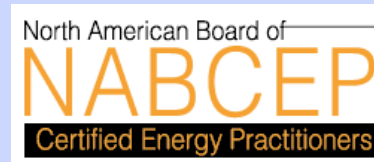
- National certification for PV installers is underway

- Voluntary program (e.g. NABCEP)
- Required by some state programs for enhanced incentives
- In order to meet 2015 SAI goals, the U.S. needs 4700 more certified installers (currently 300)

- Training institutions require accreditation

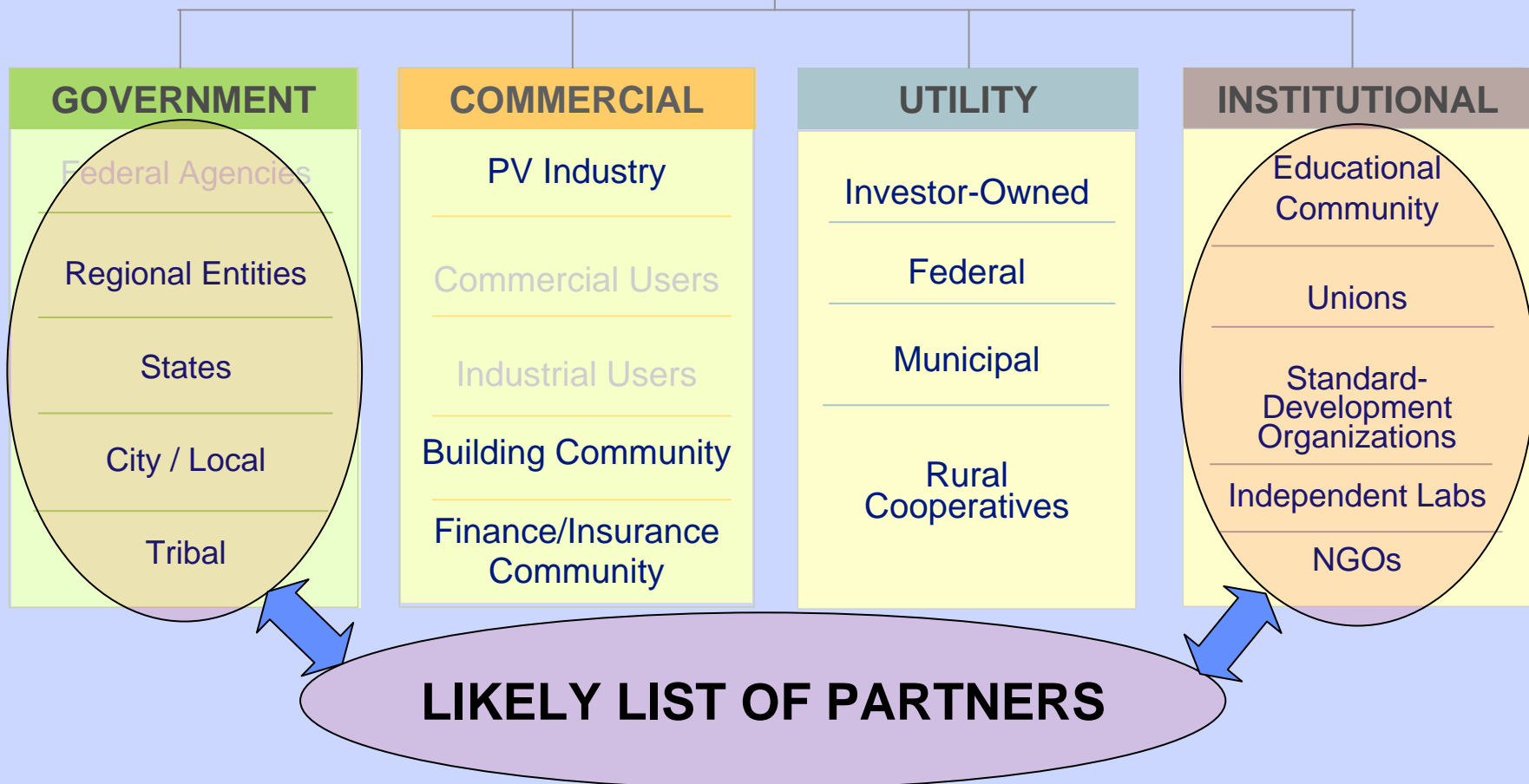
- Accreditation Processes
- Special PV Accreditation

- Quality and Consistency





### Potential DOE Partners: EDUCATION AND CERTIFICATION





- **Poor consumer confidence**
- **Lack of certified installers**
- **Lack of PV technical expertise in the Officials community**

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
<b>INFRASTRUCTURE DEVELOPMENT</b>							
Codes & Standards							
Installer/Official Training							
PV Rating System							
Financing & Insurance							



## Most frequently identified non-technical barriers to solar energy implementation, listed in order of frequency.

High cost (*being addressed by all SAI activities, including R&D effort*)

Lack of trained technical personnel, lack of reliable installation and maintenance services

Lack of communication, information dissemination, and consumer awareness

Inadequate financing options

Lack of appropriate, consistent interconnection standards

Inadequate government incentives (*not covered in this session*)

Lack of equitable and effective net-metering guidelines

Inadequate codes and standards

Liability issues / insurance requirements

Poor public perception of solar system aesthetics



# Likely Activity Topics: Education/Certification



- **Examine current solar education and certification protocols and systems, well as current State requirements to identify “Best-in-Class” model training and certification programs.**
- **Create National certification standards for designers, installers and officials and engage stakeholders to accept the National training and certifications**
- **Determine appropriate organizations to coordinate and offer training – States, cities, utilities, non-profit organizations, trade schools.**



**End product: A consistent national system for educating and certifying solar installers and code officials.**



# Main Challenges Education/Certification



- **Uniform, National programs**
- **Infrastructure**
  - Stakeholder support
  - State Recognition/Alignment
  - Program integration
    - Industry
    - Utilities
    - Unions
    - Cross-disciplines
  - Accreditations
  - Quality of programs
  - Security for Testing
  - Pathway to Self-sufficiency
  - Consistency!

# QUALITY!

# CONSISTENCY

*Note: Cross disciplines include areas where multiple skills are needed, such as the skills of a licensed electrician and a solar PV certificant.*



- **Education has been going forth without national coordination**
- **Multiple levels and types of certification are emerging without coordination**
- **Federal and State funding for training and certification has been insufficient**
- **The education/certification dilemma is the small market but highly anticipated exponential growth. (Is it too late to be proactive?)**
- **Certification infrastructure can take up to 5-years for development**
- **Training programs need lengthy accreditation procedures**



# Education/Certification Starting Questions



- 1. How can the SAI accelerate the formulation, adoption and acceptance of Solar education and certification?**
- 2. Where is the USA most deficient in education and certification of personnel?**
- 3. How would SAI teams best function to prepare the nation for the goals of the Solar America Initiative?**
- 4. What education and certification goals are needed?**
- 5. What level of funding from the US Solar Technologies Program is needed to spur adequate involvement from states, critical trade organizations and academia?**
- 6. How can the building and utility community be engaged by SAI?**



- Avoiding roadblocks due to slow certification process
- Continued support of existing “certified” installer certification
- Multiple routes to certification (at least initially) – pros/cons
- Internal “certification” process option of personnel (e.g. OJT)
- Cross-cutting trade educational programs (licensing/certification)
- Is continued financial/technical support of NABCEP justified
- Essential training criteria for SAI success
- Continuity, consistency and quality of training/certification
- Assuring integrity and quality of training/certification
- Third party assessment of training/certification procedures
- Coordination with Educational Providers – trade/CCs/Univ’s
- Educational Outreach and Curricula – Unified/Consistent
- Training/certification of Code Officials/Inspectors