IEA PV Power Systems (IEA PVPS)

IEA Overview

November 13, 2002

Ward Bower
Sandia National Laboratories

The IEA PVPS Mission:

To Enhance the International Collaboration Efforts Through Which PV Energy Becomes a Significant Renewable Energy Source in the Future

Objectives:

Realize Its Mission by Adopting the following objectives:

- **Development of Improved Systems and Reduced Cost**
- **Increase the Awareness of their Potential and Value**
- **Foster Market Deployment by Removing Tech/non-tech Barriers**
- **Enhance Technology Cooperation with non-IEA Countries**

Country Participation and Benefits

•Collaborative Worldwide Research Associated With PV Topics Exhibiting Common Characteristics.

IEA Tasks and Status

Task #	Task Description	Task Status
I	Exchange and Dissemination of Information on Photovoltaic Power Systems	Extended for 5 years to May 2004. Task I is required as part of the PVPS with utility sector support
II	Operational Performance of Photovoltaic Power Systems and Subsystems	U.S. does not participate. Very limited participation by others
III	Use of Photovoltaic Power Systems in Stand-alone and Island Applications	U.S. does not participate. Task has excellent and broad international participation
IV	Modeling of Distributed Photovoltaic Power Generation in Support of the Grid	U.S. did not participate. Task did not continue beyond concept
V	Grid Interconnection of Building-Integrated and Other Dispersed Photovoltaic Power Generation	Task was disbanded after successful workshop in March 2002.
VI	Design and Operation of Modular Photovoltaic Plants for Large Scale Power Generation	Task Completed in 1998. Future work will be under Task VIII
VII	Photovoltaic Power Systems in the Built Environment	Task has been disbanded but a final workshop is still being scheduled in FY03
VIII	Very Large Scale Photovoltaic Power Generation Systems in Remote (Desert) Areas	Initiated in Jan 1999 for 4 years to Dec 2002. U.S. Utility participation is confirmed
IX	Deployment of Photovoltaic Technologies: Co-operation With Developing Countries	Initiated for 5 years to May 2004. U.S. DOE is now a participant with broad industry support
X	Large Scale Application of Grid-connected Urban Scale PV Power Systems	Under Development

IEA PVPS Country Participation

Country	Task I	Task II	Task III	Task IV	Task V	Task VI	Task VII	Task VIII	Task IX
Australia	✸		❍		❍		❍		❍
Austria	❍	❍			❍		❍		
Canada	❍		❍		✓		❍		❍
Denmark	❍				❍		❍		❍
European Union	❍	❍							✓
Finland	❍		❍				❍		❍
France	❍	❍	✸						❍
Germany	❍	✸	❍		❍		❍		❍
Israel	❍	❍			❍			❍	✓
Italy	❍	❍	❍	✓	❍	✸	❍	❍	❍
Japan	❍	❍	❍		✸	❍	❍	✸	❍
Korea	❍		❍					❍	
Mexico	❍				✓				✓
Netherlands	❍	❍	❍		❍		✸	❍	❍
Norway	❍		❍						
Portugal	❍		❍	✓	❍	❍		❍	
Spain	❍		❍			❍	❍	❍	✓
Sweden	❍		❍				❍		✓
Switzerland	❍	❍	❍		❍		❍		❍
Turkey	❍								
United Kingdom	❍		❍		❍	❍	❍		✸
USA	❍				❍	❍	❍	❍	❍

✸ Operating Agent ❍ Country Participation ✓ Participation Under Consideration

Note: Task IX includes representatives from World Bank, UNDP & PV industry; interacts with UNEP, GEF, ASTAE, ADB, AfDB & PV Industry and Targets 14 developing countries initially (Argentina, Brazil, China, Dominican Republic, Ghana, Honduras, Kiribas, Indonesia, India, Morocco, Philippines, South Africa, Vietnam & Zimbabwe)

FY02 IEA Accomplishments

- Task I
  - Quarterly Reports
  - IEA PVPS Annual Report,
  - IEA Annual Industry Survey Report
- Task VII
  - BIPV Data Base
  - PV in Non-Building Structures (follow on work)
- Task VIII
  - Task VIII Status Report

FY02 IEA Accomplishments

- **Task V**
  - **IEA PVPS T5-04; "PV system installation and grid-interconnection guideline in selected IEA countries" [Austria]**
  - **IEA PVPS T5-05; "Grid-connected PV power systems: survey of inverter and related protection equipments" [Japan]**
  - **Report IEA PVPS T5-06; International guideline for the certification of PV system components and grid-connected PV systems" [USA]**
  - **Report IEA PVPS T5-07; "Probability of islanding in utility networks due to grid connected PV power systems" [Netherlands]**
  - **Report IEA PVPS T5-08; "Risk analysis of islanding of PV power systems within low voltage distribution networks" [UK]**
  - **Report IEA PVPS T5-09; "Evaluation of islanding detection methods for PV utility interactive power systems" [USA]**
  - **Report IEA PVPS T5-10; "Impacts of power penetration from PV into a power system" [Denmark]**
  - **Report IEA PVPS T5-11; "Power value and capacity value of PV systems" [Italy]**

Note: "Islanding and the Risk of Death by Laughter" by Achim Woyte assessed the Task V workshop reports for LIKELIHOOD of islanding in a Photon International article. The 10^{-8} risk of injury due to unattended islanding is now being considered a reason to change US interconnect standards.

FY 03 IEA Plans

- **Executive Committee:**
  - **Two Meetings**
  - **Continued Publication of the Annual Report**
  - **Executive Conference (May 2003)**
- **Task I**
  - **Two Meetings**
  - **Continued Publication of ISR and Quarterly Reports**
- **Task VIII; Three Meetings**
- **Task IX; One Meeting**
- **Task X: New Proposed Task: "Large Scale Application of Grid-connected Urban Scale PV Power Systems"**
  - **One Planning Meeting (Assess costs and benefits of US Participation)**