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# Solar America Board for Codes and Standards

Interconnection & Net Metering Panel

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Quarterly Conference Call  
June 20<sup>th</sup>, 2008

Solar America Board for Codes and Standards



# Agenda

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|-------------|-------------------------|---|
| 2:00 – 2:10 | Opening remarks         | Keith McAllister                                |
| 2:10 - 2:15 | Role call               | Larry Sherwood                                  |
| 2:15 - 2:40 | Study Report Status     | Keith McAllister<br>Jason Keyes<br>Mike Sheehan |
| 2:40 – 3:00 | Gap Analysis            | Larry Sherwood                                  |
| 3:00 – 3:20 | Year 2 work plan        | Jason Keyes                                     |
| 3:20 – 3:40 | Year 2 additional tasks | Keith McAllister                                |
| 3:40 – 3:55 | Open Discussion         | Larry Sherwood                                  |
| 3:55 – 4:00 | Closing Remarks         | Jane Weissman                                   |



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# Solar ABCs

## Mission and Structure

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# What is our Mission ?

The *Solar ABCs* identifies current issues, establishes a dialogue among key stakeholders, and catalyzes appropriate activities to support the development of codes and standards that facilitate the installation of high quality, safe photovoltaic systems.



# How do we do that:

- Coordinate revisions of interrelated solar codes and standards
- Include stakeholders in the process of setting national priorities
- Maintain a central repository for dissemination of documents, regulations, technical materials
- Operate three key services:
  - Produce 'best practices' materials
  - Answer questions (technical or statutory)
  - Provide information to DOE and other government agencies



# Solar ABCs Steering Committee



NREL



FLORIDA SOLAR ENERGY CENTER®  
A RESEARCH INSTITUTE OF THE UNIVERSITY OF CENTRAL FLORIDA



SHERWOOD ASSOCIATES



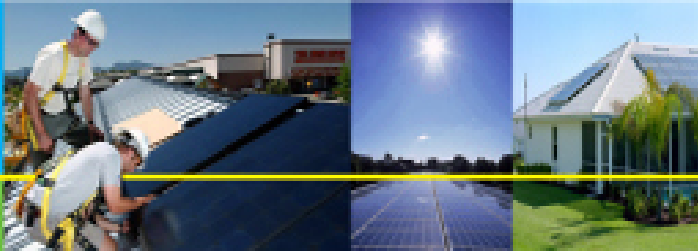
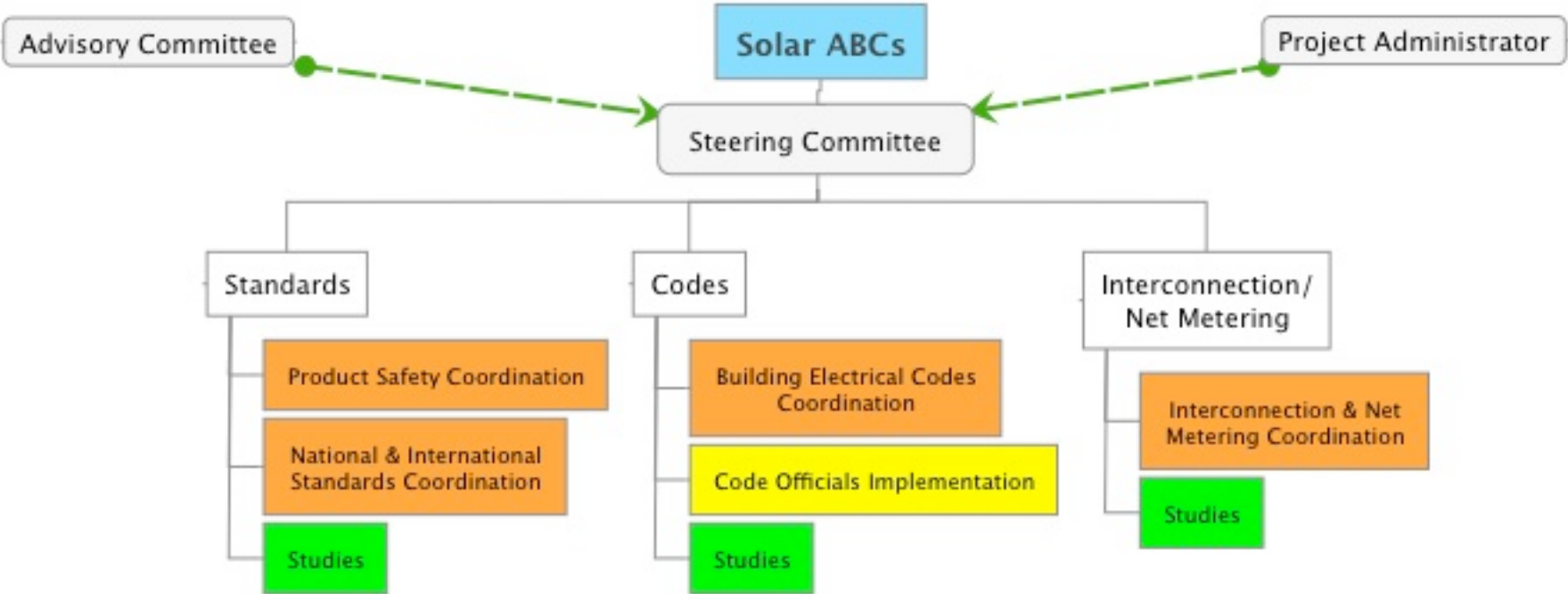
# Solar ABCs Advisory Committee

- Chair: Nick Chaset, California Public Utilities Commission
- Jim Baak, Pacific Gas & Electric (also representing Solar Electric Power Association)
- Suzanne Borek, New Jersey Department of Community Affairs
- Adam Detrick, SunPower Corp.
- Mark Dougherty, Long Island Power Authority
- Smita Gupta, California Energy Commission
- Edwin Iracki, DuPont
- Tom McCalmont, ReGrid Power
- Rhone Resch, Solar Energy Industries Association
- Peter Varadi, Consultant
- Donald Warfield, BP Solar





# Solar ABCs Organization





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# Study Report Status

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# Study Report Status

- Advanced Metering Infrastructure and Net Metering
- Utility External Disconnect Switch
- Comparison of the Four Leading Small Generator Interconnection Standards



# Advanced Metering Infrastructure and Net Metering

## ■ General Findings:

- ❑ Enormous paradigm shift
- ❑ Patchwork deployment
- ❑ Net metering capability

## ■ Regulatory Findings:

- ❑ Keep the big picture in mind
- ❑ Develop policies via consensus
- ❑ Pilots are no longer necessary
- ❑ AMI is an absolute prerequisite for all Smart Grid operations
- ❑ Net metering policies must adapt to AMI capabilities

## ■ Utility Findings:

- ❑ AMI can be cost effective
- ❑ AMI has many operational benefits
- ❑ AMI can easily split-out an energy-only net metering credit

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# Advanced Metering Infrastructure and Net Metering

- Recommendations for Legislators:
  - Fully deploy AMI
  - Define ownership rights for metering data
- Recommendations for Regulators:
  - Standardize AMI requirements
  - Remove control of AMI data from utility
  - Adapt net metering policies to AMI capabilities
- Recommendations for Utilities:
  - Know the full ramifications of AMI prior to technology selection
  - Build flexibility into policy



# Utility External Disconnect Switch (UEDS)

- Background
- Overview
- Safety
- Other
- Next Steps



# Background

- Standards have changed since the “Gardner” PV system in the early 1980’s
- What is UEDS
- NEC Requirements
- Current status of controversy
- UEDS is not used for emergency and maintenance switching



# Overview of UEDS

- Technical Issues
- Practical Considerations
- Legal Issues
- NREL paper on UEDS
- Next Steps





# Safety and UEDS

- OSHA 1910.269 and lockout/tagout rules
- UL 1741
- Practical Reasons to dismiss the requirement of the UEDS
- NEC



# Other Issues

- Legal and jurisdictional issues
- Cost of the UEDS
- IEEE 1547
- Technical Issues



# Next Steps

- Pursue IREC targeted states to eliminate the UEDS in rulemaking proceedings
- Continue to document states, utilities and other organizations that have eliminated the need of the UEDS
- Establish “best practices” Interconnections with various stakeholders



# Comparison of the Four Leading Small Generator Interconnection Standards

## ■ Comparing:

- ❑ FERC's Small Generator Interconnection Procedures (SGIP) and Agreement (SGIA) (Federal Energy Regulatory Comm.)
- ❑ California's Rule 21
- ❑ MADRI Model Small Generator Interconnection Procedures (Mid-Atlantic Demand Resource Initiative, largely PJM Interconnection parties)
- ❑ IREC Model Interconnection Standards (Interstate Renewable Energy Council)

## ■ Using:

- ❑ Freeing the Grid 2007
- ❑ Independent analysis



# Key Findings Interconnection Standards Comparison

- Important similarities among the four standards
  - ❑ All generation types covered
  - ❑ Up to 10 MW (or more)
  - ❑ Standard form agreements
  - ❑ Insurance encouraged, but not required
- Key Differentiators
  - ❑ Utility external disconnect switch
  - ❑ Area and spot network interconnections
  - ❑ Dispute resolution procedures
  - ❑ Breakpoints, especially non-exporter category



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# Gap Analysis

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# Gap Analysis

- Current state of the major codes and standards that bear on PV
- Prioritized set of guidelines for all future Solar ABCs activities





# Gap Analysis Process

- Input from Stakeholders through Meetings and Electronic Communications
  - 400 Stakeholders
  - Over 80 topics suggested
- Review and Prioritized by Solar ABCs Advisory Committee
  - Solar industry
  - Utilities
  - State Government
- Final Review and Prioritization by Solar ABCs Steering Committee
- 11 High Priority Topics Identified



# High Priority Standards Topics

- Standardization of Module Power Rating
- System Energy Performance Standard
- Inverter Meter Standard
- PV module frame grounding issues
- Generic method for testing clips
- Accelerated life testing for safety, reliability and durability of modules and the components used in modules



# High Priority Codes Topics

- National Fire Safety Guidelines for roof-top PV systems
- Roof-top PV module-specific fire research, testing and ratings systems
- Revising building codes to address PV specifically



# High Priority Interconnection and Net Metering Topics

- Update FERC Interconnection Screens
- Rate Impact of Net Metering



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# Year 2 Activities

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# Year 2 work plan

## Interconnection and Net Metering Panel

- Outreach to regulators, state energy offices and other stakeholder groups, proposing to attend:
  - NARUC Summer meeting, Portland, OR, July 20-23, 2008
  - EEI meeting on T&D and metering, Seattle, WA, Oct. 6-9, 2008
  - IREC Annual Meeting, San Diego, CA, Oct. 13, 2008
  - NARUC Winter meeting, Washington, DC, Feb. 15-18, 2009
  - Clean Energy States Alliance, TBD
  - NCSL meeting, TBD
- Produce summaries of year one studies as handouts for conferences listed above
- Hold quarterly I/NM phone meetings to discuss issues
- Participate in Solar ABCs steering committee



# Year 2 additional funding requests

- Task 1 - Potential for AMI data to reduce technical issues related to interconnection
- Task 2 - Evolution of Net Metering rates - Study the potential impact of feed-in tariffs or other similar production-based incentives on net metering
- Task 3 - Ownership of data from AMI systems
- Task 4 - Rate Impact of Net Metering (economic evaluation)
- Task 5 – Review of FERC’s SGIP Interconnection Screens
- Task 6 – Examine NREL RSI studies and provide guidance to states adopting interconnection procedures and net metering laws





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# Open Discussion

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# Closing Remarks

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# You Can Participate

- Stakeholder Meetings
- Quarterly Newsletter
- [www.solarabcs.org](http://www.solarabcs.org) (sign-up)



# Upcoming Stakeholder Meetings

- Solar ABCs Stakeholder Meeting
  - October 17, San Diego
- [www.solarabcs.org](http://www.solarabcs.org) (calendar)



# Thank you

