

September 27, 2007
Solar ABCs Stakeholder Meeting
Codes Breakout Session
Long Beach, CA

1)

NEC Article 702, optional standby systems, not included in the NEC handbook (Bower)
This is good because 702 does not address life safety issues (Wiles)
702 should be included in the handbook (Brooks)

2)

Question: when does the 2008 NEC take effect?

Answer: Depends on the state. California will go to 2005 NEC in Jan 2008 (Wiles)

3)

Rob Wills volunteered to develop a small wind interconnection standard, Article 690.4.
Trudy Forsythe (NREL) and Andy Kruse (Southwest Windpower) will join this committee.

Issue: 2005 NEC inadvertently locked out PV lighting systems.

Issue: Fire marshals want quick release or hinged systems for tilting up modules on roofs.

Bower: PV industry forum submits consensus recommendations to NEC. These are better than inputs from individuals. Industry forum has a good track record of getting recommendations passed into the code.

Brooks: This is not the forum to discuss rooftop disconnects or attic contactors. The issue is ventilation and energized conductors.

Wills: ABCs should work with OSHA to get roof safety issues before the PV stakeholders.

Brooks: CALSEIA and state firemarshalls are meeting on 3 October to decide fire code revisions for roof disconnects, etc.

Wiles: Train-the-trainer program will prepare regional level trainers for U.S.

Mike Keesee (SMUD): SMUD has developed local standardized permitting forms and will share these with ABCs if requested (NOTE: we should do this.)

Joel Davidson: Companies should go through the FSEC approval process as a learning tool. Also, Florida should remove the state required \$100k liability insurance also the requirement for visible, manual disconnect for residential applications. One can always pull the meter as a disconnect.

Unknown: Model code should be developed for the seismic areas by the panel.

Atmaram: The panel will look into this issue, in addition to the model code for high wind load locations. We will need to prioritize these issues with your help.

Joel Davidson: It is not necessary for the panel to develop the model code for seismic areas. These specific issues can be handled by the particular jurisdictions.

Unknown: We do not need modules to withstand loads of more than 100 psf. Only the overhangs and soffits experience such high wind loads. PV arrays are not installed there.

Atmaram: That probably is right. I will refer this matter to the structural engineers at FSEC.

Unknown: The smoke detector can be used to turn off the inverters and PV systems in case of fire.

Unknown: Need a standard for PV and solar hot water specialty licenses similar to well-driller licenses at the national level.

Unknown: ABCs should consider study of effects of airborne debris on PV panels.

Brian Wiley: Will ABCs address grounding?

Rob Wills: In last round of NEC, IEEE grounding guy targeted once and for all the identification of different conductors in a PV system.

Brooks: Terminology of grounding is an issue, Art 690 disagrees with Art 250 which defines ac and dc grounding.

Wiles: Where they conflict, Art 690 predominates. Code is a hierarchy.

Issue: UL controls UL1703, but OSHA controls the NRTL's. UL is given additional authority to coordinate codes under ANSI, not given to ETL and the other NRTL's.

Question: How to get fast track permits?

Brooks: Can use checklist for building inspections. SMUD has one. IREC website has one. (Atmaram mentioned in the presentation that FSEC's PV system design approval can be used for fast track permitting)

Note: confusing discussion of grounding and grounding clips ensued here.

Tom Boles: questions regarding Art. 690.16, 690.47C2.

Codes Questions submitted on 5x7 cards.

Despite updates and corrections of the *NEC*, there seems to be a considerable amount of confusion regarding proper design of grounding systems, including GEC and EGC sizing. I would suggest a more thorough and visual representation of proper design and installation methods.

—Charly Bray, PE, Sharp Electronics

- Guidance for sizing line-side interconnection conductors.
- Large commercial system GEC sizing.

—No name

To Safety Board:

What is it going to take to release IEC G1730? Biggest standards improvement we can make this year is to go to International Standard.

—Bret Adams, Solyndra; bret.adams@solyndra.com

Please address building-integrated and building-applied modules versus rack-mounted framed modules as it applies to grounding, fire, etc.

—No name

Use a forum instead of List Serve. Overlap of 2005 - 2008 (state). Wind Subcommittee (Rob). PV direct lighting systems, quick release systems to tilt PV modules. What about UBC & AS?

—No name

Code officials - naming

Five officials. Los Angeles guideline, many adopting - CASEIA

What can be done to reverse adopting (partial and wholly) guidelines?

Horizontal ventilation vs vertical

Smoke detector to shut down the system

Ventilation - Energized conductors

Work with OSHA

Train the trainers

—Bill Brooks

1. We need a 705 working group.
2. I am willing to lead a small wind group.
3. Fire Issue: differentiate between HVDC, LVDC, AC modules, systems with active shutdown.
4. Do a forum, not a listserve (???web archive)

—Rob Wills, (603) 801-4749

Permitting and Licensing:

Should adopt a model PV specialty (and solar thermal) license. Similar to specialty electrical licenses for well drillers, HVAC, etc., that exist in many states. This will help greatly in getting the proper work force.

—Jeff Wolfe, groSolar

Implementation:

Checklists - Can we include checklists for structure in the permit submission info? I.E., “submit info for installation of a racking system w/ XYZ approval. On a resident with only 1 layer of shingles, this will be accepted without engineering review. Basis - PV system weighs less than a second layer of shingles (residential)

—Jeff Wolfe, groSolar