

P1547.6 Meeting Minutes
**IEEE Std P1547.6 Draft Recommended Practice for Interconnecting Distributed
Resources with Electric Power Systems Distribution Secondary Networks**
January 27-28, Las Vegas Nevada

January 27, 2009.

On Tuesday morning at 8:30 AM, the meeting participants (**Attachment 1 – Attendees**) were welcomed by Joe Koepfinger, chairman, via teleconference (vice-chairman, John Bzura, was not able to attend). The P1547.6 co-secretaries Tom Basso and Mike Coddington, present at the meeting locally ran the operations for the chairman. Participants introduced themselves and identified their affiliations. The P1547.6 agenda (**Attachment 2 – Agenda**) was discussed and approved. The IEEE standards developments meeting introductory slides were presented that included the P1547.6 scope, purpose, and IEEE Standards Board By-Laws on Patents and Inappropriate Topics http://grouper.ieee.org/groups/scc21/1547.6/1547.6_archives.html **Meeting Introductory Presentation**. An opportunity was provided for attendees to identify or disclose patents that they believe may be essential for the use of the standard. None was identified by the participants. The minutes of the previous meeting were approved.

Joe Koepfinger gave an overview of the P1547.6 draft 3 and stated that this meeting would focus on the comments that were submitted on P1547.6 draft 3. For the remainder of the day, we focused on reviewing the comments, made proposed revisions to P1547.6 draft 3 at the meeting, and some participants volunteered to submit draft revised text based on the work group deliberations. For example, there was a discussion and motion approved to add sub clause 5.x on “traditional network design” and move the appropriate language to that sub clause. And, there was discussion on renaming Clause 6 and it was agreed that be called “Considerations for interconnecting DR to secondary networks.”

January 28, 2009

Wednesday started with a presentation by Sylvester Toe who represented a proposed, new ad hoc group who agreed to submit draft text for the new clause 6 “Considerations for Interconnecting DR to Secondary Networks.” The ad hoc group had created a template for their proposed draft material. The proposed template was discussed as the structure for the new clause 6 and after discussion the revised topics and volunteer writers were documented with Dan Sammon as the lead (**Attachment 3 – Template for Clause 6**).

There was a presentation by Joe Koepfinger proposing a schedule for action items from this meeting due Feb 19, schedule leading to the next meeting, and, for establishing an editing and writing group to help establish the Draft d (**Attachment 4 –P1547.6 Suggested Schedule**). General discussion resulted that the schedule was too tight but we still should be able to get an updated draft before the June meeting.

After lunch, the SCC21 chair, Dick DeBlasio gave a presentation to the combined participants of the P1547.6 and the ad hoc P1547.7 group (**Attachment 5 – Status of {IEEE} Standards for the Smart Grid**). Dick introduced the draft project authorization request (PAR) P2030 and answered some general questions.

Overall, the meeting comment review discussed 65 of the 79 submitted comments. Those were discussed and were either accepted, rejected, or revised text will be worked on by the volunteers as identified in the P1547.6 Draft 3 Comments resolution file (see closing remarks below). The meeting ended at 4:00 PM.

Closing remarks

The P1547.6 Draft 3, the comments received by the requested deadline prior to the meeting, and the P1547.6 draft 3 comments consideration/resolution file based on this meeting's discussions are posted at the WG member password protected area:

<http://grouper.ieee.org/groups/scc21/1547.6/private/stdrafts.html>

The attendees who volunteered to submit revised material for the P1547.6 document based on this meeting's review agreed to submit their information as soon as practical, but no later than April 8, to the P1547.6 officers. Similarly, by April 8, 2009 (or sooner), the ad hoc group working on the proposed new clause 6 will submit their draft material to the P1547.6 officers. We will then compile the next P1547.6 draft 3.1 for posting. The target posting date is four weeks after receiving the information, e.g., early May.

We are planning to hold a teleconference to preview that next draft and will survey the work group about four weeks in advance of picking that teleconference date.

The targeted schedule for P1547.6 is to have a ballot ready draft in 2010. The next P1547.6 WG meeting is tentatively planned for the first week in June, 2009 before the P1547.4 DR island systems meeting.

Respectfully submitted,

Joe Koepfinger, P1547.6 chair, John Bzura, P1547.6 vice chair, and
Tom Basso and Mike Coddington, P1547.6 co-secretaries.

Secretary's post-meeting note.

There are two additional meetings planned for 2009. The tentative dates and locations follow.

- Week of June 8 in a location yet to be determined (Boston is no longer an option; (June 9-10 for P1547.6, June 10-11 for P1547.7, and June 11-12 for P1547.4)
 - Week of Oct 5 in Atlanta, GA (6-7 for P1547.6 ; 7-8 for P1547.7 and 8-9 for P1547.4)
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Attachment 1 – Attendees
IEEE P1547.6 Work Group (WG) Meeting January 27-28, 2009

First	Last	Company
Jay	Anderson	ComEd
David	Bassett	PPL Electric Utilities
Tom	Basso	National Renewable Energy Laboratory
David	Beach	Portland General Electric
David	Bosack	Northeast Utilities System Company
Hari	Cheema	KEMA
Michael	Coddington	National Renewable Energy Laboratory
Paul	Collins	Pepco
Andris	Garsils	Long Island Power Authority
Sigifredo	Gonzalez	Sandia National Labs
Tom	Gordon	Siemens Power Generation
Patrick	Healey	United Illuminating Company
Gerald	Johnson	Basler Electric
Joe	Koepfinger	Koepfinger Consulting
Scott	Malinowski	UTC Power
Paul	Mattes	NiSource Energy Technologies
C.M.	Miller	American Electric Power
George	Moskos	NSTAR Electric
Janos	Rajda	Satcon Technology Corporation
Dan	Sammon	ConEdison
Chase	Sun	Pacific Gas and Electric
Sylvester	Toe	Georgia Power
Mohammad	Vaziri	Pacific Gas and Electric

Attachment 2 – Agenda
IEEE P1547.6 Work Group (WG) Meeting January 27-28, 2009

27 January 2009

8:00 AM	8:30 AM	Check-in and registration
8:30 AM	8:45 AM	Opening of meeting
		• Welcoming of attendees
		• House keeping issues
		• Review of IEEE required pre-meeting statements
8:45 PM	9:00 AM	Review of agenda & changes if needed and motion to approve
		Review and approval of minutes of Aug 2008 meeting
9:00 AM	10:00 AM	Review latest draft of IEEE P1547.6 Draft 3 as established by Aug 2008 meeting attendees
10:00 AM	10:20 AM	Break - refreshments
10:20 AM	12:00 Noon	Continuing review of draft of IEEE P1547.6
12:00 Noon	1:30 PM	Lunch on your own
1:30 PM	3:00 PM	Continuing review of draft of IEEE P1547.6
3:00 PM	3:15 PM	Break - refreshments
3:15 PM	4:30 PM	Continuing review of draft of IEEE P1547.6
4:30 PM	5:00 PM	Review of the proceedings so far & discussion of topics for next day
5:00 PM		Meeting ends for this day

28 January 2009

8:30 AM	9:45 AM	Continuing review of draft of IEEE P1547.6
9:45 AM	10:00 AM	Break - refreshments
10:00 AM	12:00 Noon	Continuing review of draft of IEEE P1547.6
12:00 Noon	1:30 PM	Lunch on your own
1:30 PM	2:30 PM	Continuing review of draft of IEEE P1547.6
2:30 PM	3:00 PM	Review of proceedings of the meeting and task force assignments
3:00 PM	3:30 PM	Continuation of meeting and TF assignments
3:30 PM		Adjournment of the working group meeting.

**Attachment 3 – Proposal for P1547.6 clause 6 ad-hoc group.
IEEE P1547.6 Work Group (WG) Meeting January 27-28, 2009**

Motion (approved):

Add selectively to new clause 6 proposal (template) from the past four years of material developed for clause 6.

Volunteers.

Anderson	Pellegrini?	Toe
Cheema	Rajda	Vaziri
Garsils	Sun	
Healey	Sammon – lead	

Clause 6 ad-hoc group schedule (completion by April 8 or sooner)

Feb 2 start
Feb 27 ad-hoc group to Sammon
March 10 Sammon to ad-hoc group
Mar 19 ad-hoc group teleconference (possible send to P1547.6 officers)
Mar 26 ad-hoc group resubmit to Sammon
Mar 30 Sammon to ad-hoc group
April 2 ad-hoc group teleconference (possible send to P1547.6 officers)
April 8 Sammon send to P1547.6 officers

----- The clause 6 template follows. -----

The volunteer writer/contributor is identified at end of the bulleted items.

6. Considerations for Interconnecting DR to Networks

Traditionally, utility networks were not designed to accommodate generation on networks. Therefore, to avoid negative impacts on network system reliability, power quality and safety, the major considerations for integrating DR into existing networks include. ...

Joe K. suggested that the ad hoc group material should: Identify {the considerations}; Explain rationale {as to what makes that a major consideration}; and Best way examples {consider drafting examples explaining how to overcome the considerations – this wouldn't necessarily be in clause 6 but could be useful elsewhere in the P1547.6 document}.

6.1 Equipment Ratings

The presence and operation of DR on networks should not cause the network protector:

- o To exceed its fault interrupting capability. Sun
- o To separate two dynamic sources. Toe
- o To tie two dynamic systems. Toe

6.2 Protection and Controls

The presence and operation of DR on networks should not:

- Cause the network protector to operate more frequently than the level prior to DR operation. Sun
- Prevent or delay the network protector from opening for primary feeder faults. Anderson
- DG shall not delay or prevent closure. Vaziri
- Cause the network protector to close after opening. Healey
- Energize a de-energized network. Healey
- Require the network protector settings to be adjusted. Cheema
- Cause an islanding condition. Garsils

6.3 System Planning and Reliability

The presence and operation of DR on networks:

- Would necessitate the need to provide metering at multiple locations on the network. Cheema
- Would necessitate the need to obtain DR operating characteristics (And load information). Anderson

6.4 ~~Are Flash~~ Work practices -- Sun to ask Pellegrini

The presence and operation of DR on networks:

- Should not cause Area EPS operator to alter work practices, e.g., arc flash.

6.5 Gaps not identified above. Everyone in ad hoc group.

Discussion and clarification of template material – from Toe.

6 Criteria for Interconnecting DR to Networks

To maintain existing network reliability, power quality and generally accepted industry work practices, criteria for interconnecting DR to networks should include, but not be limited to:

6.1 Equipment Ratings

A) Fault interrupting capability of network protectors should not be exceeded.

EXPLAIN WHY.

B) Network protectors should not be used to separate two dynamic sources.

EXPLAIN WHY.

C) Network protectors should not be used to tie two dynamic systems.

EXPLAIN WHY.

6.2 Protection and Control

A) Network protectors should not operate more frequently than the level prior to DR operation.

EXPLAIN WHY.

B) Opening of network protectors for primary feeder faults should not be prevented or delayed.

EXPLAIN WHY.

C) Closing of network protectors should not be prevented or delayed.

EXPLAIN WHY.

D) DR should not energize a de-energized network.

EXPLAIN WHY.

E) DR interconnection should not require network protector setting changes.

EXPLAIN WHY.

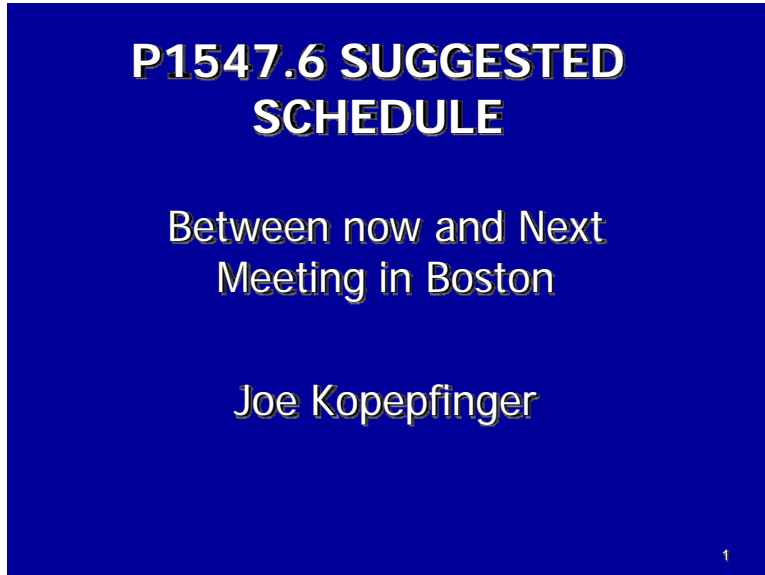
F) DR should not energize a de-energized network.

EXPLAIN WHY.

Attachment 4 –P1547.6 Suggested Schedule

P1547.7 Ad Hoc Working Group Meeting, January 27-28, 2009, Las Vegas, NV

Slide 1



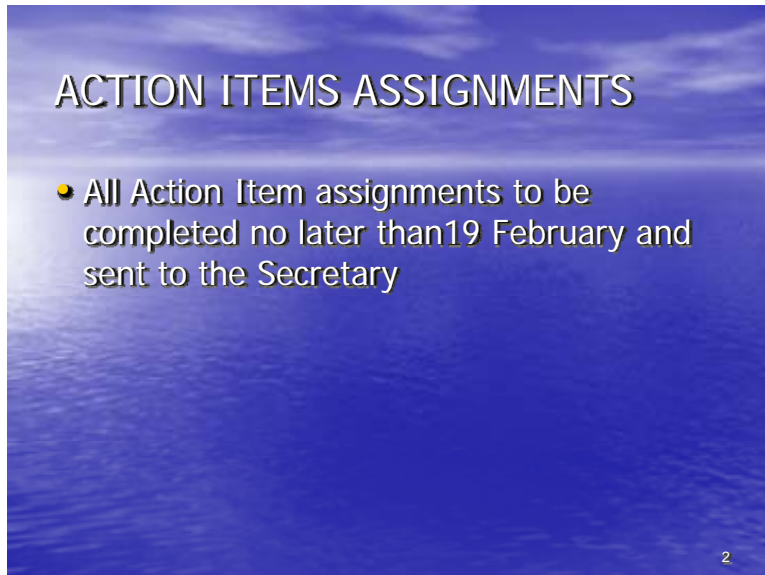
**P1547.6 SUGGESTED
SCHEDULE**

Between now and Next
Meeting in Boston

Joe Kopepfinger

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Slide 2

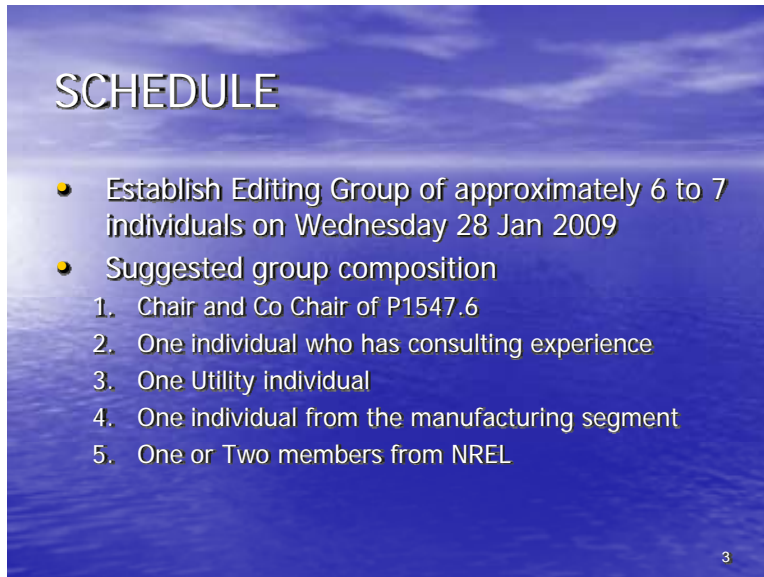


ACTION ITEMS ASSIGNMENTS

- All Action Item assignments to be completed no later than 19 February and sent to the Secretary

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Slide 3

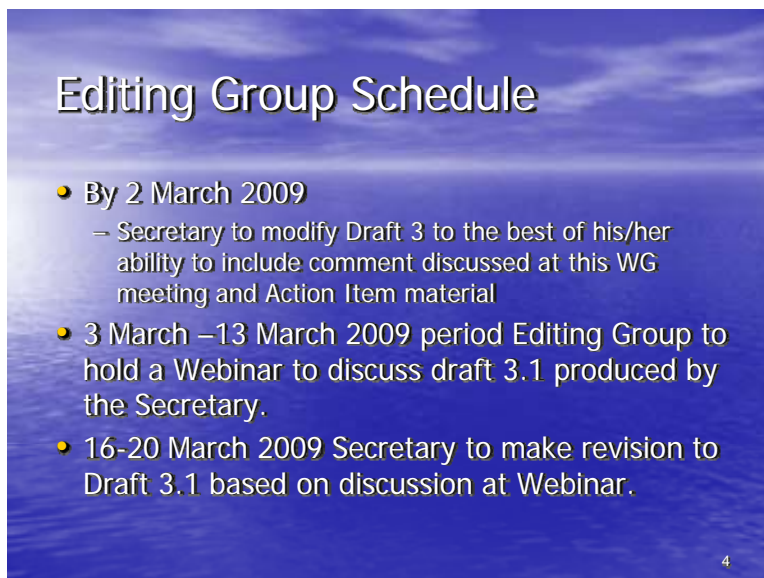


SCHEDULE

- Establish Editing Group of approximately 6 to 7 individuals on Wednesday 28 Jan 2009
- Suggested group composition
 1. Chair and Co Chair of P1547.6
 2. One individual who has consulting experience
 3. One Utility individual
 4. One individual from the manufacturing segment
 5. One or Two members from NREL

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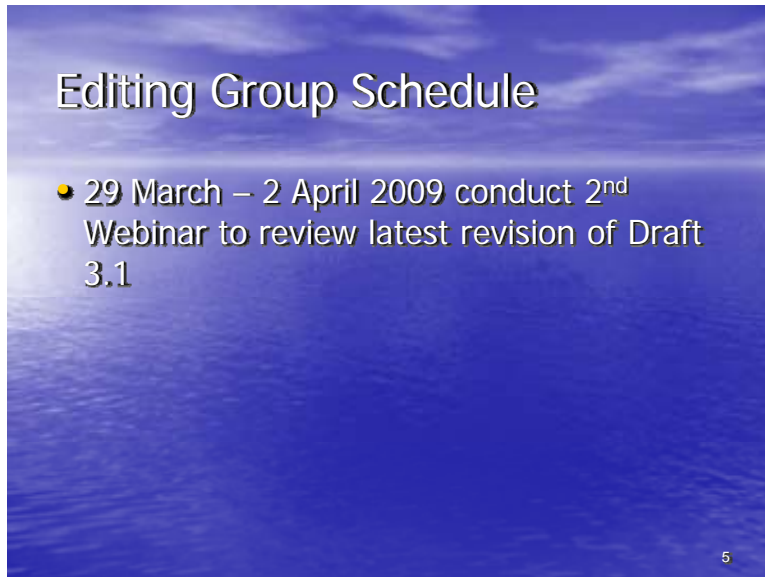


Editing Group Schedule

- **By 2 March 2009**
 - Secretary to modify Draft 3 to the best of his/her ability to include comment discussed at this WG meeting and Action Item material
- **3 March –13 March 2009** period Editing Group to hold a Webinar to discuss draft 3.1 produced by the Secretary.
- **16-20 March 2009** Secretary to make revision to Draft 3.1 based on discussion at Webinar.

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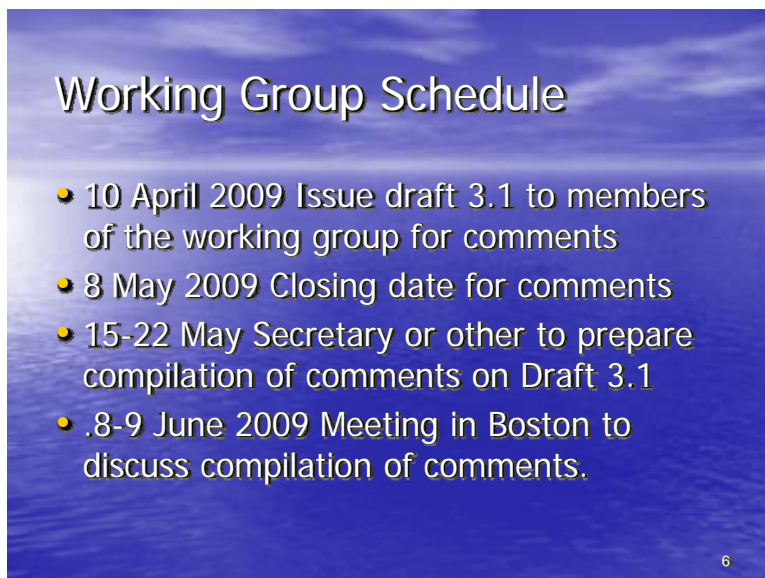


Editing Group Schedule

- 29 March – 2 April 2009 conduct 2nd Webinar to review latest revision of Draft 3.1

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Working Group Schedule

- 10 April 2009 Issue draft 3.1 to members of the working group for comments
- 8 May 2009 Closing date for comments
- 15-22 May Secretary or other to prepare compilation of comments on Draft 3.1
- 8-9 June 2009 Meeting in Boston to discuss compilation of comments.

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Attachment 5 – Status of {IEEE} Standards for the Smart Grid


P1547.7 Ad Hoc Working Group Meeting, January 27-28, 2009, Las Vegas, NV

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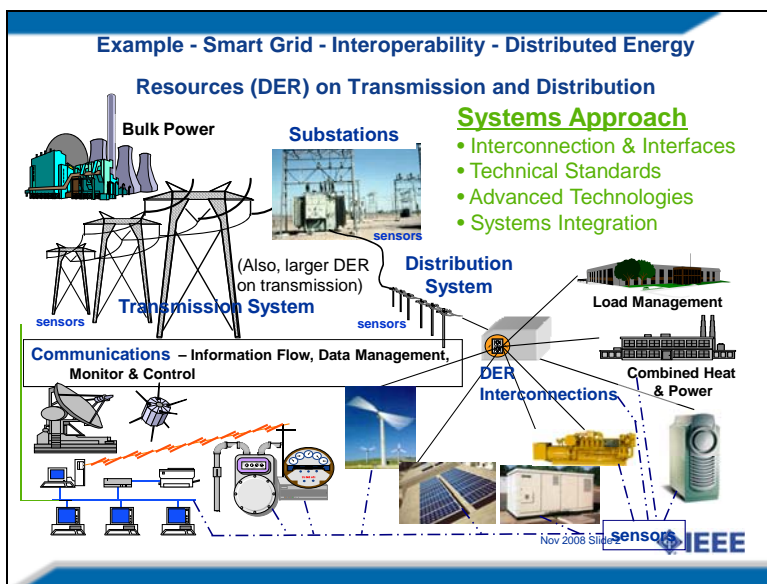
Status of STANDARDS FOR THE Smart Grid

December 10, 2008
IEEE Standard Board Meeting


Dick DeBlasio
IEEE Standards Board Member and
Liaison to U.S. DOE, and SCC21 Chair



Slide 2



Slide 3




- Two things make electricity unique and a challenge for Smart grid:
 1. Lack of flow control (Grid Management and control transformation is needed – i.e., communications)
 2. Electricity storage requirements (static or dynamic storage and load optimization/power electronics – efficiency)
 - Change either of these and the grid delivery system will be transformed
 - Smart Grid Design and Operation can Enable this to Happen.

Slide 4

IEEE's role in smart grid standards

- Numerous IEEE standards relate to the smart grid including diverse fields of digital information and controls technology, networking, security, reliability assessment, interconnection of distributed resources including renewable energy sources to the grid, sensors, electric metering, broadband over power line, and systems engineering. The standards are developed by a variety of expert groups within IEEE.


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NIST Interoperability Framework of standards and protocols

- Energy and Security Independence Act of 2007
- NIST Domain Expert Working Groups (DEWGs)
 - to identify use cases, key standards, standards gaps, for inclusion in the future Smart Grid Standards Interoperability Roadmap.
 - Building-to-Grid (B2G)
 - Industrial-to-Grid (I2G)
 - Home-to-Grid (H2G)
 - Transmission and Distribution (T&D)
 - Vehicle to Grid (V2G) – future
 - Cyber Security - new


Source - NIST EISA Smart Grid Coordination Plan 6/2/08 at <http://www.nist.gov/smartgrid/>

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NIST activity continued


- Face to Face meetings at Gridweek (Sept), Gridinterop (Nov) plus telecons and Twiki
- Current areas of focus: use cases, taxonomy, December progress report to Congress
- Dick DeBlasio ,provided a presentation at IEEE 2030 Energy Conference, in Atlanta. On November18,2008. (Co-authored a paper with Cheery Tom)
- Draft report to Congress from NIST expected in early December, 2008. (Early indications are that it will be preliminary with suggested recommendations on series of white papers in 2009)

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IEEE Task Force supporting NIST Smart Grid Interoperability Framework

- IEEE Point of Contact (POC) and *IEEE* Smart Grid Ad-Hoc Review Group Lead - Dick DeBlasio, SCC21 chair
- Power Engineering Society POC - Steve Pullins, Secretary, Intelligent Grid Coordinating Committee
- Computer Society POC – John Waltz, IEEE CS/VP
- Members at large to Date: Sam Sciacca (CEO/Microsoft), James Pace/George Flammer/Jay Ramasastry (Silver Spring Networks), Chris Knudsen (PG&E), Phil Slack/George Casio (FPL), Bob Heile (chair IEEE 802.15), Geoff Mulligan (chair – 6LoWPAN), Alex Gelman (CTO/ NETovations), Chuck Adams (Program Director Standards – IBM), Larry Kotewa (SCC31/Community Energy), Joe Koefinger (Standards Board Emeritus), Bob Grow (IEEE Standards Board Chair/Intel, Corp.), Steve Mills (Hewlett-Packard Company), Jean-Philippe Faure (P1901 chair), Tom Basso (SCC21 Representative/NREL), Cherry Tom (IEEE Standards Office), Tom Field, Bartosc Wojszczk, Joe Waligorski, and Pat Duggan.

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Proposed IEEE Interoperability SCC21 Standards Project

Proposed Title and Purpose:

Title - IEEE Standard 2030 Guide for Smart Grid Interoperability of Energy Technology and Information Technology operation with the Electric Power System (EPS) and End-Use Applications and Loads.


Purpose – This standard provides guidelines in understanding and defining smart grid interoperability of the electric power system with end use applications and loads. Integration of energy technology and information and communications technology is necessary to achieve seamless operation for electric generation, delivery, and end-use benefits that will permit two way power flow with communication and control. Interconnection and intra-facing frameworks and strategies with design definitions will be addressed that will provide guidance in expanding the current knowledge base. This knowledge base will become a key element in grid architectural designs and operation that will promote a more reliable and flexible electric power system.

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IEEE Standards in green technology


- Energy – renewables/ greener, clean technologies
 - Published 1547 series for Distributed Resources
 - P1547 ongoing projects
 - Published 1680 for Electronic Product Environmental Assessment (EPEAT)
- New Potential Project Areas
 - PHEV (plug-in hybrid electric vehicles)
 - Grid interface (SCC21)
 - Batteries
 - Smart Grid
 - Future wind, solar, geothermal, hydro
 - GHG emissions calculations
 - Industrial Energy Efficiency

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OBSERVATIONS

- Smart grid Standards will extend across the entire grid (i.e., need interoperability standards (top down) and building block standards (bottom up).
- Smart grid Equipment Standards will be needed to handle information data management, communications and control.
- Flexible smart grid system Interoperability Design and operational Standards will allow near term and long term smart grid evolution.
- Development of a body of Interoperability Smart grid Standards need to be initiated know.

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