IEEE SCC21 P1547 Working Group Meeting

P1547 Draft *Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces*

Feb. 10 - 12, 2015; Arlington VA

P1547 Chair Tom Basso, (CD F1 Overall Document)
P1547 Secretary/Treasurer Charlie Vartanian,
(CD F5 Special Interconnections)
Vice Chairs (Central Desktop [CD] Subgroup Leaders)
　　　John Berdner (CD Folder 3 [F3] GenReq2)
　　　Jim Daley (CD F6 Test Specs & Reqs)
　　　Babak Enayati (CD F2, GenReq1 & F7 PQ)
　　　Mark Siira (CD F4 interoper/Analyses)
IEEE SCC21 Liaison Mike Kipness,

IEEE P1547 (Full Revision) Project
Approved by the IEEE SASB on March 27, 2014

Title: Draft Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces.

Scope: This standard establishes criteria and requirements for interconnection of distributed energy resources (DER) with electric power systems (EPS), and associated interfaces.*

Purpose: This document provides a uniform standard for the interconnection and interoperability of distributed energy resources (DER) with electric power systems (EPS). It provides requirements relevant to the interconnection and interoperability performance, operation, and testing, and, safety, maintenance and security considerations.

Note: Interfaces and interoperability and related terms are defined and described in IEEE Std 2030

Agenda – P1547 (Registration/sign-in 8:15; adjourn 4:30 pm)
Target outcome: establish P1547 Draft 1 & WG direction to individual subgroups.

Tuesday Feb. 10   (8:15 am – 4:30 pm)
- **8:15am-noon.** Welcome; approve prior minutes; IEEE & P1547 overview
- **1:15 pm–4:30**. Draft inputs discussions (F1, F4, F5 and F6)

Wednesday, Feb 11 (8:15 am – 4:30 pm)
- **8:15am -noon** - Welcome. Draft input discussions (F2 & F7) WG direction to Subgroups
- **1:15pm-4:30pm** -- WG discussion and direction to Subgroup F3

Thurs. Feb. 12 (8:15 am; adjourn meeting 4:30 pm)
- **8:15am – 10 am.** Welcome; P1547 Draft 1 preview of consolidated draft text, and, read-through of prior days WG direction to subgroups;
- **10:15 am – 3:15 pm** WG direction to all Subgroup leads and Subgroup facilitators. Front-to-back review of onsite P1547/Draft 1 (text, graphics, etc.); document WG direction to respective subgroups (e.g., open topics, "low priority/don't include" topics; summary notes, etc.).
- **3:30 pm – 4:30 pm** - Next actions/**Adjourn meeting.**

P1547: Revision of IEEE Std 1547 (2014)

- Builds on 1547 (2014), & 2030 interoperability/interfaces;

- Central Desktop (CD) Folders (F#) are depository/informational folders (not the outline).

- CD Subgroup Leaders: P1547 Officers

- CD Subgroup Facilitators: WG Member Volunteers

P1547 Central Desktop Folder Organization (F1 – F7)

P1547 Organization: P1547 Chair – Tom Basso; Secretary/Treasurer – Charlie Vartanian **P1547 Vice Chairs: John Berdner; Jim Daley; Babak Enayati; Mark Siira** Note: each SG considers their specific inputs to testing, interoperability, and other cross-cutting aspects.	**Subgroup Leaders: P1547 Vice Chairs & Sect'y. WG Subgroup Facilitators: see below**
F1 OD: Overall Document structure/contents/harmonization; new Annexes (informative as well as normative) Existing 1547 clauses 1-2-3, glossary, new Annex(es). 1.3 "Limitations"; security/reliability?	**Tom Basso, Lead;** Charlie Vartanian, Alt Lead. WG Volunteer Facilitators: 1.3 Bob Cummings & David Forrest;
F2 (GR1): General Requirements 1 (GR1), -- Voltage regulation, potential new requirements 4.1.1 Voltage regulation; and possible new general requirements.	**Babak Enayati, Lead;** John Berdner, Alt. Lead. WG Volunteer Facilitators: 4.1.1 Aminul Huque;
F7 (PQ): 4.3 Power quality (4.3.1, 4.3.2, and 4.3.3)	**F7 (Power Quality) Bob Arritt**
F3 (GR2): General Requirements 2 (GR2), Response to abnormal grid conditions, 4.0; 4.1 (not 4.1.1 V-regulation; not distribution secondary networks); 4.2; 4.2.3; 4.2.3; 4.2.4; 4.2.6) Includes voltage and frequency ride through	**John Berdner, Lead;** Babak Enayati, Alt. Lead. WG Volunteer Facilitators: VRT & FRT Reigh Walling and Jens Boemer

P1547 Organization: P1547 Chair – T. Basso; Secretary/Treasurer – C. Vartanian	
F4 (IIAMS): Interoperability, Analysis, Modeling and Simulation 4.1.6 Monitoring provisions (information, SCADA, etc.); Interoperability/new; modeling and simulation/new.	**Mark Siira**, **Lead;** Tom Basso, Alt. Lead. WG Volunteer Facilitators: Mod/Sim: D. Lovelady? & Divya Kurthakoti?
F5 (SI): Special Interconnections (special EPS's and special DER-EPS considerations) 4.4 islanding; Microgrids (MG)/new; 4.1.4 Secondary distribution networks; special EPSs/new	**Charlie Vartanian, Lead**; Tom Basso, Alt. Lead; Babak Enayati, Alt. Lead; WG Volunteer Facilitators: - 4.1.4 Mike Coddington; - 4.4 & Microgrids Leo Casey.
F6 (IST): Interconnection/Interoperability Test Specifications and Requirements all of existing 5; new 5.1.7 DER short circuit response; and new 5.1.8 DER response to Loss of load; and, this "Testing" folder needs to be filled from all of previous topical areas.	**Jim Daley, Lead;** Mark Siira, Alt. Lead; Tom Basso, Alt. Lead . WG Volunteer Facilitators: -5.1.7 & 5.1.8

Participants: IEEE Disclosure of Affiliation

Every member and participant in a working group, Sponsor ballot, or other standards development activity shall disclose his or her affiliation(s), which includes employer(s) and any other affiliation(s). An individual is deemed "affiliated" with any individual or entity that has been, or will be, financially or materially supporting that individual's participation in a particular IEEE standards activity. This includes, but is not limited to, his or her employer(s) and any individual or entity that has or will have, either directly or indirectly, requested, paid for, or otherwise sponsored his or her participation. Failure to disclose every such affiliation(s) may result in complete or partial loss of rights to participate in IEEE-SA activities. An individual is not excused from compliance with this policy by reason of any claim of a conflicting obligation (whether contractual or otherwise) that prohibits disclosure of affiliation(s).

A person who believes that a participant's disclosure is materially incomplete or incorrect should report that fact to the appropriate Sponsor(s).

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Agenda – P1547

- Target outcome: establish P1547 Draft 1 & WG direction to individual subgroups. {Daily: full WG meeting; registration/sign-in 8:15; lunch, continental breakfast and pm coffee provided; adjourn 4:30 pm)

Tuesday Feb. 10   (8:15 am – 4:30 pm)

- **8:15am-noon.** Welcome; IEEE & P1547 overviews (work status and draft preview; e.g., presentation of draft text and work in progress): Subgroup Leads (P1547 officers), and Subgroup Facilitators (Central Desktop [CD] information Folders F1 thru F7)

- **1:15 pm–4:30**. Draft inputs discussions (F1, F4, F5 and F6) WG discussion and direction to subgroups
- F1 (overall document considerations);
- F4 (interfaces and interoperability considerations, and MIC – monitoring, information exchange & control);
- F5 (Special Interconnections); and
- F6 (test requirements).

Agenda – P1547

Wednesday, Feb 11 (8:15 am – 4:30 pm)

- **8:15am -noon** - Welcome. Draft input discussions (F2 & F7). WG discussion and direction to Subgroups F2 (General requirements 1, & F7 Power quality).

- **1:15pm-4:30pm** -- WG discussion and direction to Subgroup F3 (General requirements 2)

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Agenda – P1547 (full revision)

<u>Thurs. Feb. 12</u> **(8:15 am; adjourn meeting 4:30 pm)**

- **8:15am – 10 am.** Welcome; P1547 Draft 1 preview of onsite consolidation of draft text, and, read through of prior days WG direction to subgroups;

- **10:15 am – 3:15 pm** WG discussion and WG guidance to all Subgroup leads and Subgroup facilitators. Front-to-back review of onsite P1547/Draft 1 (text, graphics, etc.); document WG direction to respective subgroups (e.g., open topics, "low priority/don't include" topics; summary notes, etc.).

- **3:30 pm – 4:30 pm** - Next actions (subgroup plans/schedule; WG plans/schedule; etc.); Recap;

- **4:30 Adjourn meeting.**

Participants, Patents, and Duty to Inform

All participants in this meeting have certain obligations under the IEEE-SA Patent Policy.

Participants:

-- "Shall inform the IEEE (or cause the IEEE to be informed)" of the identity of each "holder of any potential Essential Patent Claims of which they are personally aware" if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents

- "Personal awareness" means that the participant "is personally aware that the holder may have a potential Essential Patent Claim," even if the participant is not personally aware of the specific patents or patent claims

-- "Should inform the IEEE (or cause the IEEE to be informed)" of the identity of "any other holders of such potential Essential Patent Claims" (that is, third parties that are not affiliated with the participant, with the participant's employer, or with anyone else that the participant is from or otherwise represents)

-- The above does not apply if the patent claim is already the subject of an Accepted Letter of Assurance that applies to the proposed standard(s) under consideration by this group

"Quoted text excerpted from IEEE-SA Standards Board Bylaws subclause 6.2"

● Early identification of holders of potential Essential Patent Claims is strongly encouraged

● No duty to perform a patent search

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Patent Related Links

All participants should be familiar with their obligations under the IEEE-SA Policies & Procedures for standards development.

Patent Policy is stated in these sources:

IEEE-SA Standards Boards Bylaws

http://standards.ieee.org/guides/bylaws/sect6-7.html#6

IEEE-SA Standards Board Operations Manual

http://standards.ieee.org/guides/opman/sect6.html#6.3

Material about the patent policy is available at

http://standards.ieee.org/board/pat/pat-material.html

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org or visit http://standards.ieee.org/board/pat/index.html

This slide set is available at http://standards.ieee.org/board/pat/pat-slideset.ppt

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Call for Potentially Essential Patents

- If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance:
    - Either speak up now or
    - Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible or
    - Cause an LOA to be submitted

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Other Guidelines for IEEE WG Meetings

All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.

- Don't discuss the interpretation, validity, or essentiality of patents/patent claims.

- Don't discuss specific license rates, terms, or conditions.

    - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.

        - Technical considerations remain primary focus

- Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.

- Don't discuss the status or substance of ongoing or threatened litigation.

- Don't be silent if inappropriate topics are discussed … do formally object.

See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and "Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy" for more details.

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IEEE Standards Classification

- **Standards**: documents specifying mandatory requirements (shall)

- **Recommended Practice**: documents in which procedures and positions preferred by the IEEE are presented (should)

- **Guide**: documents that furnish information -- e.g., provide alternative approaches for good practice, suggestions stated but no clear-cut recommendations are made (may)

IEEE Style Example Word Usage

"*Shall*" indicates mandatory requirements (*shall* equals "*is required to*").

"*Should*" is used to indicate a recommendation (*should* equals "*is recommended that*"). Should indicates that among several possibilities one is recommended as particularly suitable, without necessarily mentioning or excluding others; or, should indicates a certain course of action is preferred but not necessarily required.

"*May*" is used to indicate a course of action permissible within the limits of the standard ("*may* equals *is permitted to*").

"*Can*" is used for statements of possibility and capability, whether material, physical, or causal ("*can* equals *is able to*").

Note: (a) use of the word "*must*" **is deprecated** and shall not be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.

(b) use of the word "*will*" **is deprecated** and shall not be used when stating mandatory requirements; *will* is only used in statements of fact.

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IEEE 1547 Interconnection Standards

1547- 2008/2014 Standard for Interconnecting Distributed Resources with Electric Power Systems (1547a-2014 -- Amendment 1 published May 2014)

P1547 (full revision) Draft Standard for Interconnection and Interoperability of Distributed Energy Resources With Associated Electric Power Systems Interfaces

1547.1 – 2005/2011 Conformance Test Procedures for Equipment Interconnecting DR with EPS **(PAR approved Dec 2014)**

P1547.1a Amendment 1 (ballot affirmed; submitted to IEEE 201502)

1547.2 - 2008 Application Guide for IEEE 1547 Standard for Interconnection of DR with EPS

1547.3 - 2007 Guide for Monitoring, Information Exchange and Control of DR

1547.4 - 2011 Guide for Design, Operation, & Integration of Distributed Resource Island Systems with EPS

1547.6 - 2011 Recommended Practice for Interconnecting DR With EPS Distribution Secondary Networks

1547.7 – 2014 Guide to Conducting Distribution Impact Studies for DR Interconnection

P1547.8 Recommended Practice for Establishing Methods and Procedures that Provide Supplemental Support for Implementation Strategies for Expanded Use of IEEE Standard 1547 (ballot affirmed; recirculation TBD)

http://grouper.ieee.org/groups/scc21/index.html

Recent and Next Actions (20150210)

- **P1547 (full revision)** Next meeting early-late summer and/or fall 2015

- **P1547.1a Amendment 1** {ballot affirmed; recirculated; 2015 Q1 to IEEE};

- **P1547.8 -- recommended practice: "*how-to extend 1547-2003*" {**ballot affirmed; recirculation TBD; to IEEE 2015 Q2?}

- **P2030.2 Energy Storage Interoperability** {201502 submitted to IEEE}

- ? Etc.

P1547 Going Forward (target 2016 ballot?)

Meeting (2/year)	Meeting Location (Sponsor)	Meeting Duration {3-1/2 days}	Meeting Format (Breakouts and full WG)
April 23 – 25, 2014	Las Vegas NV	2-1/2 days	One group
June 26-27, 2014	Las Vegas NV	1-1/2 days	One group
Nov 4-7, 2014	Atlanta GA (NERC)	3 days	breakouts
Feb 10 - 12 2015	Arlington VA (NRECA)	3 days	One group
Late summer? 2015	West? South? Nat'l Grid (MA)?	To be determined (TBD)	TBD
Feb 2016?	CA? (?)	TBD	TBD
Summer 2016	TBD	TBD	TBD
Fall 2016 (sooner or later?)	WG final draft to IEEE for ballot	TBD	TBD

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IEEE P1547
WG site on Central Desktop;
Public site: IEEE Grouper web pages

<u>IEEE Central Desktop Working Group Web site</u>

- Document depository and exchange
- Organized into categories (Folders)
- Username and password required
- Schedule and plan for subgroup completing their inputs to WG
- See P1547 organization - logistics for

<u>Listservs for subgroups – being established</u>

Next Actions (20150212　)

- TBD