IEEE SC21 P1547.10 Working Group Kickoff

"IEEE P1547.10 Recommended Practice for DER Gateway Platforms"

IEEE P1547.10 Kick-off Meeting
Minutes (DRAFT)
Monday, January 9th, 2023, 2:00pm – 4:00pm ET
2023 IEEE JTCM, Jacksonville, FL

Chair: Abrez Mondal
Vice Chairs: Yashar Kenarangui, John Berdner
IEEE SA Liaison: Michael Kipness
IEEE SC21 Standards Coordinator / Secretary (Acting): Jens Boemer

1. Call to Order

- Start at 2:06 PM with reminder to record attendance (room sign-in sheet, Webex, and Slido)

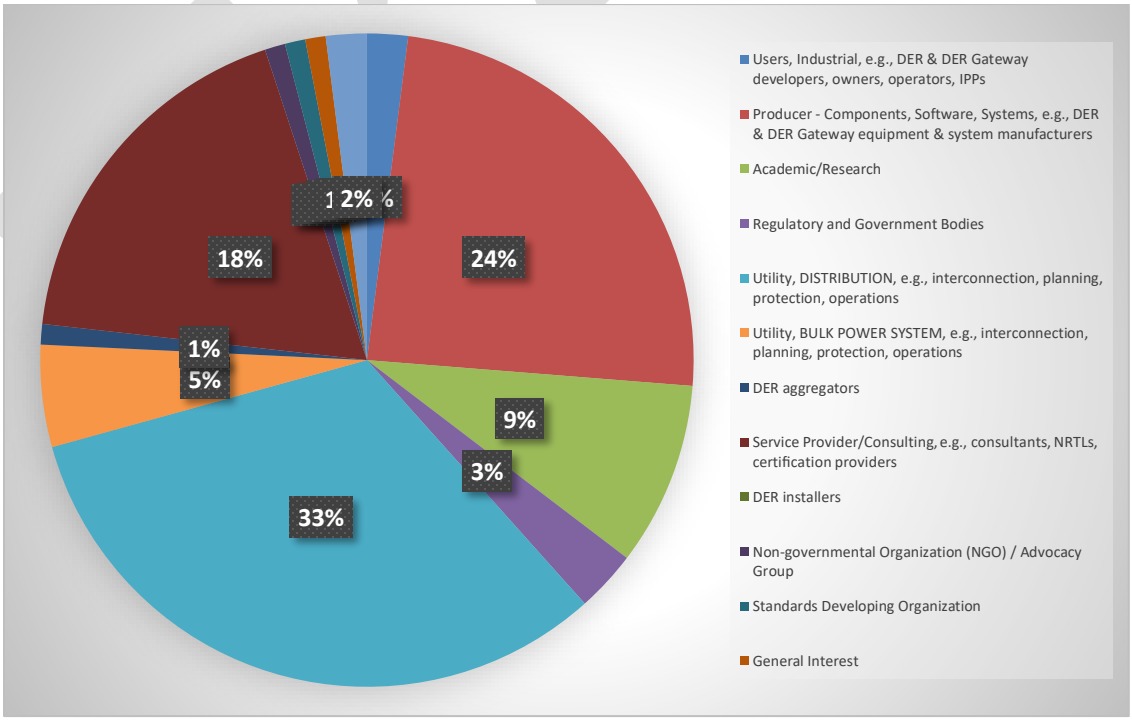
A. Meeting Goals and Context

- Introduce Working Group Leadership and Policies & Procedures
- Define Scope and Form Sub-Working Groups
- Define relationship to P1547 revision
- Develop timeline, frequency for meetings & calls
- Call for volunteers to fill open positions

B. Review of Agenda

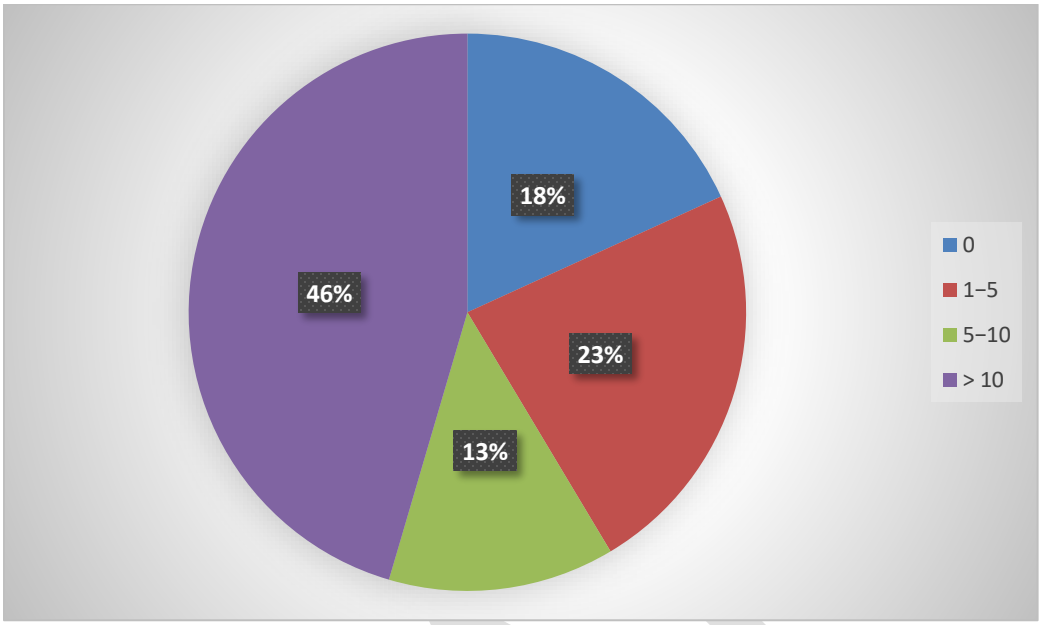
2. Roll call of Individuals and Declaration of Affiliation (Working Group Establishment)

- Survey for individual affiliation category:



The suggestion from audience to include addition of customers/ rate payers as an interested group under "Other Groups" was justified by that use of DER gateways may have an impact on project financials and energy use cases.

- Survey for previous IEEE Meeting Experience



3. **IEEE SA Procedure Introduction - (IEEE SA Program Manager) (Slides 11-18)**
    a. **GDPR Compliance**
    b. **Parliamentary Procedures**
    c. **eTools: myProject, Listserve, iMeet Center, WordPress, and WebEx**

Mike Kipness presented the IEEE SA Procedures that were read and shown to the audience. The WG Chair, Mamadou Diong, clarified that an iMeet Central workspace and listservers for e-mail communication will be set up in the coming weeks.

4. **IEEE Policies (Slides 19-32)**
    a. **IEEE SA** Call for Patents
    b. **IEEE SA** Copyright Policy Presentation
    c. **IEEE SA** Individual Participation

Mike Kipness reviewed the IEEE SA Call for Patens, Copyright Policy, and Individual Participation slides, then opened the floor for essential patents. No essential patents were claimed.

5. **Review of the Project Authorization Request (Slides 33-44)**
    a. **Overview on DER Gateways and relationship to DERs/P1547**
    b. **Need, Purpose, Scope, Stakeholders**
    c. **Standards Classification & Language**

Mike Siira gave an introduction into the SC21 standards development, including the importance of standards in the industry, reviewed the importance of IEEE 1547 on interconnection deployment in the U.S., and the reminded the audience of the IEEE Standards Classification, consensus building, and appropriate use of standards words (shall, should, and may language). Additionally presented where P1547.10 falls into the 1547 and 2800 families.

Jens Boemer presented why the PAR for P1547.10 is timely. He suggested that some ongoing or recently completed standards and industry activities stretch into functional requirements that relate to the DER Gateway. However, these activities do not appear to be sufficiently coordinated which brings along a potential risk of bifurcated requirements. The P1547.10 Working Group can integrate and help coordinate between these related activities:

- Recent publication of 2030.11 (DERMS functional specification), 1547.10 may connect 2030 and 1547 requirements.
- 1547.3 nearing SA ballot, some of that guidance may become part of the base std
- approved PAR of 1547 revision, coordinate what could belong in the main revision and what can belong in the DER gateway PAR initiative
- UL 1741 on Power Control Systems (PCS)
- IEEE P2030.5 (Standard for Smart Energy Profile 2.0 Application Protocol)
- IEEE P2030 (Guide for Smart Grid Interoperability)
- IEEE P2688 (Recommended Practice for Energy Storage Management Systems in Energy Storage Applications)

Question from the audience suggested establishing a definition of DER gateway. Current 1547 version has no definition of DER gateway. This could be a next step for both WGs and requires coordination. Figure 1 visualizes the DER Gateway and its relationship to the requirements specified in IEEE 1547-2018.

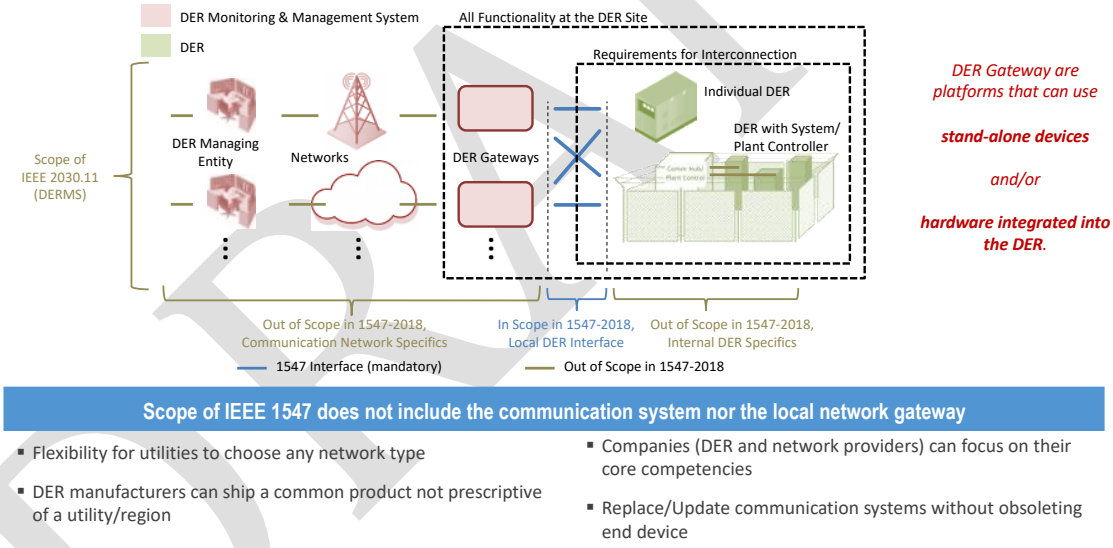


Figure 1: Visualization of the DER Gateway and its relationship to the requirements specified in IEEE 1547-2018.
***Source: Modified based on Applications of the Local DER Gateway: EPRI, Palo Alto, CA: 2020. 3002018673.* (Slide 69)**

Jens Boemer read the scope, purpose and need of the PAR document (available on IEEE myProject here) qualifying that the scope is broad and some overlap from other groups will become visible and it is expected to coordinate with those groups to not duplicate work. This includes coordination with IEC, NERC, SEIA, SEPA, SunSpec, UL, etc., and the Energy Storage & Stationary Battery Committee (PE/ESSB). The joint sponsors of P1547.10 include:

- SC21 Standards Committee 21 (main sponsor)
- PE/T&D Power and Energy Society Transmission & Distribution Committee
- PE/EDPG Energy Development and Power Generation Committee
- COM/PLC Communications Society Power Line Communications Standards Committee
- PE/PSCC Power System Communications and Cybersecurity
- PE/PSRC Power System Relaying and Control

Scope of proposed standard:
This document defines recommended specifications for a Distributed Energy Resources (DER) gateway platform in grid applications across various domains. A description of DER gateway implementation options (local or distributed platform, for legacy or intelligent DERs) is included. Gateway platform functions and communications, including operational procedures and data collection recommendations are described. Recommended procedures for cybersecurity, centralized manageability, monitoring, grid edge intelligence and control, multiple entities management, error detection and mitigation, events tracking and notification, communication protocol translation, and communication network performance monitoring are also described.

Purpose:
The purpose of the project is to create and maintain coherency between P1547/.x, P2030/.x, and other related projects for DER and Distributed Energy Resources Management Systems (DERMS) within the evolving smart grid interoperability reference model (SGIRM) with a focus on Distributed Energy Resources (DER) Gateway Platforms. The recommended practice enables utilities deploying DERMS and other DER integration systems to integrate DER with grid edge intelligence, while DER devices serve their core functions focusing on simplicity, interoperability, and long-term stability.

Need for the Project:
The smart inverter functionalities specified in IEEE 1547-2018, and the associated communication interfaces are not suitable for direct integration with the monitoring and control systems of grid operators. The standard inverter functionalities were designed only to expose the raw, inherent capabilities of the DER, but (intentionally) omitted additional logic or management features because these were believed to vary by utility and region. This gap can be addressed by deploying a DER gateway platform with a range of grid edge-intelligence functions that provides opportunities to improve system functionality as grid needs evolve over time.

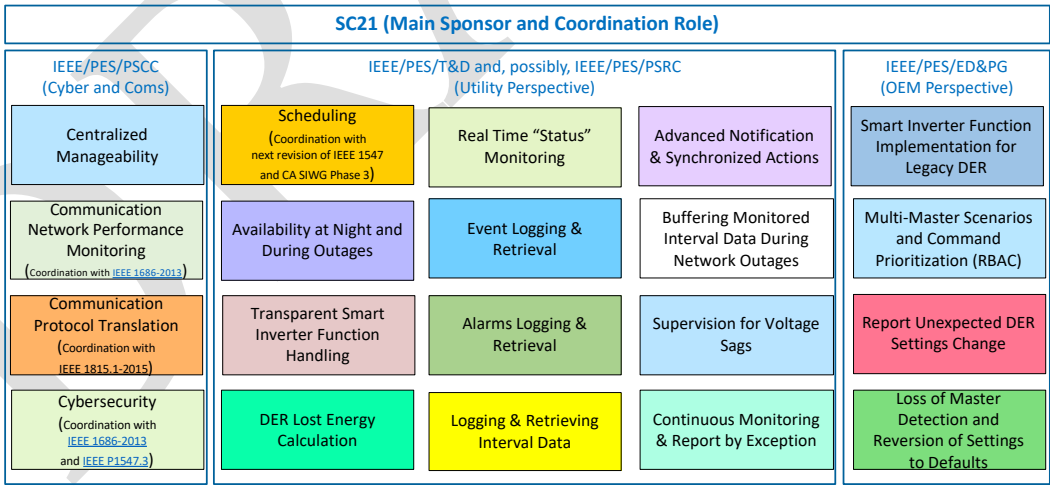


Figure 2: Visualization of the Scope of the PAR (Slide 41)

Question from the audience inquired about why IEEE 2030.5, as a "communication interface" specified, would not be suitable for direct integration. Jens Boemer clarified that 1547 defines three std protocols from which 2030.5 was one of them. In many DERs, not all three protocols are available and the DER gateway could help with protocol translation as needed.

Another comment from the audience was about the fact that many DERs are not owned or financed by the Area EPS operator (utility), and thus, utility "management" would be executed indirectly via a third party or via contracted grid services. Coordination is needed for all the activities that are

ongoing to be able to draft recommended practices. Cyber and Coms, Utility Perspective, OEM perspective. Is it important to define how all standards interact between each other? An answer to that question was left for later presentations during the meeting.

Examples of DER gateway functions were also presented as visualized in Figure 2.

6. **Working Group Policies & Procedures (Slide 45-58)**

   a. **Review Baseline Procedures**

Jens Boemer presented the Working Group Policies & Procedures (P&Ps) to the audience. He highlighted the rule that allows any interested party that participates at the WG kick-off meeting to become a voting member. A Slido poll was used to record participants' claim of voting membership which has been recorded in **Appendix 1** of these minutes. Figure 3 visualizes the result of that poll. 77 individuals became voting members, 38 remained as observers from which 26 said they were not sure yet whether they might want to become voting members in the future.

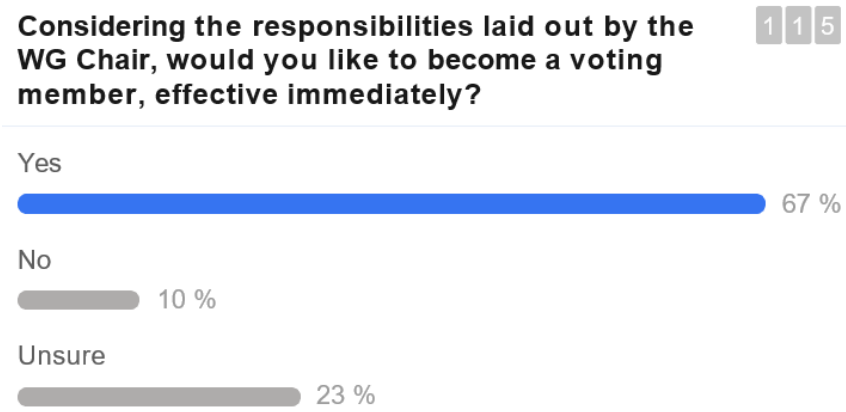


Figure 3: Results from Slido poll for voting membership. (Slide 60)

Once voting membership was established, Wayne Stec made the motion to move forward with the P&Ps and Joe Schaffer seconded the motion. No further discussion requests were raised. No opposition and no abstained votes were made, and the P&Ps were approved at 3:14 PM.

   b. **Standards Development Process**

Jens Boemer reviewed the slides that explain the IEEE SA standards development process and include links to additional resources. Slide 57 explains how to express interest in the project on IEEE myProject.

7. **Approval of Agenda (Slide 59)**

Once voting membership was established, the agenda was presented to the audience for approval. Michael McConnell made the motion to move forward with the agenda and Daniel Freeman seconded the motion. No further discussion requests were raised. No opposition and no abstained votes were made, and Agenda was approved for the meeting at 3:16 PM.

8. **Appointment of Officers (Slide 61)**

   a. **Introduction of WG Leadership Team**

The WG leadership team was introduced to the audience with Abrez Mondal as the chair of the WG, and Yashar Kenarangui and John Berdner as vice-chairs. WG Secretary and SG facilitators were still vacant positions and will be filled in by volunteers. Volunteer nominations were requested by the chair for the vacant positions. Questions about responsibilities for Secretary and Subgroup facilitators were also answered, including clarifications about anticipated time/resource commitments (Slide 63).

9. Technical Presentations

Brian Seal, affiliated with EPRI and former facilitator of the IEEE 1547-2018 Subgroup on DER Communications and Interoperability, was invited to present on the motivation, opportunities, and challenges for DER Gateways, including their relationship to the IEEE 1547-2018 requirements for a standardized local DER communication interface. He clarified that there is a difference between a "DER" and a "DER Site", and that the latter could include a DER Gateway that is outside the scope of the IEEE 1547-2018 requirements (Figure 1 above and Slide 69 in **Appendix 2**). He also showed different DER Gateway architectural and ownership scenarios (Slide 70), potential DER Gateway Functionalities (Figure 2 above and Slide 71), including Communication Protocol Translation (Slide 72), and potential Cybersecurity Challenges and Related Objectives of Gateways (Slide 73). The presentation was welcomed by the various participants in chat as a useful clarification of the potential scope and value of the P1547.10 project.

10. Proposed Sub-WG Overview (Slides 75-81)

a. Discussion & Scope Adjustments

b. Coordination with Related Activities

Subgroup proposals were presented to the audience by the chair and vice-chairs as shown in Figure 4 (Slide 75). Vice-chairs also presented potential topics that may be addressed in the future by the subgroups. No questions were raised by any member of the audience. A Slido poll was used to record the participants' interest in the proposed WG Subgroups which is also recorded in **Appendix 1**.

Subgroup	Officer (Chair or Vice-Chair)	Subgroup Lead / Facilitator(s)	Scope
Overall document and general requirements	Abrez Mondal	WG Secretary	* locational requirements * should vs. may language
DER gride-edge Intelligence functions in Gateway	Yashar Kenarangui	TBD	* smart inverter function implementation * alarm/events handling * scheduling
Security functions in Gateway	John Berdner	TBD	* cybersecurity features * hardware security
Communications	Yashar Kenarangui	TBD	* protocol translation * network management

Figure 4: Proposed Working Group Subgroups (Slide 75)

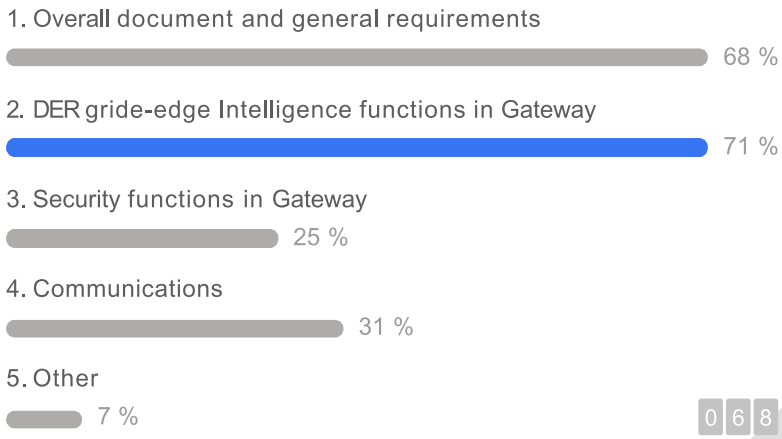


Figure 5: Results from Slido poll on participants' interests in the proposed WG Subgroups (Slido 81)

11. Future Meetings (Slides 82-84)

It was announced by the chair that future meetings will follow the schedule of P1547 Revision WG with hybrid participation allowed. Proposed meetings dates are the week of April 3, 2023 with P1547.10 meeting hybrid on Wed/Thu April 5-6, 2023 in Houston, TX; a virtual-only meeting in early summer 2023, and a hybrid meeting in fall 2023 in Chicago, IL. Pending dates will be specified later. Small fees or no fees are intended for the next meetings, and will be announced later.

12. Adjourn

Mark Siira moved the motion to adjourn the meeting. Brian Seal seconded the motion. No discussion nor objections or abstinence votes were made. Meeting was adjourned at 4:04 PM.

Appendices

- **Appendix 1. Working Group Roster**
- **Appendix 2. Meeting Slides**

Appendix 1. Meeting Attendance

First Name	Last Name	Affiliation	In Person	Virtual	Voting?	SG1 Overall Document	SG2 Grid-Edge Functions	SG3 Security Functions	SG4 Comms	SG5 TBD
Marcelo	Algrain			x	Yes					
Hawk	Asgeirsson			x	Yes		x			
Philip	Baker	Duke Energy		x	Unsure					
John	Berdner	Enphase	x	x	Yes	x				
Nedim	Besirevic			x						
William	Bloethe	IEEE EMC	x		No					
Jason	Bobruk	SolarEdge Technologies		x	Yes	x				
Jens	Boemer	EPRI	x	x	Yes	x				
George	Bolos		x		Yes		x			
Fredy	Bravo		x							
Branislav	Brbaklic	Schneider Electric		x	Unsure					
Rob	Bridges	CenterPoint Energy		x	Yes					
William	Brown	Schneider Electric		x	No					
Jimyeons	Bue	HICO	x		Yes					
Jeff	Buttermore	Xcel Energy		x	Unsure					
Jim	Campbell	Southern Company Services	x		No					
Keith	Carpenter		x		No					
Sean	Carr	ComEd	x	x	Yes	x				
Vong	Chan	Southern California Edison		x						
Arunodai	Chanda		x		Yes	x				
Brittany	Chapman	Commonwealth Associates, Inc.		x	Unsure		x			
Meredith	Chee	Hawaiian Electric Company		x						

Inji	Choi	Korea Electric Power Corp		x	Unsure			x		
Nancy	Connelly	Duke Energy		x	Yes	x				
Bill	Cook	SEL		x	Yes	x				
Michael	Cooper	Liberty Utilities NH		x	No					
Jose	Cordova	EPRI	x		Yes					
Atieh	Delavari	IREQ		x	Yes	x				
Mamadou	Diong	Dominion Energy	x		Yes					
Kevin	Donahoe		x							
Ben	Ealey	EPRI	x		Yes	x				
Christian	Eder	Fronius USA LLC		x	Yes	x				
Antti	Eerola	EPC Power Corp		x	Yes	x				
David	Ellis	Public Service Electric and Gas, NJ		x	Yes		x			
Steve	Estes	EnergyUnited		x	No					
Don	Etheridge	Kinectrics	x	x	Yes					
Peter	Evans	New Power Technologies Inc.		x	Yes		x			
Normann	Fischer	SEL		x	Yes		x			
Jason	Fisher	STC		x	Yes	x				
Bob	Fox	SunSpec Alliance		x	Yes	x				
Daniel	Freeman	Schneider Electric	x		Yes	x				
Fred	Friend		x		No					
Kamal	Garg			x	Yes					
Haile	Gashaw	Georgia Power Company		x	Yes	x				
Émile	Grégoire	Eaton		x	Yes					
Aboutaleb	Haddadi	EPRI		x	Unsure	x				
Joshua	Hambrick	Open Energy Solution		x						
Robert	Harris	NRECA	x	x	No					
Kyle	Hawkings	Hawk's Aerial and Technical Solutions Inc.		x	Yes	x				
Andy	Hoke	NREL		x						

Craig	Holt	Xcel Energy		x	Unsure					
Bryan	Hosseini			x	Yes					
Daqing	Hou	SEL		x	Unsure	x				
Mohammad	Huque	EPRI	x	x	Yes		x			
Rahim	Jafari	Electrical Power Engineer		x	Yes	x				
Andi	Jakupi	Schneider Electric		x	Unsure	x				
John	Jennings	Enervenue		x	Yes					
Steve	Johnston	Eaton	x		No					
Gandhali	Juvekar	SEL		x	Unsure	x				
Rosanna	Kallio	Consumers Energy		x	Yes	x				
Farid	Katiraei		x		Yes					
Yashar	Kenarangui	Xcel Energy		x	Yes	x				
Michael	Kipness	IEEE SA	x							
Jaime	Kolln	PNNL		x						
Ibukunoluwa	Korede	Dominion Energy		x	Yes	x				
Pankaj	Lal	Schneider Electric		x	Yes					
Brett	Larson	Schneider Electric		x	Unsure					
Jim	Lau		x		No					
Stuart	Laval	Eaton		x	Yes		x			
Cathy	Le	Schneider Electric		x	Yes		x			
Pres Tech	Leber			x						
Christopher	Lee	EPC Power Corp		x	Unsure					
Dan	Leeman	Schneider Electric		x	Yes					
Brian	Lydic	IREC		x	Yes		x			
Bruce	Mackie		x		No					
Michael	McConnell	Schneider Electric	x		Yes	x				
Charles	McGaughy	Schneider Electric		x	Unsure					
James	Michaelis			x	No					
Trent	Miller	Duke Energy		x	Unsure	x				
Jeremiah	Miller	Sense		x	Yes		x			

Stephen	Miller	Energy Emissions Intelligence	x		No	x				
Amir	Miragha	Schneider Electric		x	Yes	x				
Chad	Mittelstadt	Schneider Electric		x	Unsure					
Abrez	Mondal	EPRI	x	x						
Adi	Mulawarman	Xcel Energy	x		No					
Dan	Mungovan	Eversource Energy		x	Unsure					
Donal	Murray			x	Unsure	x				
Nirmal	Nair	University of Auckland		x	Yes					
David	Narang	NREL		x	Yes	x				
Ryan	Newell	TRC		x	Yes					
Nayeem	Ninad	CanmetENERGY - Natural Resources Canada (NRCan)		x						
Farhad	Omar	NIST		x	No					
Jason	Page	Xcel Energy		x	Yes		x			
Gian	Paramo	Eaton	x		No					
Alexandros	Paspatis	National Technical University of Athens		x	Yes		x			
Ron	Pate	G&W Electric Co.	x	x	Yes	x				
Dhruv	Patel			x	Unsure	x				
Marc	Patterson	Idaho Power	x		Yes					
Damian	Perrin	Entergy		x						
Alexandre	Piatniczka	Hitachi Energy	x		No					
Prasad	PMSVVSV	Bloomenergy		x	Yes	x				
Chris	Postma			x						
Craig	Preuss	Black & Veatch	x	x	Yes					
Syed	Qaseem Ali			x		x				
Karen	Quackenbush	Fuel Cell & Hydrogen Energy Association		x	Unsure					
Shah	Rahman	BCHydro		x	Unsure					
Paul	Reid			x	Unsure					

Ajit Anbiah	Renjit	EPRI		x	Yes					
Michael	Ropp	Sandia National Laboratories		x	Unsure					
Ajmal	Saeed	PG&E		x	Yes	x				
Nicolas	Salazar	FPL	x		No	x				
Janette	Sandberg	Portland General Electric		x	Yes	x				
Joseph	Schafer	FPL	x		Yes					
Lynn	Schroeder	SEPC		x	Yes		x			
Rudi	Schubert	IEEE SA	x		No					
Brian	Seal	EPRI	x		Yes		x			
Daniel	Seidel	East Penn Manufacturer Co. - Deka Batteries		x	Yes	x				
Robert	Seitz	Artech Engineering		x	Yes	x				
Mehrdad	Sheikholeslami	Quanta Technology		x	Yes		x			
Neil	Shepard	ORNL		x	Yes		x			
Prasad	Shrawnae	Greater Sudbury Hydro		x	Yes	x				
George	Shu	QPS Evaluation Services		x	Yes					
Mark	Siira		x		Yes	x				
Robby	Simpson	DER Security Corp		x	Yes					
David	Smith	FPL	x	x	Yes					
Wayne	Stec	Distregen, LLC	x		Yes		x			
Clayton	Stice	ERCOT		x	Yes					
Lili	Tao	ComEd		x	Yes	x				
Jim	van de Ligt	Spark Power Corp.		x	Yes	x				
Benton	Vandiver III		x		Yes	x				
Devin	van Zandt	EPRI	x		No					
Charlie	Vartanian	PNNL		x	No					
Jorge	Velez	Quanta Technology LLC		x						
Joshua	Watson	Nebraska Public Power Distric		x	Yes					
Kevin	Whitener	Portland General Electric		x	Yes	x				
Stephen	Wurmlinger	SMA		x	Yes		x			

Mohammad	Zadeh	ETAP		x	Yes					
Nicholas	Zagrodnik			x						
Amin	Zamani	Quanta Technology		x	Unsure		x			
Vahraz	Zamani		x							x
Yash		NREL		x						

Appendix 2. Meeting Slides

Post-Meeting Slide Deck for Meeting Minutes

IEEE P1547.10 Kick-Off Meeting

Recommended Practice for DER Gateway Platforms

Abrez Mondal, WG Chair

Yashar Kenarangui, Vice-Chair

John Berdner, Vice-Chair

Jens Boemer, SC21 Standards Coordinator

Mark Siira, IEEE SC21 Chair

Mike Kipness, IEEE SA Program Manager

Joint Technical Committee Meeting, Jacksonville, FL

January 9, 2023

Agenda

Monday 1/9/23: 2PM – 4PM		
13:45-14:00	Arrival	
14:00-14:05	Welcome & Call to Order	Chair
14:05-14:15	Introductions (Name, Affiliation)	On- and Off-site Participants
14:15-14:25	IEEE SA Procedures Introduction	IEEE SA Program Manager
14:25-14:30	Approval of Agenda	Chair
14:30-14:40	IEEE Policies	IEEE SC21 Chair
14:40-14:55	Review of the Project Authorization Request • Overview on DER Gateways and relationship to DERs/P1547 • Need, Purpose, Scope, Stakeholders • Standards Classification & Language	Chair
14:55-15:10	Review of WG Policies & Procedures	IEEE SA Program Manager
15:10-15:15	Introduction of WG Leadership Team, Open Positions	Chair
15:15-15:45	Technical Presentations	Chair & Vice-Chairs
15:45-15:55	Proposed Sub-WG Overview	Chair & Vice-Chairs
15:55-16:00	Future Meetings	Chair
16:00	Adjourn	Chair

Meeting Goals

- ✓ Introduce Working Group Leadership and Policies & Procedures
- ✓ Define Scope and Form Sub-Working Groups
- ✓ Define relationship to P1547 revision
- ✓ Develop timeline, frequency for meetings & calls
- ✓ Call for volunteers to fill open positions

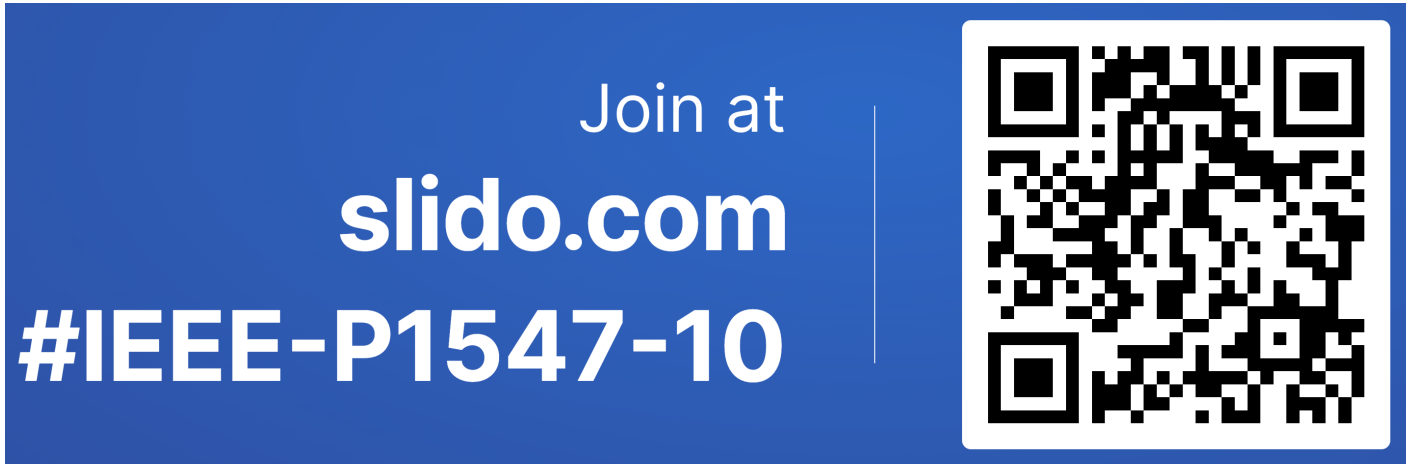
Facility Safety and Emergency Procedures

- Emergency exits
- Assembly location
- Defibrillator location
- Dial 911 in emergency

Housekeeping for Live Polling

We'll be using Slido.com during this meeting

- Use your phone's camera app and hold it at the QR code to the right.
  - Alternatively, go to slido.com and enter the event code "#IEEE-P1547-10"
- Participate in **live polls** or **type your questions** to the WG leadership.



Target Stakeholder Groups

Are any important groups not listed here?

Applicable Groups

- Users, Industrial, e.g. DER & DER Gateway developers, owners, operators, IPPs
- Producer – Components, Software, Systems, e.g., DER & DER Gateway equipment & system manufacturers
- Academic/Research
- Regulatory and Governmental Bodies
- Utility, DISTRIBUTION, e.g., interconnection, planning, protection & operation engineers
- Utility, BULK POWER SYSTEM, e.g., interconnection, planning, protection & operation engineers
- Service Provider/ Consulting, e.g., consultants, NRTLs, certification providers

Other Groups?

- DER installers?
- DER aggregators?
- Non-governmental Organization (NGO) / Advocacy Group?
- Standards Developing Organization?
- General Interest
- …

Introductions

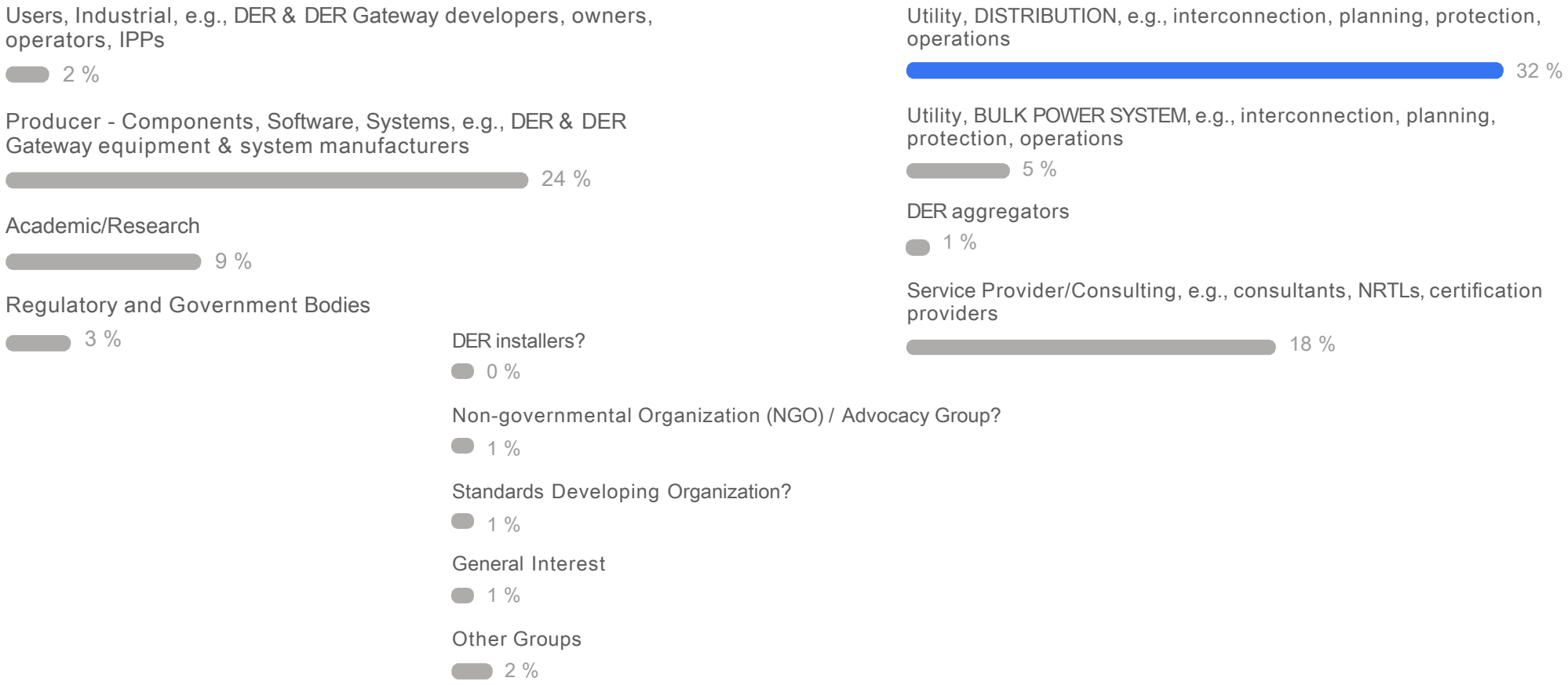
Name, Employer, Affiliation

Please keep it short!

***Virtual Participants – Please enter Name and Affiliation in Chat*

Slido Poll

Which of the following balloter classifications do you belong to? (please chose the one that fits your affiliation for this meeting)



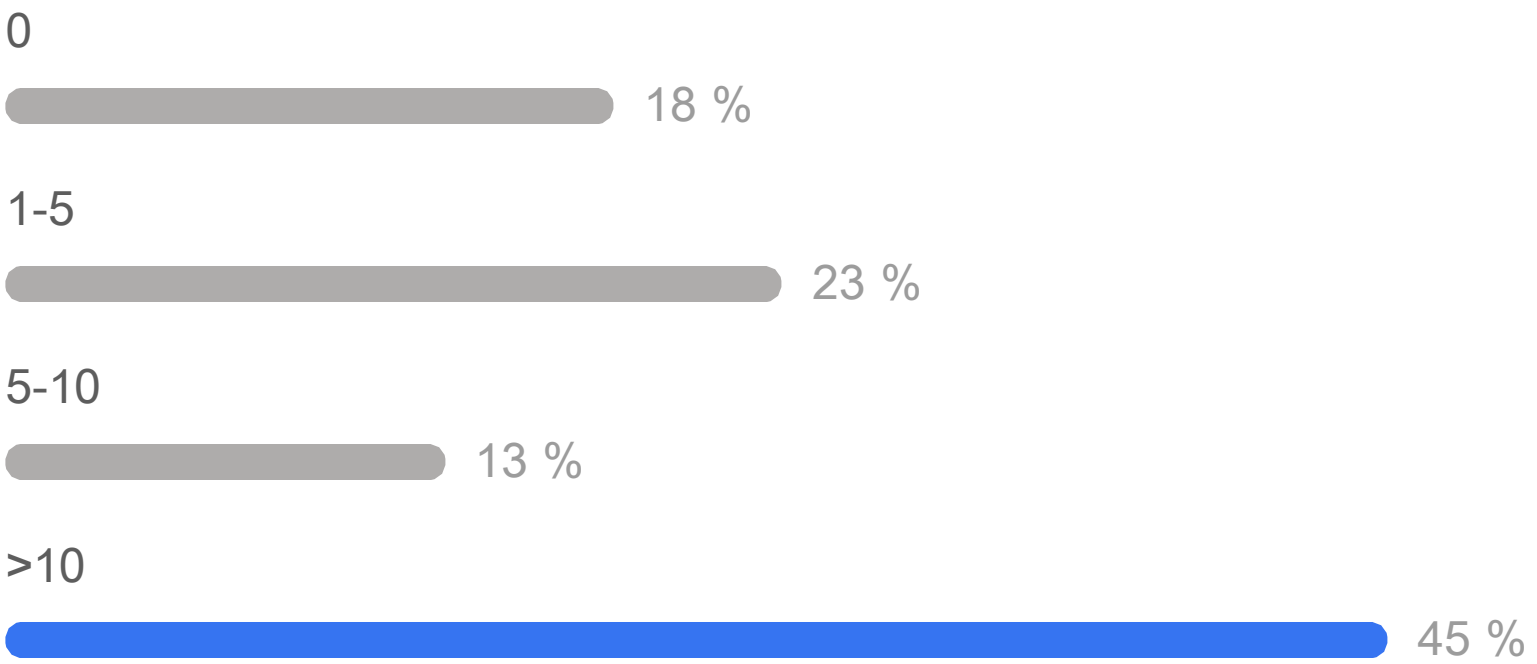
Slido Poll

If you chose "Other Groups" on the previous question on balloter classification, please clarify.

- Consultant
- Advocate for Rural Electric Cooperatives.
- Industry Trade Association (Fuel Cells and Hydrogen Energy)
- Customers/ rate payers

Slido Poll

How many previous IEEE Standards Working Group meetings have you attended?



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IEEE SA Procedure Introduction

IEEE SA
STANDARDS ASSOCIATION

WG Standards Development Process Overview

IEEE

WORKING GROUPS

1.Working Groups (WG) write standards.

2.A WG can officially begin to develop a standard when the PAR is approved by the SASB.

3.The SASB can issue a call for participation to get more participants for the WG.

4.Individual-based WGs (one individual-one vote) are open to everyone.

a. Depending on the committee participants do not have to be IEEE, IEEE SA, or IEEE Society members

b. WG Chair and Vice-Chair shall be members of IEEE SA and either IEEE members of any grade or IEEE Society Affiliates.

c. Other WG officers should be members of IEEE and IEEE SA

5.WGs operate in accordance with a written set of policies and procedures that has been approved by the Sponsor.

https://ewh.ieee.org/soc/pes/emc/documents/IEEE_PES_EMC_AWG_PP.pdf

6. **Consent to the IEEE Privacy Policy** - https://engagestandards.ieee.org/IEEE-SA-Privacy-Policy-Acceptance.html

IEEE SA Membership: http://standards.ieee.org/membership/index.html

IEEE Membership: http://www.ieee.org/membership_services/membership/join/index.html

IEEE CONSENTS

Acceptance of the IEEE Privacy Policy is the mechanism by which IEEE obtains consent for the various ways that IEEE uses PII.

IEEE Privacy Policy

https://www.ieee.org/security-privacy.html

Note that for IEEE standards activities, IEEE SA is only permitted to use PII as outlined in its policies and procedures.

- **If you collect PII, then there must be a checkbox for accepting the IEEE Privacy Policy, and the checkbox must be required before the PII can be submitted.**
- **If you collect PII for a meeting or event, then there must be a required checkbox for accepting the IEEE Event Terms and Conditions.**

IEEE Event Terms and Conditions

https://www.ieee.org/conferences/event-terms-and-conditions.html

- **Note that acceptance of the IEEE Privacy Policy is included in acceptance of the IEEE Event Terms and Conditions, so you only need consent to the IEEE Event Terms and Conditions.**

RULES OF ORDER IN A COMMITTEE

- Parliamentary procedure is meant to simplify, not complicate the process:

- All members of the committee have equal rights to participate in debate, except that non-voting members do not have right to vote.
  - Everyone has the right to speak once if they wish, before anyone may speak a second time
  - Only in urgent matters may you interrupt a speaker.

- Formal parts of meetings are normally conducted in accordance with Robert's Rules.

- The Chair should facilitate an orderly, equal and fair debate to take place on all issues.
  - Members discuss one item at a time.

- The Chair must take a neutral position and may vote only when his/her vote may change the outcome.

MOTIONS

- Member makes the motion - Uses the word "move"
- Another member seconds the motion
- The chair "states the question“
- The chair calls for discussion of the motion and maintains a queue if necessary
- The vote is taken (approve/disapprove/abstain)
- Motions and results of votes are recorded in the minutes

Motion Example：
Approve the agenda for October 2019 meeting as presented in P2882. In case the items listed on the first day completes early, the WG meeting will continue with items that are scheduled for the second day will be initiated through the remainder of the day.
Moved: xxx, First Name, Last Name
Seconded: xxx First Name, Last Name
(Procedural, required ≥ 50%)
Motion passed by voice vote without opposition.

ETOOLS

1. **myProject** — It is the IEEE Standards Association's web-based tool used by IEEE members, staff, and other individuals who want to participate in the standards process.
2. **iMeet Central** — A web-based, password-protected collaboration platform offered to standard development groups. iMeet provides many tools including secure file sharing, forum, project management and more.
3. **WordPress** — WordPress is an online, open source website creation tool.
4. **Webex** — Webex is a web/teleconference service.
5. **Listserv** — IEEE Listserv is the preferred email list management tool for Working Group email communication. Through this list, the WG can communicate with individuals interested in the WG activities.
6. **vTools Events** — This tool is managed by IEEE Members and Geographic Activities and is used for scheduling and managing events and meetings.

WORKING GROUP TOOLS

- **Document management, calendar, project management, e-mail, wiki:**
  - https://ieee-sa.imeetcentral.com/p3149/folder/WzIwLDE1MDYyOTc1XQ/
  - Imeet central: https://www.Imeetcentral.Com
  - Imeet central new user training https://help.Imeetcentral.Com/hc/en-us/articles/204961415-new-user-training
  - IEEE SA imeet central webinar: https://help.Imeetcentral.Com/hc/en-us/articles/204961435-imeet-central-university

- **E-mail listserv**:
  - Ieee listserv overview: https://listserv.Ieee.Org/request/add-listserv.Html

- **Teleconference & web conference services:**
- **Webex -** https://ieee-sa.Imeetcentral.Com/webex/frontpage

- **Public website:**
  - Word press
    - WG is responsible for maintaining the website. IEEE SA does not provide tools to manage the website. IEEE SA will help you setup wordpress
    - Exp: https://sagroups.Ieee.Org/2942

- **Myproject (pars, balloting):**
  - Login at: https://development.Standards.Ieee.Org/my-site
  - User guide: https://mentor.Ieee.Org/etools_documentation/bp/myproject

- **IEEE SA editorial hub (interactive draft template training)**
  - Https://iln.Ieee.Org/public/contentdetails.Aspx?Id=c989ba32a4194a208a965a1b442918b9

IEEE Policies

Patents Slides

PARTICIPANTS HAVE A DUTY TO INFORM THE IEEE

- 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

- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

Early identification of holders of potential Essential Patent Claims is encouraged

WAYS TO INFORM IEEE

- **Cause an LOA to be submitted to the IEEE SA (patcom@ieee.org); 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**
- **Speak up now and respond to this 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, please respond at this time by providing relevant information to the WG Chair

OTHER GUIDELINES FOR IEEE WORKING GROUP 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 of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
      - **Technical considerations remain the 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. Formally object to the discussion immediately.**

For more details, see *IEEE SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at http://standards.ieee.org/develop/policies/antitrust.pdf

PATENT-RELATED INFORMATION

The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE SA Standards Board Bylaws***
  (http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6)
- ***IEEE SA Standards Board Operations Manual***
  (http://standards.ieee.org/develop/policies/opman/sect6.html#6.3)

Material about the patent policy is available at
http://standards.ieee.org/about/sasb/patcom/materials.html

If you have questions, contact the IEEE SA Standards Board Patent Committee Administrator at patcom@ieee.org

IEEE SA
STANDARDS ASSOCIATION

IEEE SA COPYRIGHT POLICY FOR PARTICIPANTS IN IEEE STANDARDS ACTIVITIES

IEEE

IEEE SA COPYRIGHT POLICY

By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.

- Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
- Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

IEEE SA COPYRIGHT POLICY - LINKS

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
  - IEEE SA Copyright Policy, see
    Clause 7 of the IEEE SA Standards Board Bylaws
    https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7
    Clause 6.1 of the IEEE SA Standards Board Operations Manual
    https://standards.ieee.org/about/policies/opman/sect6.html

- IEEE SA Copyright Permission
  - https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip

- IEEE SA Copyright FAQs
  - https://standards.ieee.org/faqs/copyrights/

- IEEE SA Best Practices for IEEE Standards Development

http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best_practices_for_ieee_standards_development_051215.pdf

- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
  - https://standards.ieee.org/about/policies/opman/sect6.html

QUESTIONS?

stds-copyright@ieee.org

For requests to use material from approved IEEE standards:
https://standards.ieee.org/ipr/copyright-permissions-form.html

IEEE SA STANDARDS ASSOCIATION

IEEE

PARTICIPANT BEHAVIOR – INDIVIDUAL METHOD

PARTICIPANT BEHAVIOR IN IEEE-SA ACTIVITIES IS GUIDED BY THE IEEE CODES OF ETHICS & CONDUCT

- All participants in IEEE-SA activities are expected to adhere to the core principles underlying the:
  - IEEE Code of Ethics
  - IEEE Code of Conduct
- The core principles of the IEEE Codes of Ethics & Conduct are to:
  - *Uphold the highest standards of integrity, responsible behavior, and ethical and professional conduct*
  - *Treat people fairly and with respect, to not engage in harassment, discrimination, or retaliation, and to protect people's privacy.*
  - *Avoid injuring others, their property, reputation, or employment by false or malicious action*
- The most recent versions of these Codes are available at http://www.ieee.org/about/corporate/governance

PARTICIPANTS IN THE IEEE-SA "*INDIVIDUAL PROCESS*" SHALL ACT INDEPENDENTLY OF OTHERS, INCLUDING EMPLOYERS

- The IEEE-SA Standards Board Bylaws require that "*participants in the IEEE standards development individual process shall act based on their qualifications and experience*"
- This means participants:
  - **Shall act & vote** based on their personal & independent opinions derived from their expertise, knowledge, and qualifications
  - **Shall not act or vote** based on any obligation to or any direction from any other person or organization, including an employer or client, regardless of any external commitments, agreements, contracts, or orders
  - **Shall not direct** the actions or votes of other participants or retaliate against other participants for fulfilling their responsibility to act & vote based on their personal & independently developed opinions
- By participating in standards activities using the "*individual process*", you are deemed to accept these requirements; if you are unable to satisfy these requirements then you shall immediately cease any participation

IEEE-SA STANDARDS ACTIVITIES SHALL ALLOW THE FAIR & EQUITABLE CONSIDERATION OF ALL VIEWPOINTS

- The IEEE-SA Standards Board Bylaws (clause 5.2.1.3) specifies that *"the standards development process shall not be dominated by any single interest category, individual, or organization"*
  - This means no participant may exercise *"authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints"* or "*to hinder the progress of the standards development activity"*
- This rule applies equally to those participating in a standards development project and to that project's leadership group
- Any person who reasonably suspects that dominance is occurring in a standards development project is encouraged to bring the issue to the attention of the Standards Committee or the project's IEEE-SA Program Manager

Review of PAR

Why Standards are Important

- Standards provide a consensus view of requirements or guidelines based on an industry technical area or need.
- Standards establish common terminology and frameworks that ensure clarity in specifications and requirements.
- Standards lead to modularity.
- Standards develop the framework from which design rules emerge.
- System designs become more robust over time through iteration and improvement of designs.

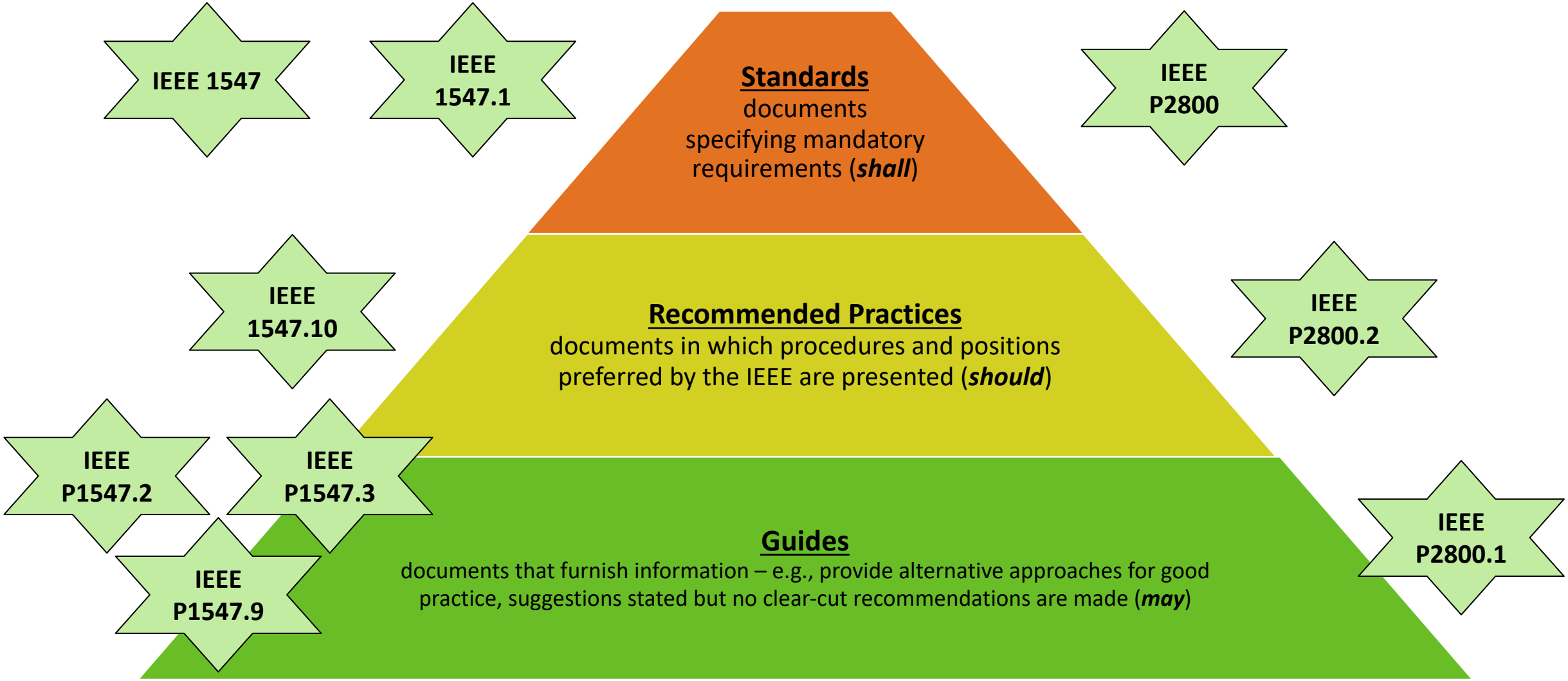
References:

- *IEEE Std 610.12-1990 IEEE Standard Glossary of Software Engineering Terminology*
- *Managing in an Age of Modularity* - Harvard Business Review; Carliss Y. Baldwin and Kim B. Clark
- *"Make Megaprojects More Modular- Repeatable design and quick iterations can reduce costs and risks and get to revenues faster". - Harvard Business Review; Bent Flyvbjerg; November, 2021*

Importance of IEEE 1547 Regulations on Interconnection Deployment

- Energy Policy Act (2005) Cites and requires consideration of IEEE 1547 Standards and Best Practices for Interconnection; all states use or cite 1547.
- Energy Independence and Security Act (2007) IEEE cited as a standards development organization partner to NIST as Lead to coordinate framework and roadmap for Smart Grid Interoperability standards and protocols {IEEE 1547 & 2030 series being expanded};
- Federal ARRA (2009) Smart Grid & High Penetration DER projects {*use IEEE stds*}.
- FERC Order 2222 (2020)
- DOE Research into Grid Forming Inverters

IEEE Standards Classification & Consensus Building



IEEE 1547.10

Why a PAR Now?

- Recent publication of IEEE 2030.11 (Guide for DERMS Functional Specification)
- IEEE P1547.3 (Guide for Cybersecurity of DER) nearing end of SA Balloting
- Approved PAR for next revision of IEEE 1547-2018 Standard

- Ongoing work in
  - UL 1741 on Power Control Systems (PCS)
  - IEEE P2030.5 (Standard for Smart Energy Profile 2.0 Application Protocol)
  - IEEE P2030 (Guide for Smart Grid Interoperability)
  - IEEE P2688 (Recommended Practice for Energy Storage Management Systems in Energy Storage Applications)
- And possibly others

➢ ***With every day these activities continue and stretch into functional requirements that relate to the DER Gateway, the potential risk of bifurcated requirements increases.***

Electronic Communication and Collaboration

- PAR Available in IEEE myProject at

https://development.standards.ieee.org/myproject-web/app - viewpar/13494/9866

- Sponsors
  - SCC21 Standards Coordinating Committee 21 (main sponsor)
  - PE/T&D Power and Energy Society Transmission & Distribution Committee
  - PE/EDPG Energy Development and Power Generation Committee
  - COM/PLC Communications Society Power Line Communications Standards Committee
  - PE/PSCC Power System Communications and Cybersecurity
  - PE/PSRC Power System Relaying and Control

- Coordination
  - Energy Storage & Stationary Battery Committee (PE/ESSB, informal liaison for two-way normative references)
  - IEC, NERC, SEIA, SEPA, SunSpec, UL, et al.

IEEE P1547.10 PAR

❑ Scope

This document defines recommended specifications for a Distributed Energy Resources (DER) gateway platform in grid applications across various domains. A description of DER gateway implementation options (local or distributed platform, for legacy or intelligent DERs) is included. Gateway platform functions and communications, including operational procedures and data collection recommendations are described. Recommended procedures for cybersecurity, centralized manageability, monitoring, grid edge intelligence and control, multiple entities management, error detection and mitigation, events tracking and notification, communication protocol translation, and communication network performance monitoring are also described.

❑ Purpose

The purpose of the project is to create and maintain coherency between P1547/.x, P2030/.x, and other related projects for DER and Distributed Energy Resources Management Systems (DERMS) within the evolving smart grid interoperability reference model (SGIRM) with a focus on Distributed Energy Resources (DER) Gateway Platforms. The recommended practice enables utilities deploying DERMS and other DER integration systems to integrate DER with grid edge intelligence, while DER devices serve their core functions focusing on simplicity, interoperability, and long-term stability.

IEEE P1547.10 PAR (contd.)

❑Need for the Project

The smart inverter functionalities specified in IEEE 1547-2018, and the associated communication interfaces are not suitable for direct integration with the monitoring and control systems of grid operators. The standard inverter functionalities were designed only to expose the raw, inherent capabilities of the DER, but (intentionally) omitted additional logic or management features because these were believed to vary by utility and region. This gap can be addressed by deploying a DER gateway platform with a range of grid edge-intelligence functions that provides opportunities to improve system functionality as grid needs evolve over time.

❑Stakeholders for the standard

DER vendors, DER communication system providers, DER aggregators, DER gateway providers, utilities, grid operators.

IEEE P1547.10 PAR (contd.)

SC21 (Main Sponsor and Coordination Role)

IEEE/PES/PSCC (Cyber and Coms)	IEEE/PES/T&D and, possibly, IEEE/PES/PSRC (Utility Perspective)			IEEE/PES/ED&PG (OEM Perspective)
Centralized Manageability	Scheduling (Coordination with next revision of IEEE 1547 and CA SIWG Phase 3)	Real Time "Status" Monitoring	Advanced Notification & Synchronized Actions	Smart Inverter Function Implementation for Legacy DER
Communication Network Performance Monitoring (Coordination with IEEE 1686-2013)	Availability at Night and During Outages	Event Logging & Retrieval	Buffering Monitored Interval Data During Network Outages	Multi-Master Scenarios and Command Prioritization (RBAC)
Communication Protocol Translation (Coordination with IEEE 1815.1-2015)	Transparent Smart Inverter Function Handling	Alarms Logging & Retrieval	Supervision for Voltage Sags	Report Unexpected DER Settings Change
Cybersecurity (Coordination with IEEE 1686-2013 and IEEE P1547.3)	DER Lost Energy Calculation	Logging & Retrieving Interval Data	Continuous Monitoring & Report by Exception	Loss of Master Detection and Reversion of Settings to Defaults

IEEE P1547.10 PAR (contd.)

The goal of this project is not to duplicate existing related projects but rather to bring together the stakeholders from related projects to create coherency across projects under a new IEEE Recommended Practice, using references to existing projects where possible. This includes coordination with IEC and other industry activities, including NERC, SEIA, SEPA, SunSpec, UL, et al. With every day these activities continue and stretch into functional requirements that relate to the DERs and DER Gateway platforms, the potential risk of bifurcated requirements increases.

Other standards or projects with a similar scope

- **IEEE/SASB/SCC21/1547_revwg – 1547**
- **IEEE/SASB/SCC21/Smart Grid Interoperability_p2030**
- **UL 1741 Power Control Systems Task Force**
- IEEE/SASB/SCC21/1547.2WG
- IEEE/SASB/SCC21/1547.3 WG - Guide for Interoperability and Cybersecurity of DER
- IEEE/PE/PSCC/S1-WG_1686 - Cybersecurity Subcommittee
- IEEE/PE/PSCC/P0_1815.1_WG - WG for IEC 61850 and 1815mapping
- IEEE/PE/ESSB/WG_2688 - Energy Storage Management Systems in Grid Applications
- IEEE/PE/T&D/DERMS WG - DERMS functional specification_P2030.11
- IEEE/COM/PLC/SEP2 - Smart Energy Profile 2.0
- IEEE/SASB/SCC21/CA4EPI_P2030.4 WG - Control and Automation Installations Applied to the Electric Power …
- IEC TC57 WG14 - Enterprise business function interfaces for utility operations
- IEC TC57 WG16 - Deregulated energy market communications
- IEC TC57 WG17 Power systems management and associated information exchange

IEEE P1547.10 PAR (contd.)

Additional Explanatory Notes

Examples of DER Gateway functions:

The following provides some example functions for each of the DER Gateway functional categories listed in section 5.2 (Scope of the proposed standard):

FUNCTIONAL CATEGORY: Example Function(s)
* CYBERSECURITY: Transport Layer Security (TLS), Role Based Access Control (RBAC)
* CENTRALIZED MANAGEABILITY: Firmware management, Upgradeability
* MONITORING: Real time status monitoring, Report by exception, Interval data, Lost energy calculation
* GRID-EDGE INTELLIGENCE AND CONTROL: Recurring schedules, New and transparent smart inverter functions handling, Advanced notification and synchronized actions, Smart inverter function implementation for legacy DER, Availability at night and during outages
* MULTIPLE ENTITIES MANAGEMENT: DER providing grid services to multiple entities (local utility, ISO etc.), Command prioritization
* ERROR DETECTION AND MITIGATION: Report unexpected DER settings change, Loss of communication detection and reversion to defaults
* EVENTS TRACKING AND NOTIFICATION: Events and alarms logging and retrieval, Supervision of voltage sags
* COMMUNICATION PROTOCOL TRANSLATION: Translation of messages between DER and upstream managing entity
* COMMUNICATION NETWORK PERFORMANCE MONITORING: Network diagnostics such as detection of packet loss, latency, errors etc.

IEEE P1547.10 PAR (contd.)

Additional Explanatory Notes

Justifications for project type “Recommended Practice”:

1) The Working Group for the revision of IEEE 1547 that was approved by IEEE SASB NesCom on 24 March 2022 may have to decide which non-standard DER capabilities, performance specifications, and logical functions that have emerged since the standard was published in 2018, or are emerging in recent projects---like IEEE P1547.2 for the application of IEEE 1547, IEEE P1547.3 for cybersecurity, IEEE P2030.5 for a local DER communication interface protocol, IEEE P2688 for energy storage management systems and UL 1741 for DER power control systems, or IEEE 2030.11-2012 for DERMS integration---would be promoted to standard requirements using “shall” language in a future version of IEEE 1547. Each of the listed projects may have its unique characteristics such as having narrowly focused scope, having a limited set of stakeholders involved, or providing guidance in form of “may” language. From a smart grid architectural design perspective, some of the emerging specifications for DERs may suitably be required from all future DERs while others may more suitably be recommended for DER gateways located at the DER site, or DER gateway platforms distributed in the DERMS.

2) Considering that DER gateways are relatively young and still emerging technology solutions and that there are many innovations appearing and expected to appear in this area for in the coming years, developing this P1547.10 project as a standard could adversely constraint the room for innovation. Developing this project as a standard is also considered inappropriate for the time being because “standards” in the DER area may require adoption by use of “certification” or “listings” as in the case of IEEE 1547.1 and UL 1741 for inverters.

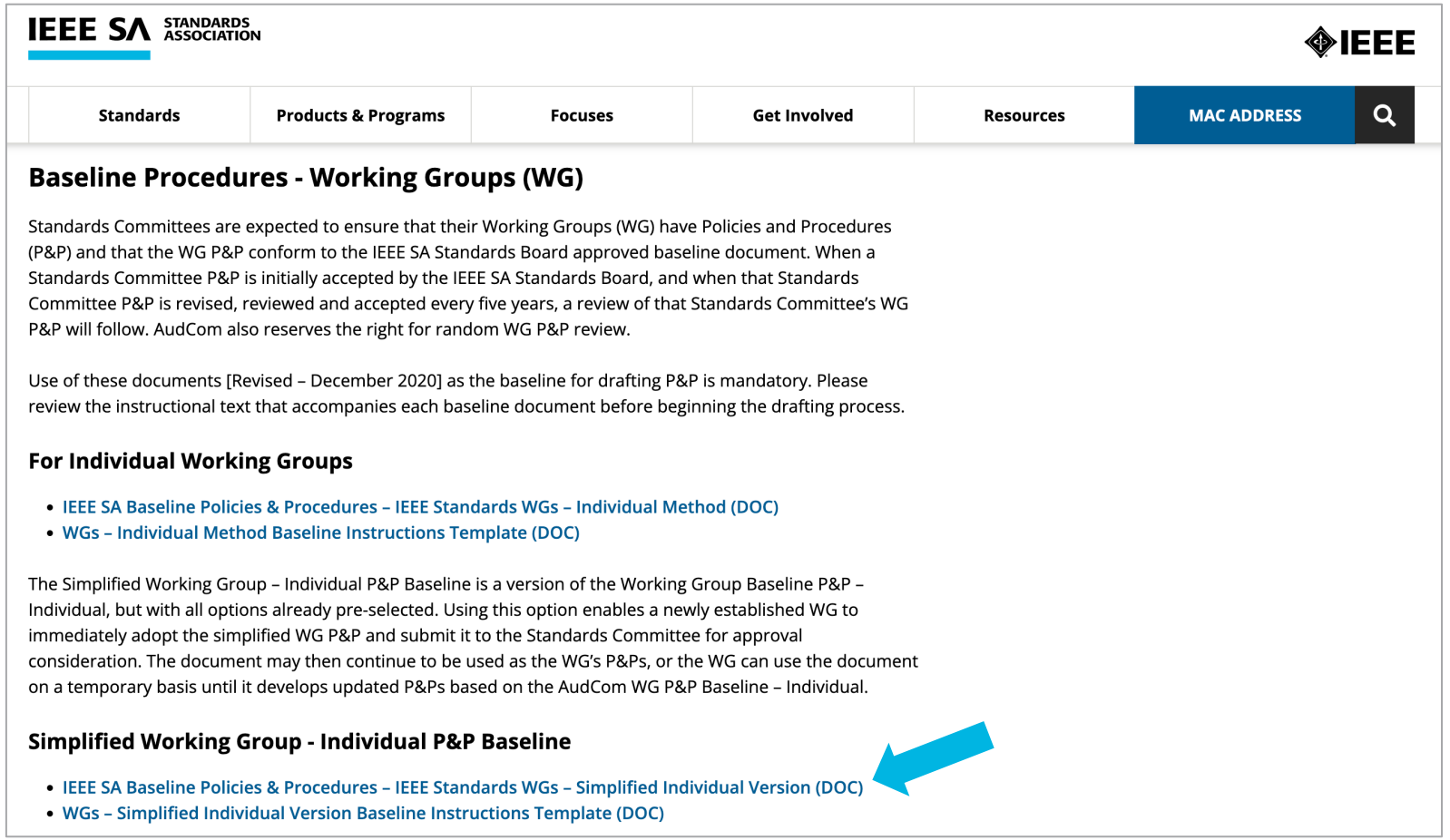
3) Standards groups like P2030.5, Open FMB, and OpenADR need to develop protocol support for the interactions between utilities and/or aggregators and DER gateways. Such specifications may not be readily developed if this P1547.10 project was a “guide” as such projects tend to be broad in scope and provide multiple options without recommending any preferred option that can be implemented.

4) As a potential new part of the IEEE P2030 smart grid interoperability reference model (SGIRM) that is currently under revision, this P1547.10 Recommended Practice can help to balance harmonization and innovation in this evolving field of DER technology development and integration by using “should” language instead of “shall” (Standard) or “may” (Guide) language. In doing so, this P1547.10 Recommended Practice could be used by utilities and other entities as a key reference in requests for proposals (RFPs) and in-house design efforts to lend toward more industry cohesiveness and

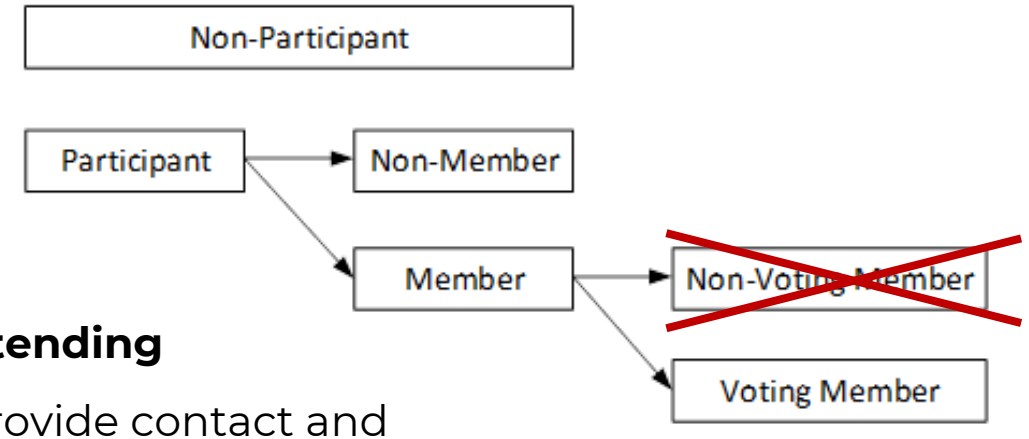
Working Group Policies and Procedures

Working Group Policies and Procedures

- **Based on December 2022 Baseline Procedures For Individual Working Groups**
  - https://standards.ieee.org/about/sasb/audcom/bops/
- **Simplified Working Group – Individual P&P Baseline with these changes:**
  - Added Sponsor name
  - Added Working Group name
  - Allow for multiple Vice-Chairs
  - Replaced text in 4.3 (Non-voting Membership) with “Not Applicable.”
- **Available from WG Chair upon request.**



VOTING MEMBERSHIP



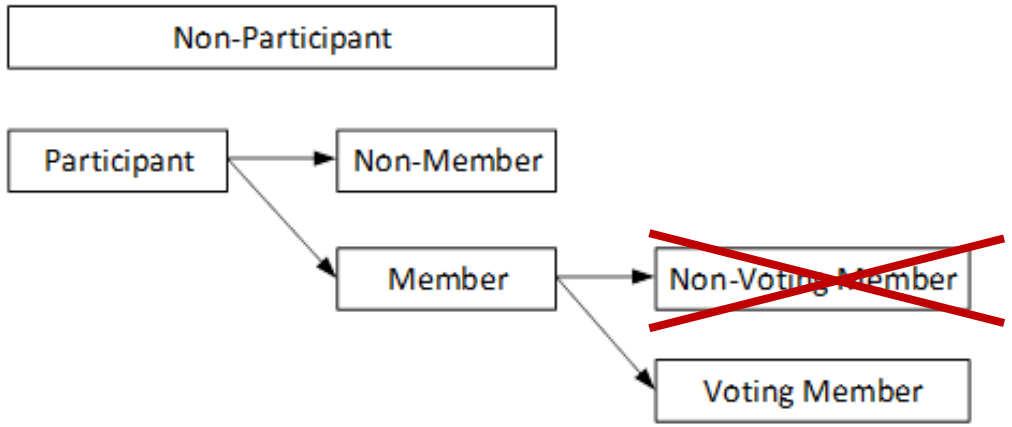
Voting Membership at WG Kick-Off

- Voting membership shall be granted to those **participants attending the first meeting** of a newly chartered Working Group **who** provide contact and affiliation information and **request voting membership.**
- Voting membership is a **privilege with responsibilities** that can be lost after 2 missed meetings.

Attendance of Subsequent WG Meetings

- For a participant's attendance to count towards gaining or maintaining voting membership, the participant shall attend either the duration of the meeting or **at least 50% of the** planned **duration of the meeting** as stated in the notice or agenda for the meeting, whichever is less , and satisfy any requirements of subclause 6.3 regarding any registration fee for the meeting.
- Attendance or lack of attendance at a meeting as defined in Clause 6 shall be counted towards the attendance requirements, independent of whether quorum was achieved.

VOTING MEMBERSHIP (CONTINUED)



Voting Membership earned by participation

- A participant becomes a voting member, **upon request,** by **attending 2 of the last 4 meetings**.
- The participant's voting status will be **effective at the start of the next meeting**.

Requirements to Maintain Voting Membership

- A voting member who has not attended at least 2 of the last 4 meetings may become a non-member.
- For simplicity, all members of the Working Group are considered voting members. **The category of non-voting member is not used.**

Quorum

- Quorum shall be defined as **10% of the current total voting membership** or 26, whichever is greater.
- *Example: if all of the ~300 participants that registered for this WG Kick-Off meeting requested voting membership, quorum would be defined as* ***~30 voting members***

WG POLICIES - MEETINGS

- Working Group meetings may be conducted either exclusively in-person or in-person with one or more participants contributing via electronic means, or exclusively via electronic means.

- **Working Group meetings shall be held, as decided by the Working Group, the Chair, or by petition of 15% or more of the voting members**, to conduct business, such as making assignments, receiving reports of work, progressing draft standards, resolving differences between subgroups, and considering views and objections from any source.

- *All **meeting notices** shall be distributed or made available by notification to members at least **30** calendar days in advance of a face-to-face meeting and at least **7** calendar days in advance for an electronic (including teleconference) meeting.*
- **A meeting agenda** (including participation information and known potential actions) shall be distributed or made available by notification to members at least **10 calendar days** in advance of a face-to-face meeting, and at least **5 calendar days** in advance for an electronic meeting.

WG POLICIES – MEETINGS (CONTINUED)

- Meetings of subgroups may be held as decided upon by the members or Chair of the subgroup.
- While having a balance of all interested parties is not an official requirement for a Working Group, it is a desirable goal. As such, the officers of the Working Group should consider issues of balance and dominance that may arise and discuss them with the Standards Committee.
- All IEEE standards development meetings are **open to anyone who has an interest and wishes to attend.** However, some meetings may occur in Executive Session (see subclause 6.2).
- Participants shall be asked to **state their employer and affiliation at each Working Group meeting as required by the *IEEE SA Standards Board Operations Manual* clause on "Disclosure of affiliation."**

WG POLICIES – APPOINTMENT OF OFFICERS

- The **Working Group Chair shall be appointed** in accordance with the Standards Committee's procedures.
- The **Working Group Chair shall appoint** one or multiple Vice Chair(s), Treasurer, and Secretary.
- The **term of office** for each officer shall be **four years**, with no more than two consecutive terms in the same office, but an officer may serve until a successor is appointed provided the Working Group or Standards Committee works in good faith to fill the vacancy before or as soon as possible after the term expires.
- The **term of office** for a Working Group Officer **can be extended to the expiration of that project's PAR** by the Standards Committee.
- An officer may be **removed by a two-thirds vote of the voting members** of the Working Group meeting in Executive Session.

WG POLICIES - VOTING

Actions Requiring Approval by a Majority Vote

The following actions require approval by a majority vote:

•Formation or modification of a subgroup, including its procedures, scope, and duties;

•Disbandment of subgroups;

•Approval of minutes.

Actions Requiring Approval by a Two-thirds Vote

The following actions require approval by a two-thirds vote. Once approved, items a) and b) require approval by the Standards Committee or their designee and items c) and e) require approval by the Standards Committee:

•Beginning an IEEE Standards Association ballot for a draft standard. (Separate approvals are not required for recirculation ballots.);

•Modification to a Project Authorization Request (PAR);

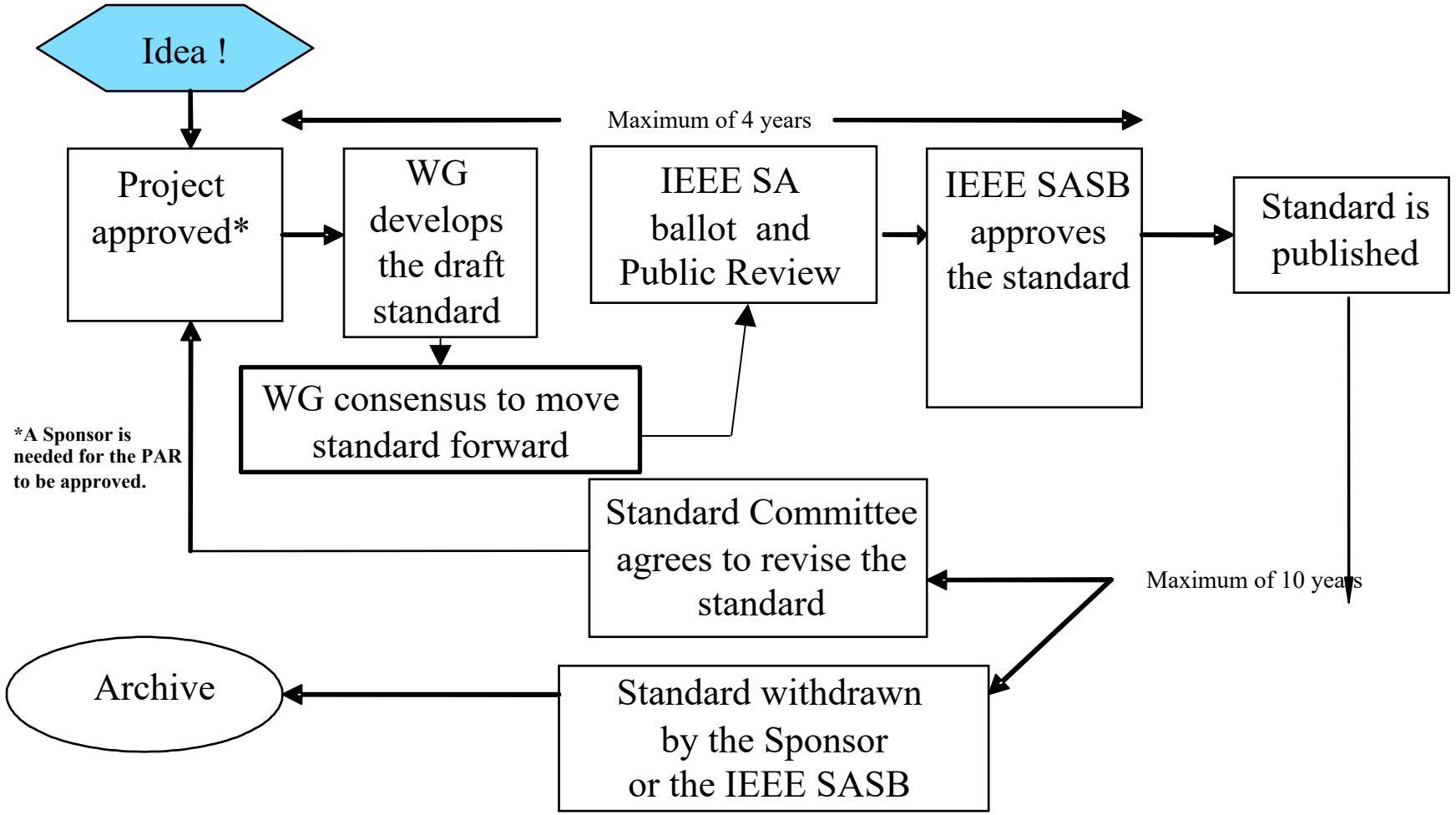
•Modification to the Working Group Policies and Procedures;

•Establishment of fees;

•Removal of an officer (see subclause 3.4).
•Approval of public statements (see Clause 8).

Standards Development Process

Standards Development Lifecycle



Standards Process Overview:
http://standards.ieee.org/develop/overview.html

Special thanks to our working groups

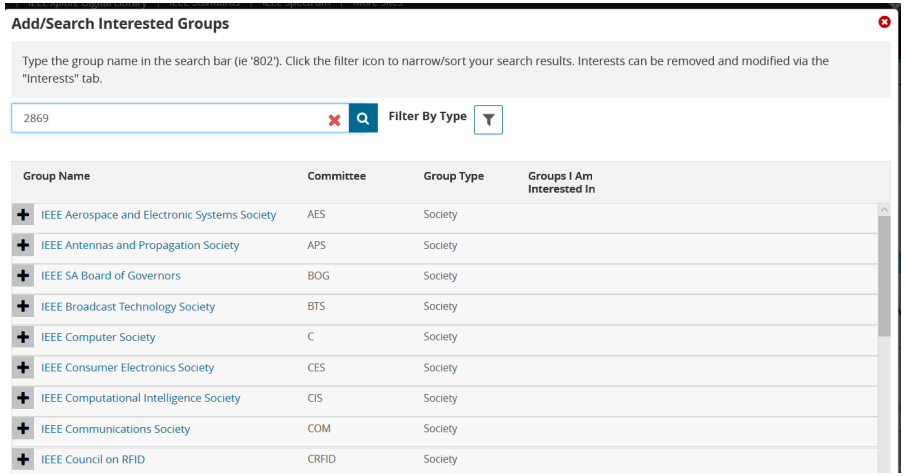
- **WG members receive complimentary copies of the standard.**
- After the SASB approves the standard, the WG Chair will be asked to select candidates for the **IEEE SA Working Group Chair Award**.
- The Working Group Chair Award is presented to WG officers, editors and others in recognition of their contribution to the development of a standard, **only if the WG chair returns the award form.**
  - http://standards.ieee.org/develop/awards/wgchair/wgawards.html

ADDITIONAL RESOURCES

- IEEE-SASB Bylaws: http://standards.ieee.org/develop/policies/bylaws/index.html
- IEEE-SASB Operations Manual: http://standards.ieee.org/develop/policies/opman/
- SA Working Group Chair Training and Quick Reference Guide: https://iln.ieee.org/Public/ContentDetails.aspx?id=C08D783819D24C5A9EF37CF41DD17DC7
- Copyright Policy Training: https://iln.ieee.org/Public/ContentDetails.aspx?id=801E799E84604749AE9754F3C03D43A3
- Best Practices for IEEE Standards Development: *http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf*
- IEEE Standards and the Law: http://standards.ieee.org/develop/policies/stdslaw.pdf
- IEEE Policies: https://www.ieee.org/documents/ieee_policies.pdf
- IEEE-SA Website: http://standards.ieee.org/index.html
- IEEE-SA Membership: http://standards.ieee.org/membership/index.html
- IEEE Membership: http://www.ieee.org/membership_services/membership/join/index.html

REGISTER TO THE WG AS AN INTERESTED PARTY

- https://development.standards.ieee.org/myproject-web/public/view.html#landing
- **WG requires an IEEE SA corporate membership**
  - List of IEEE SA corporate members
  - "Basic members can observe" and "Advanced members can vote"



Please also find instruction on myProject User Guide（Section 3.1）: http://sagroups.ieee.org/myproject-help/wp-content/uploads/sites/135/2020/02/myproject-user-guide-2020-Public.pdf

1. On the **myProject** Home Screen, select **Menu.**
2. Click on **Manage Profile and Interests**.
3. Click on the **Interests** tab
4. Click **Add Groups**.
5. On the **Add/Search Interested Groups** screen, expand the **Group Name** list by clicking the "+" or use the Search box to find the desired group.
6. Click in the **Groups I am Interested In** column to indicate interest in a group.
7. On the **Add Interested Group I want to follow** screen, indicate if you want to **Participate** or **Follow** the group.
8. Click **Declare Affiliations**.
9. On the next screen, confirm your current affiliation and add additional affiliations as necessary.
10. Click **Save** or **Return to Level of Interest** to change your selection.
11. Click OK.
12. Click **Done**. The groups you indicated interest in will appear on the Interests Tab.

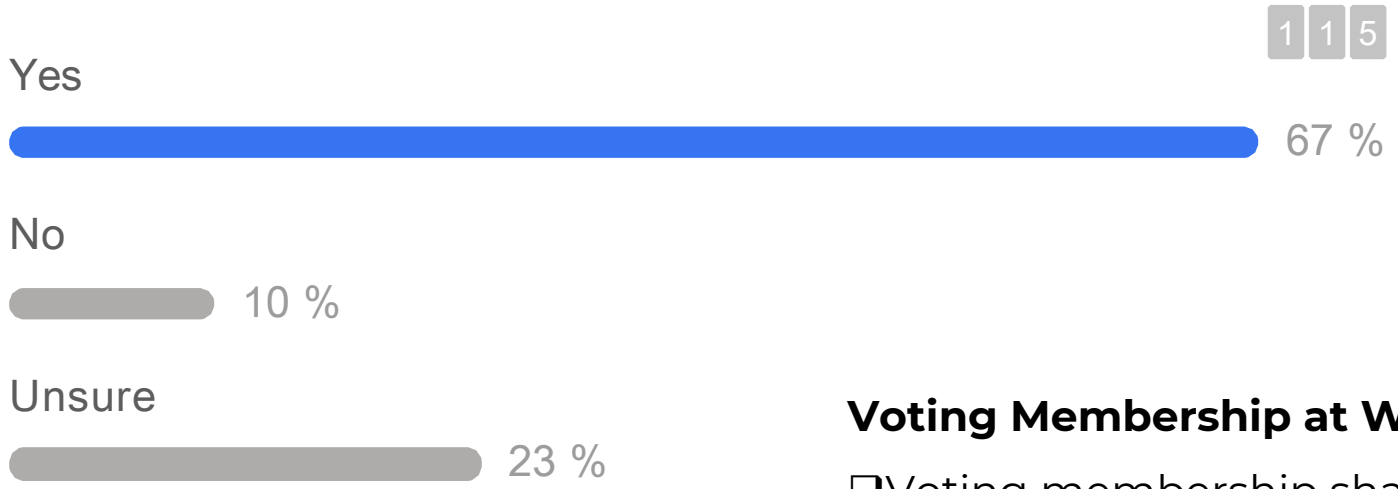
Visit the IEEE SA web site:
http://standards.ieee.org

Questions?

Approval of Agenda

Slido Poll

Considering the responsibilities laid out by the WG Chair, would you like to become a voting member, effective immediately?



Voting Membership at WG Kick-Off

- ❑Voting membership shall be granted to those **participants attending the first meeting** of a newly chartered Working Group who provide contact and affiliation information and **request voting membership**.
- ❑Voting membership is a **privilege with responsibilities** that can be lost after 2 missed meetings.

Introduction to WG Leadership Team & Open Positions

Appointment of Officers

Introduction to WG Leadership Team

Position	Name	Affiliation	Stakeholder Group
Chair	Abrez Mondal	EPRI	Academic/Research
Secretary	[open position, as needed]		
Vice-Chair	John Berdner	Enphase	DER Vendor
Vice-Chair	Yashar Kenarangui	Xcel Energy	Utility
Sub-group Facilitators	[open positions, as needed]		

Appointment of Officers

Anticipated Resource Commitments

Commitments	Officers (Chair, Vice-Chairs)	Secretary	Sub-WG Leads & Facilitators	Sub-WG Members
Regular attendance of 3-4 hybrid meetings per year (2-3 days each) over the duration of the project of 2-3 years	In person or remotely	In person	In person or remotely	In person or remotely
Regular attendance of monthly P1547.10 leadership calls (1hr each)	X	X		
Review of draft requirements	X	X	X	X
Attendance/contributions to Sub-Working Group draft requirements and calls as needed (may vary, but typically bi-weekly calls of 1 hr)		X	X	X

Please send your (self-)nominations to
Abrez Mondal, abrezmondal@ieee.org and Jens C Boemer, j.c.boemer@ieee.org

Introduction to WG Leadership Team

Abrez Mondal

- PhD in Electrical Engineering focused on DER Management in Microgrids
- 6 years of experience in power industry
- Past Position: Specialist Engineer at Eaton Corporation
- Current Position: Senior Technical Leader at EPRI
- Role: Lead efforts for DER Integration & Controls

Introduction to WG Leadership Team

Yashar Kenarangui

- 12 years of experience in power industry
- **Past Positions:** Consulting/Engineering at S&C and Sargent & Lundy
- **Current Position:** Principal Engineer at Xcel Energy
- Role: technical Lead for DERMS Adoption at Xcel Energy
- Working group member in IEEE 1547.2, 1547.3 and 1547.9
- Balloter in IEEE 2030.11 “Guide for DERMS Functional Specification”

Introduction to WG Leadership Team

John Berdner

- 40 years in PV Industry, more than 20 years in Standards development
- Senior director of regulatory strategy for Enphase Energy, inc.
- Sub-group Chair, IEEE 1547.1 - 2020
- Vice Chair, IEEE 1547 – 2018
- Founding and current member UL 1741 Standards Technical Panel
- Task group member UL 1741 – Supplement SB
- Task group member UL 1741 – Supplement SC
- Task group lead UL 1741 CRD for power control systems
- Member CMP4 for NFPA 70
- Active in CA Rule 21 and HI Rule 14H interconnection proceedings

Technical Presentations

Motivation for a DER Gateway

Today, aggregators and utilities are **deploying DER management systems (DERMS)** that intend to connect with DER, making them active parts of system operations. However, this remains a challenge due to the **revolving mix of DER types and capabilities** that will be continuously interconnected and retired over time. Standardization efforts like IEEE 1547-2018 make the integration possible by specifying simple functions to the DER and leaving many utility-specific functions to the integration systems. The DER Gateway is designed to address **management-system-specific** functions. It serves as a local platform housing features and logic important to the **DER managing entity**. It also performs several other important functions including a translator of the DER's communication protocol to the protocol **used in the communication network** and it enables secure integration with **grid** operations.

For further information, refer to a recent article at https://eprijournal.com/the-network-gateway-the-missing-link-for-integrating-distributed-energy-resources/

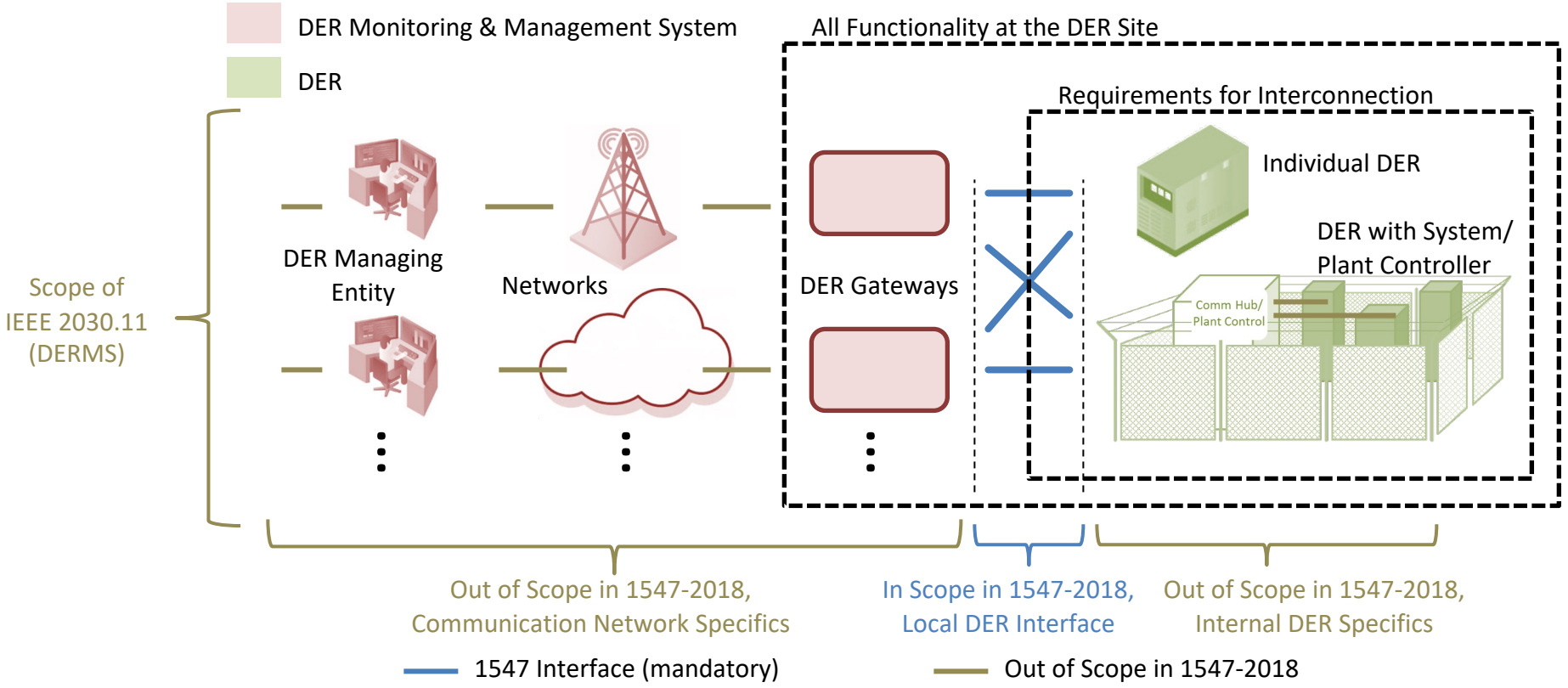
Industry Voices

"Gateway systems allow us to more efficiently and effectively manage DERs," ***Lee Ragsdale, Sr. Vice-President, North Carolina Electric Cooperatives***

"DER gateways could help operating the grid safelya and reliably when DER communications are lost," ***David Lovelady, Grid Modernization Eng., NationalGrid***

"Support for the DER Gateway PAR can balance harmonization and innovation when aggregating DERs securely and efficiently," ***Mark Baldassari on behalf of John Berdner, Enphase Energy***

IEEE 1547-2018 & the Local DER Interface



DER Gateway are platforms that can use

stand-alone devices

and/or

hardware integrated into the DER.

Scope of IEEE 1547 does not include the communication system nor the local network gateway

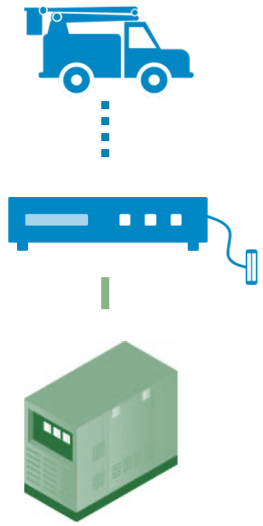
- Flexibility for utilities to choose any network type
- DER manufacturers can ship a common product not prescriptive of a utility/region
- Companies (DER and network providers) can focus on their core competencies
- Replace/Update communication systems without obsoleting end device

Source: Modified based on Applications of the Local DER Gateway: EPRI, Palo Alto, CA: 2020. 3002018673.

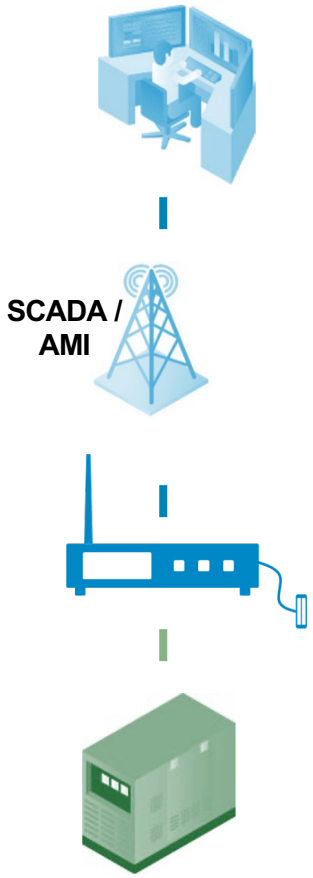
Gateway Architecture Scenarios

Utility | Third-Party | Customer

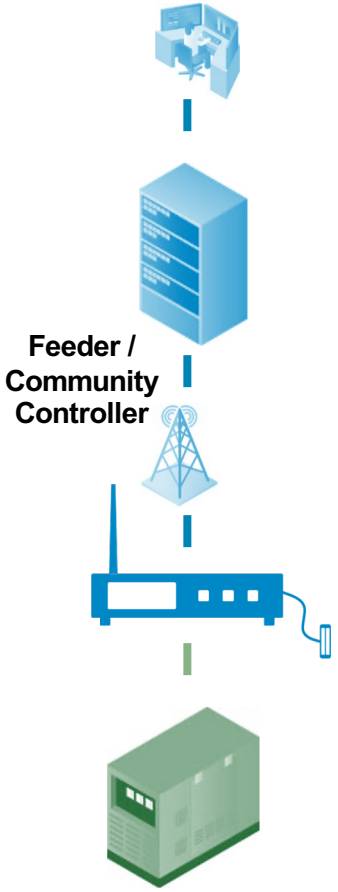
Autonomous Utility Gateway



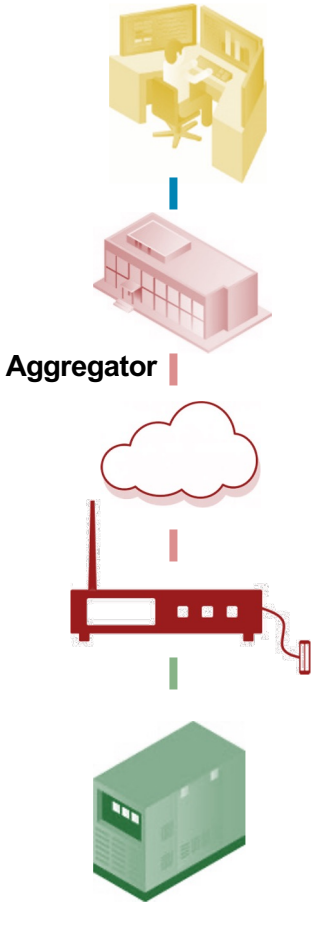
Utility Central DERMS



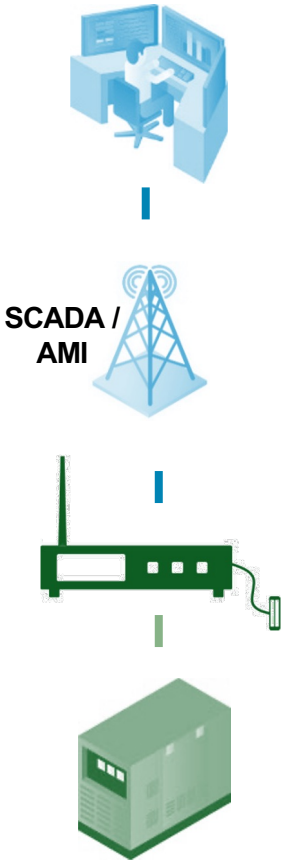
Decentralized Utility Control



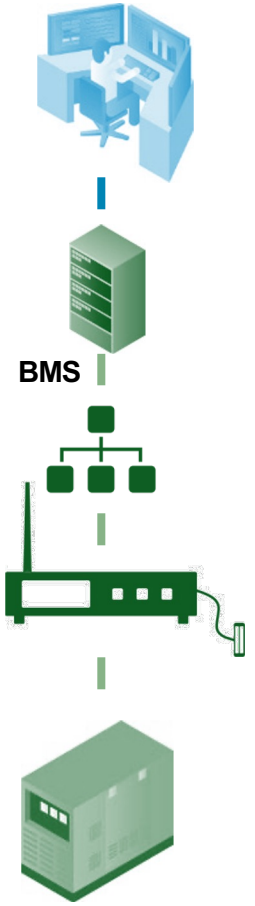
Third Party Aggregator



Utility Central DERMS



Customer Control System



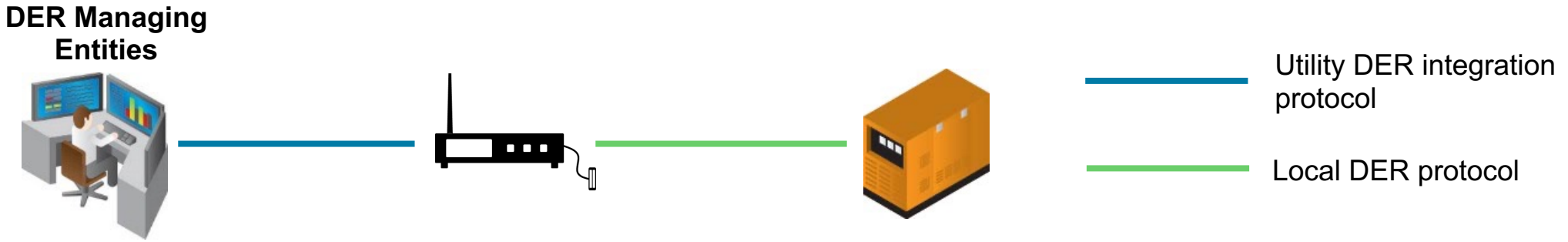
Source: Modified based on Applications of the Local DER Gateway: EPRI, Palo Alto, CA: 2020. 3002018673.

DER Gateway Functionalities

- Loss of Master Detection and Reversion of Settings to Defaults
- Advanced Notification & Scheduling
- Centralized Manageability
- Logging & Retrieving Interval Data
- Buffering Monitored Interval Data During Network Outages
- Event Logging & Alarms
- Continuous Monitoring & Report by Exception
- Availability at Night and During Outages
- Report Unexpected DER Settings Change
- Productivity Loss or Curtailed Energy Calculation
- New Smart Inverter Function Implementation
- Transparent Smart Inverter Function Handling
- Communication Protocol Translation
- Cybersecurity
- Multi-Master Scenarios and Command Prioritization (RBAC)

Source: Modified based on Applications of the Local DER Gateway: EPRI, Palo Alto, CA: 2020. 3002018673.

Communication Protocol Translation



- DER Managing entities have a critical need to standardize DER technologies
- Local DER interfaces may speak one of the different protocols (e.g., SunSpec Modbus, DNP3, etc.) specified in IEEE 1547-2018
- Gateways are ideal systems for translating local protocols to utility DER integration protocols (e.g., IEEE 2030.5 for CA) and harmonize communications
- Gateways can also accommodate various other languages/protocols at the system edge. This could include legacy products with native protocols that are vendor-proprietary

Source: Modified based on Applications of the Local DER Gateway: EPRI, Palo Alto, CA: 2020. 3002018673.

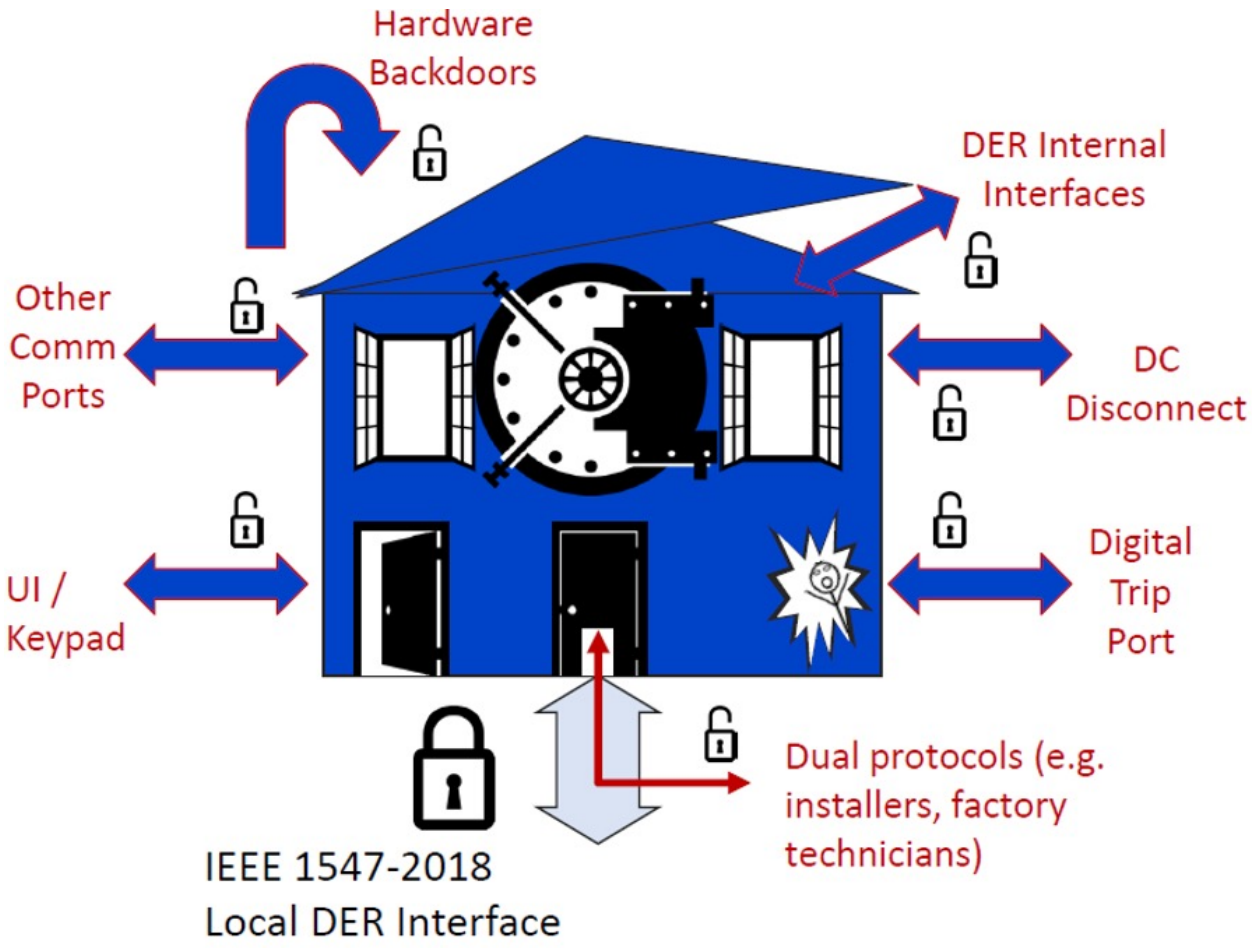
Cybersecurity Challenges and Objectives of Gateways

DER Cybersecurity Challenges:

DERs face a variety of local threats and vulnerabilities which are likely outside of utility responsibility and control. Current standards, such as IEEE 1547, are limited in scope of cybersecurity specification and may only address a subset of security issues. Furthermore, current compliance and certification frameworks are limited in their scope of enforcement to ensure that necessary security controls are adequately met among owners of DER. This presents a challenge for utilities where assurances in integrity and availability of data and functionalities cannot be fully established.

Gateway Security Objective:

Security requirements for utility gateways must consider these deficiencies to help establish trust in the integrity of the DER and to protect critical utility systems, such as DERMS and ADMS, from third-party threats.



Source: Modified based on Applications of the Local DER Gateway: EPRI, Palo Alto, CA: 2020. 3002018673.

Proposed Sub-WG

Proposed Sub-WG Overview

Subgroup	Officer (Chair or Vice-Chair)	Subgroup Lead / Facilitator(s)	Scope
Overall document and general requirements	Abrez Mondal	WG Secretary	* locational requirements * should vs. may language
DER gride-edge Intelligence functions in Gateway	Yashar Kenarangui	TBD	* smart inverter function implementation * alarm/events handling * scheduling
Security functions in Gateway	John Berdner	TBD	* cybersecurity features * hardware security
Communications	Yashar Kenarangui	TBD	* protocol translation * network management

DER Grid-Edge Intelligence functions in Gateway

Possible topics for Sub-group discussion

- **Defining roles and functions of DER gateway devices:**
  - Supplemental DER device
  - Edge computing and distributed intelligence
- **Functional requirements**
  - …

Communications

Possible topics for Sub-group discussion

- **Interoperability**
  - Communication Protocols
  - Data models
  - Communication performance requirements

Security Functions of Gateways

Possible topics for Sub-group discussion

- **Scope of the gateway versus plant controllers versus aggregation**
  - A single physical device / hardware interface may support multiple functions
  - Security of the gateway when used by multiple stakeholders, role based access
- **Special considerations for gateways used with bi-directional EV's**
- **Clarification of the 1547- 2018 requirement for a single local DER communication interface**
- **Hardware level security embedded in the gateways / DER units**
  - Other devices, below the DER interface, are out of scope in 1547-2018

Security Functions of Gateways

Possible topics for Sub-group discussion (2)

- **Scope of secrets/keys to be used with gateways**
- **Provenance of keys used**
- **Security of software used with gateways**
- **Engineering requirements / best practices for suppliers**
- **Gateway operational security monitoring / reporting**
- **Network security**
  - Out of scope in IEEE 1547 – 2018

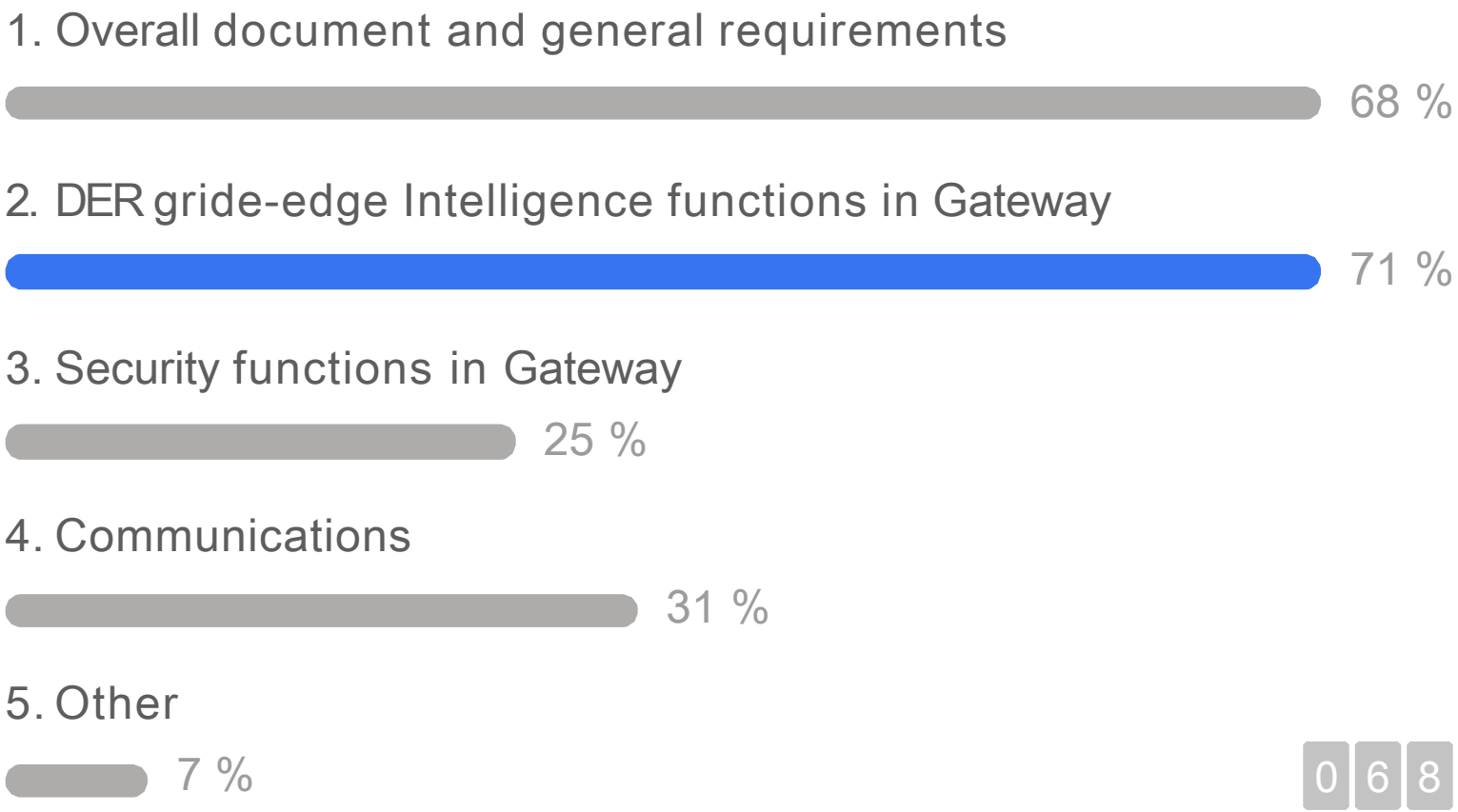
Security Functions of Gateways

Possible topics for Sub-group discussion (3)

- **Coordination with IEEE Standards, Recommended Practices, and guides**
  - IEEE 1547 – 2018, IEEE 1537.1- 2020 IEEE 2030.5, IEEE 1547.3, others
- **Coordination with other National and International Standards**
  - Mesa DNP 3, Sunspec
  - UL 2941 – (cybersecurity, UL / NREL draft, outline of investigation)
  - UL 5500, UL 1998
  - UL / IEC 61730
  - SAE J3072
  - NIST
- **Other topics TBD**

Slido Poll

Which of the following Subgroups are you interested in?



Future Meetings

Next Meetings

- ❑ **Coordinate with IEEE P1547 Meeting Schedule**
- ❑ **Allow for remote participation via WebEx**
- ❑ **Preferably no registration fee, as long as facilities and catering is provided in-kind**

IEEE P1547	IEEE P1547.10	Location	Comment
Week of April 3, 2023	Wed/Thu, Apr 5-6, 2023	Houston, TX (1898& Co./ Burns & McDonnell)	Tentative
Summer 2023	Summer 2023	100% virtual	Tentative
Fall 2023	Fall 2023	Chicago, IL (TBD)	Tentative
2024+	2024+	Atlanta, GA (TBD)	Tentative

Slido Poll

What are your thoughts of the proposed WG meeting schedule in 2023?

Thank you !

Meeting adjourned.