

Meeting Minutes

November 17, 2021

GWAC Members

David Forfia, GWAC Chair

Ron Ambrosio, Independent Energy
Transformation Professional

Kay Aikin, Founder, CFO, Dynamic
Grid/Introspective Systems

Ron Bernstein, President, RBCG, LLC

Andrew Bordine, VP Energy Mkts & Innovation,
Anterix

Ron Cunningham, American Electric Power

Lorenzo Kristov, Principal, Electric System
Policy, Structure, Market Design

Stuart McCafferty, President, GridIntellect

Farrokh Rahimi, Senior Vice President, Open
Access Technology International, Inc

Aaron Snyder, Dir. of Grid Tech. Consulting,
EnerNex

Leonard Tillman, Partner, Balch & Bingham, LLP

GWAC Associates & Emeritus

Rahul Bahadur, VMWare, Inc.

Mark Knight, 1898 & Co., Part of Burns &
McDonnell

Jeff Morris, Schneider Electric

Ken Wacks, Home, Building & Utility Systems

GWAC Members and Assoc. not present

Gerald Gray, Sr. Program Manager, Electric
Power Research Institute (EPRI)

Ahlmahz Negash, Sr. Engineer, Tacoma Power

Mark Paterson, CSO, Strategen

Chris Villarreal, President, Plugged In Strategies

GWAC Guests

Christopher Fleck

David Katz

Jaime Kolln, PNNL

Seemita Pal, PNNL

Alex Papalexopoulos

Elizabeth Sisley

David Toquica Cardenas

PNNL Support

Susan McGuire, GWAC Coordinator

Ron Melton, PNNL

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David Forfia called the meeting to order at 12:06pm Central time once a quorum was met. He noted that Karen Studarus, PNNL, was not able to attend this meeting. David promised to do his best to lead the meeting. He welcomed any new attendees and then read the proprietary notice.

David noted that there were no minutes from the October 2021 GWAC workshop to be approved.



Agenda Nov. 17, 2021

Call to Order and roll call

GWAC Administrative Business

- Welcome
- Minutes
- Upcoming events
- TESC 2022 update
- Actions
- GWAC Projects Overview Chart review
 - Seemita Pal to give an update on the Grid Architecture white paper
- Liaison Reports

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Conferences and Events (**Bold** = GWAC speakers, **blue** = complete)

- Pacific Northwest Economic Region Winter Meeting, Vancouver BC, Nov. 17-19, 2021
- Advanced Energy Economy Western Meeting, Denver, CO, Dec. 6 – 8, 2021
- Western Governor's Association, San Diego, CA, Dec. 8 – 10, 2021
- National Governor's Association, Washington DC, Jan. 28 – 31, 2022
- DistribuTech 2022 – Jan 26 – 28, 2022, Dallas, TX
- ASHRAE Winter Conference, Jan 29 – Feb. 2, 2022, Las Vegas, NV
- AHR Expo, Jan. 31 - Feb. 2, 2022, Las Vegas Convention Center, NV
- **IEEE ISGT 2022, Washington, DC, February 21-24, 2022 – face to face format**
GWAC Speakers: Kay Aikin
- IEEE PES T&D, April 25 – 28, 2022, New Orleans, LA
- IEEE Rural Electric Power Conference REPC, Cleveland OH, May 17 – 20, 2022
- **TESC2022 – tentatively scheduled for May 3 – 5, location to be determined**
- IEEE PES General Meeting, Denver, CO, July 17 – 21, 2022

David reviewed the list of upcoming conferences.

Kay Aikin will be speaking at the IEEE ISGT conference in February and David said that most likely Ron Melton will be speaking also as the conference chair. Farrokh Rahimi is the technical chair of the meeting.

Jeff Morris said the Advanced Energy Economy meeting on the list is cancelled.

Andy Bordine noted the [NARUC Winter Policy Summit](#) Feb. 13 - 16, 2022 and asked that it be added to the conference list.

David gave a quick overview of the TESC 2022 Organizing meeting that was held on Nov. 15. He noted that the conference will be 100% virtual again this year. The budget for this year's event will be higher due to increased costs by the registration company and also to cover using the Engagez platform which was complimentary by IEEE last year. The group is also looking into the use of Spatial Chat for the poster session to enhance the user experience noting that last year poster presenters did not talk to many people but had to wait in their area for two hours in case someone joined. Spatial Chat would allow for more interaction.

Increased sponsorship could help increase available funds for the conference. The Organizing committee would like to get commitments for sponsorship in as soon as possible. The group is reworking the sponsorship prospectus.

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David noted that as we get closer to the conference it will be important for the GWAC members and associates to support panels and other elements of the conference. He mentioned that tutorials will be discussed at the next meeting which will be the Monday after the Thanksgiving holiday.

Ron Bernstein said that he is interested in hosting a tutorial similar to one that he has done previously.

Andrew Bordine said that he would be happy to be involved with the conference and asked if he could be invited to future meetings.

David said that at the next TESC Organizing meeting agenda and content for panels and tutorials will be the primary topic for discussion. Panel hosts will need to be identified.

Farrokh mentioned that IEEE has a process for pre-approving tutorials. Susie noted that the tutorials for the last meeting had been presented at IEEE meetings previously and so they were approved quickly.

Last year's tutorials were "Transactive Energy Fundamentals" which was hosted by Ron Ambrosio, and "Grid Architecture fundamentals," which was hosted by David Forfia.

In 2019 Ron Bernstein and Ron Melton hosted the tutorial, "Transactive Energy 101," and Lorenzo Kristov and Tanya Barham hosted "TE Toolbox - Can Communities Provide the Ideal Test Bed and Partnership for Transactive Energy?" Ron Bernstein also hosted "Grid Connected Buildings as a Transactive Energy Hub," and Gerald Gray hosted, "Blockchain and Transactive Energy."

David asked the group to post any ideas for tutorials in the chat window.



Actions

- Action: Ron B. and David Forfia to keep GWAC informed on the possible GWAC panel at the ASHRAE Winter Conference.
- Action: Karen and David to create an abstract for ISGT. Ron B. would be interested if the topic includes "building to grid architecture."
- Action: Karen to start an effort to review the Interoperability Constitution with Jaime Kolln and consider it for a rework.
- Action: Karen Studarus and Mark Knight to discuss DOE's ideas for GWAC future direction.

In response to Action items Ron Bernstein and David Forfia said that ASHRAE did not accept the GWAC offer to do a presentation at the Winter Conference. This action will come off the list.

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David Forfia said that he and Karen did not submit an abstract to the ISGT in time so that can be taken off the action item list also.

GWAC Projects

Project	Grid Arch for Regulators	Grid Architecture White paper	TESC2022 Conference	Grid Future States	GWAC Blog Content and Review Committee
Scope	Applying Grid Architecture in the Policy & Regulatory Arenas	An introduction to Grid Architecture – including best practices and real-world examples.	Annual GWAC sponsored conference focused on Transactive Energy and related topics	Update Grid 3.0 Future States	Decarbonization, GA for Policy
Audience	Policy makers	Geared to stakeholders who aren't familiar with grid architecture	Decision makers, solution providers, labs, academics, policy, solution providers	Industry Stakeholders	
Status	Abstract in development		Program structure created for virtual or P2P	Started in January. Now meeting regularly. Coordinating with GMLC Grid Architecture results	Group: Stuart McCafferty, Ahimahz Negash, Larisa Dobriansky, Ron Bernstein, Tonya Barham, Rahul Bahadur, Leonard Tillman, David Katz, Tim Schoeche, Heather Donaldson
Actions	Group: Lorenzo Kristov, Larisa Dobriansky, Kay Aikin, Farrokh Rahimi, Chris Villareal, Mark Paterson, Karen Studarus		Promote conference, work on identifying and recruiting keynote(s) and plenary panels	Working group is gathering inputs and organizing material and has a work plan	
Leadership	Lorenzo Kristov	Seemita Pai, PNNL	Various – Karen Studarus, lead	Ron Cunningham, Karen Studarus	Stuart McCafferty

Regarding the Blog Posts Ron Bernstein asked if there was a list of blog posts. Stuart said there are five approved blog posts ready to go on the new website.

Kay Aikin told the group that Ahimahz Negash has created a new GWAC organization Linked In site. This can be used to cross reference blog postings on the website once it is up and running. And GWAC personal sites can also point to the blog posts to help drive traffic to them. We are hopeful to get the word out to a large audience.

Stuart said that currently there are 55 people on the site but we should all work with the site to invite more people to the site.

David asked Stuart to suggest an alternative if the new GWAC website is not up in a month.

Ron Bernstein suggested that we create a list of the blog posts to share with the GWAC to help them decide on their own potential topics.

Stuart said once we the first blog published this list would be more helpful.

Lorenzo asked about the preferred length of the posts. Kay answered that they are from 500 to 1000 words.

David asked if we could start the blog posts without the site. He is open to ideas.


Ron Ambrosio asked if the LinkedIn site could be a place for the blog posts.

Kay said that would work once we increase membership to the Linked In organization page.

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Ron Bernstein suggested a Landing Page or repository for all posts as a historical record. There was agreement on that. He also asked if we could try to use Google Analytics to monitor usage.



Progress & Accomplishments

- 2006 – [Interoperability Constitution](#)
- 2007 – Interoperability Decision Maker's Checklist
- 2008 – [Interoperability Context Setting Framework](#)
- 2009 – Interoperability Benefits Papers
 - [Environmental Benefits](#)
 - [Financial Benefits](#)
 - [Reliability Benefits](#)
- 2010 – [Interoperability Decision Maker's Checklist update](#)
- 2011 – [Smart Grid Interoperability Maturity Model](#) Beta Version
Electrical Power Engineering Academic Landscape
- 2011 – [GWAC Interoperability Constitution Whitepaper](#) PNNL-20728
- 2007-2012 – Grid-Interop Forum



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Progress & Accomplishments

- 2015-2021 – Annual Transactive Energy Systems Conference (since 2019, IEEE PES partnership event)
- 2015 – [Valuation of Transactive Energy Systems Proceedings](#)
- 2018 – [TE Systems Research, Development and Deployment Roadmap](#)
- 2020 – [Reliability and Resilience Considerations for TE Systems](#)
- 2016 – [TE Decision Makers Checklist](#)
- 2020 – [Decision Maker's Interoperability Checklist v.1.6](#)
- 2020 – [Smart Buildings as a Transactive Energy Hub](#)
- 2020 – [Transactive Energy FAQ](#)



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David Forfia noted that the GWAC historical documents now have links for each item.

Ron Ambrosio had asked about the GWAC Interoperability Constitution and Susie looked into it and it is corrected in the slide shown now. Ron and David said it had not been updated since the beginning of GWAC.

Jaime Kolln asked about Interoperability Decision Makers Checklist which was updated in 2019. He asked that it be included. It is now shown above.

Jamie has started creating executive summaries for each of these documents. He hopes to get that to Karen in the next couple weeks.

David noted that he doesn't have a link to the GWAC public organization in LinkedIn.

Ron Ambrosio posted the GWAC Organization link in the chat window. This is the site that Ahlmahz Negash set up recently: <https://www.linkedin.com/company/gridwise-architecture-council-gwac/about/>

Action: David asked all GWAC members to go to the link and hit "follow" and also to invite others to do the same.

Action: David will follow up with Stuart McCafferty about how to invite people. It could be that only the administrators of the site can invite people.

Liaison Reports

David Wollman - NIST recently published a NIST Tech Note on Distributed Energy Resource Security: Potential Guidelines and Research Topics.

<https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2182.pdf>

This publication describes an effort to validate applicability of cyber controls from NISTIR 7628 (Rev1) to High-DER environments, including summarizing stakeholder/workshop input and analyzing some specific logical interface categories (LIC 6,9,16).

David Katz suggested the group connect to the link www.caba.org for interest in grid connected buildings

Ken Wacks ISO/IEC and IREC:

Ken said that ISO/IEC is progressing with three important standards. The ISO/IEC are run by the nations of the world. Nearly every country on the planet is a member of ISO and/or IEC. In particular, 40

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countries participate in the standards that we developed for a home and building systems including energy management.

The current standards under development that the nations are reviewing this month and next month involve artificial intelligence applied to energy management, and energy management in apartment buildings. Each apartment and each building include local intelligence in the form of an Energy Management Agent (EMA) controller. These EMAs communicate with each other to coordinate energy management for the apartment complex. The standards committee is specifying a communications protocol for these EMAs to talk with each other. The group is specifying a communications protocol for the energy management agents to talk with each other.

They have a third standard out for ballot on storage systems including power conditioning and batteries. This standard specifies a communications protocol for intelligent cooperation among storage systems to track which device has energy and where power is flowing. Our next meeting will be sometime in the spring.

Ken told they group that ISO/IEC is open to publishing any additional materials as may be appropriate from GWAC. All previous publications offered to the ISO/IEC by GWAC were approved and have been published and are available worldwide. So, keep that in mind as we're looking for different avenues to publicize GWAC activity.

IREC, the Interstate Renewable Energy Council: Ken noted that there was an agreement between SEPA and IREC to have IREC take over the management of the Customer Grid Edge. This is the committee that Ken chaired previously. The move has been very timely and very productive. Membership has grown with this recent transition.

A lot of the focus a has to do with utilities that IREC works closely with including States and regulators in particular, and the DER installer community, and also, people in the solar and wind industry. IREC has been doing a series of featured speakers on the modular communication interface for energy management. There is a standard for that interface to cover both the physical and logical communication protocol to connect devices like thermostats and water heaters to a home network and then perhaps to the Grid.

One of the most popular methods for communicating demand response signals that has been discussed is using FM radio. All FM stations in the US and Canada have sub channels that are available for carrying telemetry data.

Most car radios now will show you what station you're listening to by the call letters and sometimes the performance. That's done through a data channel that FM stations carry. One of the most popular methods for communicating demand response signals that has been discussed is using FM radio. All FM stations in the US and Canada have sub channels that are available for carrying telemetry data. They have excess capacity. So, they actually lease out the excess capacity, which we can use for carrying energy management signals.

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IREC recently hosted presentations on this topic by Jeff Morris. Jeff was the legislator in the State of Washington responsible for the law that mandates each electric water heater should include a communications interface based on the ANSI/CTA-2045 standard entitled, "Modular Communications Interface [MCI] for Energy Management." Bill Hoskin of A. O. Smith discussed including MCI interfaces in his company's water heaters.

We heard from Geoff Wicks of the Northwest Energy Efficiency Alliance (NEEA), an alliance of more than 140 utilities and energy efficiency organizations head-quartered in Portland, Oregon, and Tony Koch with the Bonneville Power Administration (part of the Department of Energy). Both are advising the governments in Oregon and Washington about deploying MCI-equipped appliances.

The work of IREC is not membership driven. It is open to the public. Anyone can participate in our work at the Customer Grid Edge (CGE) committee and listen to our presentations. Please [contact Ken Wacks](#) (to be added to the distribution list. CGE meets once or twice a month. They have been meeting every other Friday with the exception of November and December where it's one Friday each month to accommodate the holidays.

Ron Bernstein -ASHRAE: There are many standards in progress within ASHRAE. There is much work in progress on interoperability and cybersecurity within the area of specification development and building automation specifications. We are hoping for a publication in early 2022.

Ron Bernstein noted that there were two CTA/ANSI standards finalized last month. One having to do with web services and one with interoperable function device definitions.

Ron B. posted a link to a new [ANSI Standard](#), "Increasing Grid Resilience under Differing Distributed Control Architectures."

Ron B. also posted [the link](#) to the new standard "Control Networking Protocol Specification Part 6: Application Elements.

SEPA - David Forfia gave comments provided by Aaron Smallwood who was not able to be on the call today:

SEPA Cybersecurity Working Group is nearing publication of a new document about securing Energy IoT Devices. It is a reference for standards and best practices that *prevent* bad actors from exploiting Energy IoT devices through cybersecurity penetration. Publication targeted for December 2021.

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The SEPA Cybersecurity Working Group will be receiving an update from Frances Cleveland about IEEE 1547.3 during their 11/18/21 meeting.

Recent SEPA blog titled, “Increasing Grid Resilience Under Differing Distributed Control Architectures”

<https://sepapower.org/knowledge/increasing-grid-resilience-under-differing-distributed-control-architectures/>

Energy Blockchain Consortium, EBC - Tony Giroti was not on the call. David Forfia will follow up to see if he can send a report to the December meeting.

Chris Villarreal was not on the call. Upcoming NARUC and regulator events were discussed earlier in this meeting.

David Forfia noted that Stuart McCafferty, Eammon McCormick and David Forfia received a Cleanie - Community Contributor award on Energy IOT Architecture talk that Stewart had presented at a GWAC Face to Face meeting in Tulsa, Oklahoma a couple years ago. Stuart was the lead author and David was a contributor and editor for that original presentation.

Rahul Bahadur posted a link to the [awards site](#) at Businesswire.

David Katz noted an upcoming market test on TE that will be happening in Canada. David will keep GWAC informed. He is also on a webinar today regarding grid interconnectedness. He will post a link to that talk.

David Forfia asked for a motion to adjourn. Ron Bernstein gave a motion and Leonard Tillman gave the second. David thanked everyone for attending. On behalf of GWAC he wished Karen well. The next GWAC meeting will be held December 15.