Meeting Minutes

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GWAC Members

Ron Bernstein, GWAC Chair

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

Ron Ambrosio, Independent Energy Transformation Professional

Andrew Bordine, Sr. Practice Manager, Grid Automation, Actalent

Ron Cunningham, IT Enterprise Architect, American Electric Power

David Forfia, Acting Chair, Principal Consultant, Utilicast

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

Ahlmahz Negash, Sr. Power Analyst, Tacoma Power

Farrokh Rahimi, Executive Vice President, Open Access Technology International, Inc.

Aaron Snyder, Dir. of Grid Technology Consulting, EnerNex

Leonard Tillman, Partner, Balch & Bingham, LLP

GWAC Associates & Emeritus

Rahul Bahadur, Associate

Marc Costa, Associate

Mark Knight, Emeritus

Jeff Morris, Associate

James Mater, Emeritus

Ken Wacks, Emeritus

GWAC Guest Speaker

Danielle Sass-Byrnett, NARUC

GWAC Friends

Sean Crimmins, EPRI

Shawn Chandler

Elizabeth Cook

Harry Peterson

Don Hammerstrom, PNNL

Anthony James

Olayinka Kolawole

Doug Houseman

Dave LeVee

Stephan MacDonald

Seemita Pal, PNNL

Jeremy Roberts, Green Button

Jiri Skopek

Tylor Slay, PNNL

Dave Wollman, NIST

PNNL Support

Jaime Kolln, PNNL GWAC Administrator

Ron Melton, PNNL GWAC Administrator

Susie McGuire, GWAC Coordinator

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GRIDWISE Architecture Council

Agenda January 2024

Call to Order and Roll Call

- Welcome

GWAC Administrative Business

- Minutes
- Upcoming events
- Call for Candidates
- GWAC Accomplishments
- Action Items
  - The Next Big Thing

Guest Speaker – Danielle Sass Byrnett - NARUC

Future Activities

- Planning 2024 "TE" Conference
- GWAC April Face-to-Face - OATI
- GWAC Strategic Outreach Plan

Work Product Status Reports

- GWAC Projects Overview Chart review
- Working Party Status Updates
  - Grid Architecture White Paper
  - Grid Future State White Paper
  - Grid Arch for Regulators White Paper
  - Applying Grid Architecture Concepts to Bridge Back from the Future Grid
  - Grid Architecture Concept Model for Interconnection, Electrification, and Decarbonization
- Liaison Reports

New Business

Jaime briefly reviewed the GWAC agenda.

Danielle Sass Byrnett, Director, Center for Partnerships & Innovation for NARUC is the speaker for today.

The December minutes went out yesterday. Ken Wacks had a couple changes to his liaison report and those changes have been made.

Ron Bernstein asked to hold the December minutes until February for approval.

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GRIDWISE Architecture Council Conferences and Events

Date	Event	Location	Attend	Speaker	Topic
Jan. 17-19, 2023	Energy Storage North America	San Diego, CA	Russ Weed		Combined with Intersolar North America
Jan. 22-24, 2023	AHR Expo	Chicago, IL			Co-sponsored by ASHRAE and AHRI and is held concurrently with ASHRAE's Winter Conference
February 5 - 8, 2024	Energy Transition Summit	Arlington, VA	Jaime Kolln		Grid Modernization Initiative and Clean Energy Cybersecurity
February 19-22, 2024	ISGT North America	Washington DC	Mark Paterson, Farrokh Rahimi, Paul DeMartini, Kay Aikin		ISGT North America
February 26-29, 2024	DistribuTech 2024	Orlando, FL	Farrokh Rahimi		
Apr. 30 – May 2, 2024	V2G 2024	San Diego, CA	James Mater, Jaime Kolln		
May 6 – 9, 2024	IEEE PES T&D Conference & Expo	Anaheim Convention Center			Accelerate the Grid of Tomorrow
May 14 – 16, 2024	Energy Storage Safety and Reliability Forum	PNNL Campus	Jaime Kolln		
July 21 – 25, 2024	IEEE PES General Meeting	Seattle, WA			
Sept 9-12, 2024	RE+ Anaheim, CA & GWAC Conference	Anaheim, CA			

Ron Bernstein would like to add March 26 – 28 Energy, Exchange in Pittsburgh, he will be attending and speaking on the Challenges of Connected and Smart Buildings (link https://www.energy-exchange.com/

Sean Crimmins – noted that EPRI will host the Electrification 2024 International Conference & Expo March 12 – 14, 2024 in Savannah, Georgia. https://www.electrification2024.com/ and also the European Workshop Week 2024 in Lisbon Portugal, April 16 – 18, 2024. Link https://www.eprievents.com/event/385e8224-efad-4b41-ab86-e7b4c22fcf00/summary

Ken mentioned an RE+ meeting to be held Feb. 13 and 14 in Boston, MA. in Feb. Ken will attend. Kay has not attended but thought that attendance would be about 5,000 people. https://re-plus.events/northeast/

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GRIDWISE Architecture Council

Call for Candidates Open?

Potential candidates should have demonstrated visionary capacity, team effectiveness, and an acknowledged level of recognition and credibility in their professional fields, along with specific skills and experience.

- Nominations are open now
- Call will close on January 15, 2024 (extended)
- At least one candidate will be chosen
- Council members serve a two-year term

https://gridwiseac.org/index.php/call-for-candidates/

https://gridwiseac.org/pdfs/gridwise_architecture_council_bylaw.pdf

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Jaime would like to keep the GWAC call for candidates open for 2 more weeks. GWAC received request to do so from an interested participant.

GRIDWISE Architecture Council

GWAC Accomplishments

2015-2022 – Annual Transactive Energy Systems Conference (since 2019, IEEE PES partnership event)

2022 – Blog Post #5 – Decarbonization efforts of three Northern California CCA's - Bahadur

2022 – Blog Post #4 - Decarbonization of the Electric Grid – Bernstein

2022 – Blog Post #3 - Energy Equity in Decarbonization - Negash

2022 – Blog Post #2 - Grid Infrastructure Challenges In A Decarbonized World – Aikin

2021 – Blog Post #1 - Decarbonization – The Pattern that Has Emerged - McCafferty, McCormick, Forfia

2020 – Transactive Energy FAQ

2020 – Smart Buildings as a Transactive Energy Hub

2020   Decision Maker's Interoperability Checklist v.1.6

2020 – Reliability and Resilience Considerations for TE Systems

2019 - GridWise® Transactive Energy Framework V1.1

2018 - TE Systems Research, Development and Deployment Roadmap

2016 - TE Decision Makers Checklist

2015 – Valuation of Transactive Energy Systems Proceedings

Jaime noted that some work products are being finalized, and he noted that a new white paper cover is in development with PNNL Creative Services. The cover art is under discussion; a new paper template is in development and may be affected by the mission and vision refresh that is also underway.

Ron Melton asked about the cover art that Marc suggested. He said they were AI generated and there is a logo noted.

Jaime noted that PNNL Creative Services has checked the copyright for the art that Lorenzo had suggested and that it can be used. They would ensure that we have the proper rights before using any graphics.

Jaime asked about future speakers, next month should be covered. Ideas for future speakers can be sent to Jaime Kolln, Ron Bernstein, and Susie McGuire.

Kay suggested she could give GWAC a briefing on a super capacitor technology that is under development in Maine.

Jaime thanked Kay and noted that GWAC presenters are encouraged. These talks would typically be 5 to 10 minutes to be in addition to the monthly guest speaker.

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GRIDWISE Architecture Council

Action Items

- Send speaker ideas to Jaime Kolln and Ron Bernstein and copy Susie McGuire.
- **Jaime to schedule an organizing meeting with RE+ in January.**
- **Jaime/Susie to schedule recurring GWAC Conference organizing meetings.**
- **Jaime/Susie to organize a Spring F2F Committee meeting.**
- Website updates
  - Create a GWAC database of presentations for future talks and a speakers bureau post on the website.
  - Create a catalog of speaker materials with links.
  - AHR composite video posted
  - Feedback on format and errors requested
- **Susie to send out new GWAC White Paper cover format from PNNL Creative Services for GWAC feedback.**

Regarding the GWAC Conference planned for September 2024, Jaime said that our RE+ contacts are scheduled to meet with GWAC at the end of January to review the contract. Once this agreement is in place, we will start the Conference Organizing meetings.

Ron Melton noted that the IEEE Smart Buildings, Loads and Consumer Systems Committee work group of IEEE is interested in participating with GWAC and RE+ at the conference. The work group web page is https://cmte.ieee.org/pes-sblc/subcommittees/ It has an architecture subcommittee.

Jaime is aware of this and will ask about it with the RE+ contacts.

Action: Jaime to ask about including the IEEE work group in conference planning with SEPA

Jaime said he had scheduled an organizing meeting for the Spring F2F at OATI.

Jaime reviewed the GWAC website updates on the Action item list. He noted that there is now a Videos tab and the posted presentations by GWAC guest speakers and by GWAC are noted on the page. This meets the need of a database.

GWAC speakers who provide their slides those will be linked with the videos.

Jaime reminded the group that these presentations are all open access and he asked GWAC participants to "like" the presentations in their LinkedIn accounts to drive more people to the website and the videos.

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The AHR composite video is the precursor of the "Building Back from the Future," video. It is posted on the GWAC website under the videos tab. Ron B. did the video editing to merge various talks by the council for this video.

Jaime asked the GWAC to provide feedback on the GWAC white paper cover choices developed by PNNL Creative Services. Many have already given their feedback. Marc Costa had sent out a couple of new graphic choices.

Ron B. said he could create a mash up graphic for the cover art of a micro grid, distributed resources, and renewable resources if we are interested in another option.

Jaime Kolln introduced Danielle Sass Byrnett, NARUC, today's GWAC Guest Speaker:

NARUC GRID DATA SHARING FRAMEWORK

Danielle Sass Byrnett
Senior Director, NARUC Center for Partnerships & Innovation
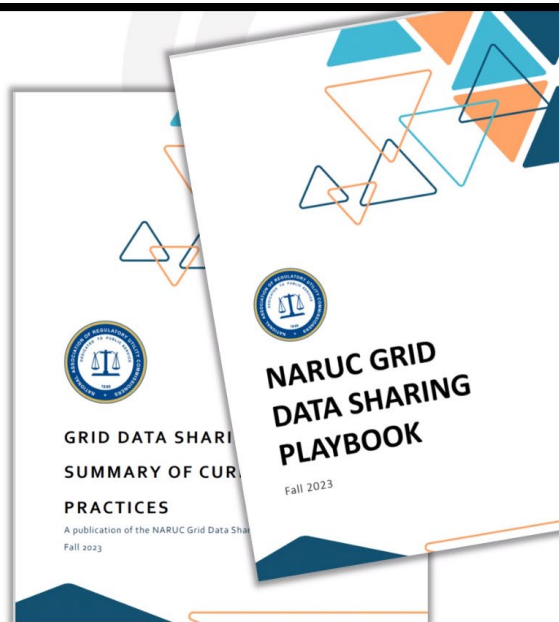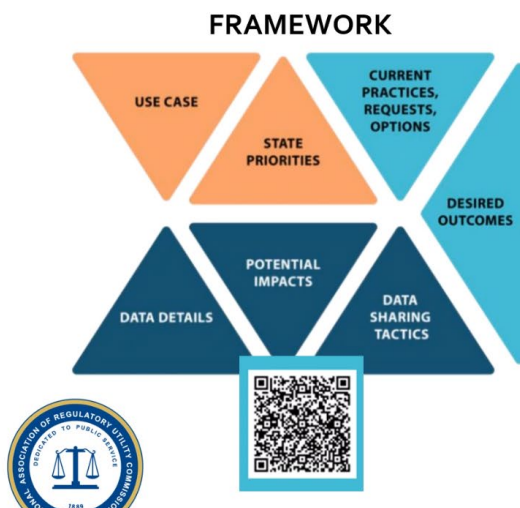
GWAC Meeting on January 17, 2024

www.naruc.org/cpi-1/energy-distribution/der-integration-compensation/grid-data-sharing/

https://www.naruc.org/cpi-1/energy-distribution/der-integration-compensation/grid-data-sharing/

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She will go over an initiative (title) and the docs shown in the slide above.

Danielle noted who participated on the development team and she added that the effort received support from DOE OE and CESER.

The group met over a series of several workshops.

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GRID DATA SHARING COLLABORATIVE PURPOSE & GOALS

Support states, utilities, and stakeholders in identifying areas of agreement / disagreement about grid data sharing to devise a framework that each state can later tailor to their goals and priorities.

Through the 2022-2023 workshops, participants explored use cases, data sharing options for meeting identified needs, and articulated risks and tradeoffs of those options.

WHAT IS IN SCOPE FOR THIS INITIATIVE?

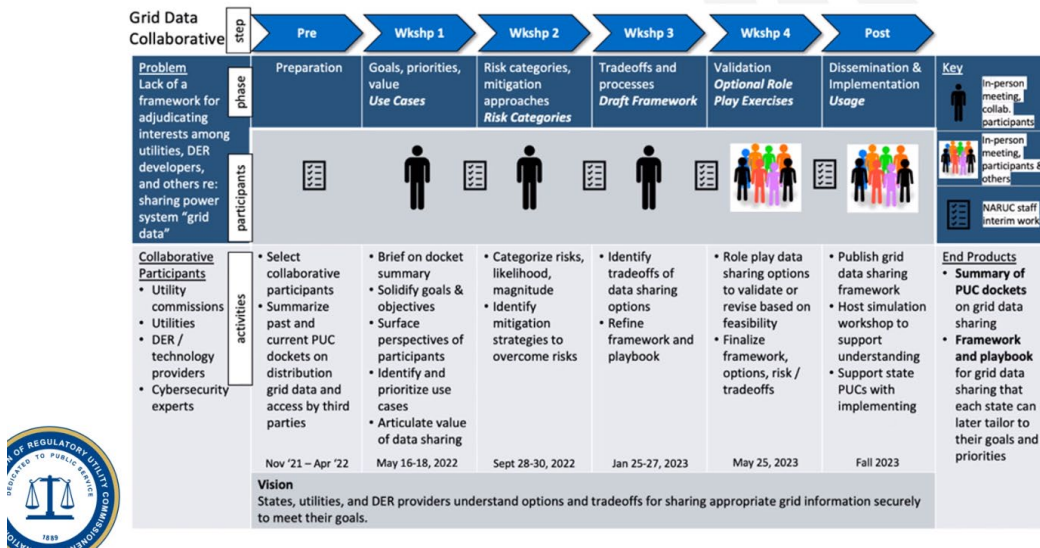| In Scope	Out of Scope
• Distribution system data • **Information about grid assets, system conditions and system constraints** (e.g., hosting capacity) • Data portals and other means to share system information • Locational and temporal information	• Customer data • **Customer privacy and personally identifiable information** (PII) • Data "ownership" questions • DER metering and telemetry requirements • Natural gas utility data

They didn't talk about customer energy consumption patterns or any PII data.
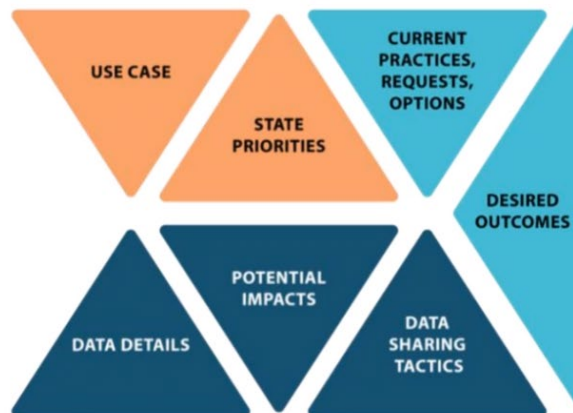
GRID DATA SHARING COLLABORATIVE PROCESS

The talk described the activities of this work group and the data that they referred to for the study. The summary has info from 2 states and over 40 utilities.

GRID DATA SHARING FRAMEWORK

- Divided into 7 categories
- Identifies considerations and questions to ask
- Matching colors identify categories that are closely related

She said it is a framework, not a process. As they worked through it with stakeholders, the use cases and state priorities were closely related. They needed to understand what data details were needed to be shared and what the risks were for each data set.

It is more about how to make a decision about what should be shared.

GRID DATA SHARING FRAMEWORK

- This is a framework, not a process. Each state will determine its own process.

- The framework aims to support decision making about whether and which data to share.
  - Information might not be needed in each category before decision making.
  - Not focused on how to implement grid data sharing.

- Results will vary by state.
  - Each state can take the same information and make a different decision based on their own jurisdiction, goals/policies, priorities.

Use cases were developed iteratively as they worked through the framework.

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SAMPLE USE CASES

- Improving DER Interconnection
- Enabling Fleet Vehicle Electrification
- Enabling Distribution Non-Wires Solutions

NEXT STEPS

- Grid Data Sharing pilots coming soon

www.naruc.org/cpi-1/energy-distribution/der-integration-compensation/grid-data-sharing/

THANK YOU!

Question: Olayinka Kolawole asked "is there a key role for the feds to play in grid transparency efforts?

Danielle replied saying, Chris Irwin was an attendee at our workshop in May. They are working with VT and another DOE office about EV charging stations and around fleet issues. DOE has several things they are considering. There is no easy way to answer this since we had lots of input from utilities and from the states.

The CESAR program is funding NARUC to work with a few states to implement the framework and support their use of it in their own proceedings or related efforts. We will be announcing an open call for pilots where the grid data sharing framework can be leveraged. They are expecting to get more insight about where additional resources will be needed and where states and stakeholders could use more support.

GRID DATA SHARING PLAYBOOK

DATA DETAILS

Data elements necessary to unlock the benefits of the use case

Table 2: Sample Grid Data Elements

Interconnection Data Elements
(Source: Grid Data Sharing Collaborative)

Feeder (and substation in some cases)
- Feeder name or identification number
- Substation to which the feeder connects
- Feeder voltage
- Number of phases
- Substation transformer to which the feeder connects
- Feeder type (e.g., radial, network, spot, mesh)
- Feeder length
- Feeder conductor size and impedance
- Service transformer rating
- Service transformer daytime minimum load
- Existing generation
- Queued generation
- Total generation
- 8760 load profile
- Percentage of residential, commercial, and industrial customers
- Currently scheduled upgrades
- Federal or state jurisdiction
- Known transmission constraint
- Presence of reverse flow protection, automated voltage regulators, load tap changers, capacitor banks that would be impacted
- Other relevant information to guide interconnection applicants

Public Queue Data
- Queue number
- Nameplate rating and export capacity
- Fuel type
- City, ZIP code
- Substation
- Feeder
- Status (e.g., active, withdrawn, connected)

Dates for
- Application complete
- Screening results
- Supplemental review results
- System impact results
- Facilities study results
- Interconnection agreement provided
- Interconnection agreement signed
- Permission to operate

NOTE: This is an illustrative list for demonstration purposes only.

Kay Aikin asked about slide 21 (Data Details slide) and asked about this data. There are a lot of static hosting apps, but it doesn't help. What states if any to provide data to groups such as solar panel installers to help them know where to install.

Danielle said they can't pass judgement on states or rank them by policy. She said that in addition to the summary of state practices where they do attempt to articulate what type of granularity, and the type of data, the DOE just related in the last 2 weeks, a web page of where they are tracking, and there are also hosting capacity map available which could be useful to EVs and DERs. She will try to post that for the GWAC.

Kay said the engineering data would be very helpful. Kay would like to see the topology of the distributed grid.

She said she understands the question but doesn't have the answer.

Marc Costa noted the framework document, from a local government perspective, and asked how they could help local governments and stakeholders to ask the right questions for the data and also how do you map a use case to the questions they should be asking?

Danielle said the framework questions are anticipated to be the right questions to be able to get to the heart of the matter. Questions such as what's at the heart of the matter, what are we trying to accomplish, how could we get there are asked. It's not just about questions asked by the Commission.

Jaime thanked Danielle and noted that the work was referenced in the I2X guidebook that will be published soon. Danielle gave her approval for today's video presentation to be published on the GWAC website. Ron B. noted that he will format the video for the website.

Next Big Thing – Back to the Future – webinar committee

Ron Ambrosio gave an update about the progress of this committee that he and Rahul are leading. The group has met a couple of times. They will be putting together a webinar on the next big thing – back from the future. The group started with the material from the AHR Expo panel that the GWAC presented. They will be trimming the material presented. The talk will be about 45 minutes to allow time for questions and answers. They need to be sure that they are articulating for the right audience. Once they have a complete PowerPoint draft, they will send it out to the GWAC for review and feedback.

Anyone that wants to join this group is welcome, just reach out to Ron Ambrosio.

GRIDWISE Architecture Council

Planning the "TE" Conference

- Co-Located at RE+ in Anaheim, CA September 9-12, 2024
  - Specific Format TBD, but planning on plenaries and two tracks
  - RE+ Technical session is Monday and Tuesday.
  - GWAC " TESC" will be Wednesday and Thursday
- Schedule Organizing Committee (OC) Meeting
  - Coordinating with Lesley Fondren and Lori Smith
  - May collaborate with IEEE for technical publications. Awaiting direction from RE+
- Council Members Participating in the Organizing Committee
  - At Least 4 Council Members
  - No papers this year
  - Sponsorship TBD
  - David Forfia has volunteered to be ~~the Treasurer~~ himself. ~~This may not be needed for RE+~~
  - Need to understand associated fees. Will be tiered based on SEPA/SEIA membership.
  - Call for participation is the kickoff; it will include a timeline of due dates for presenters.

Jaime said the conference will have some aspects of transactive energy but it's working to the theme of building back from the future. It will include how architecture plays a role.

Jaime said that GWAC will be coordinating with RE+ contact Leslie Fondren.

The conference may work with IEEE, but we will not have technical papers. Also, a treasurer won't be needed this year, so David Forfia is off the hook for that.

Jaime noted that many GWAC members are involved with SEPA activities and the relationship with SEPA goes back to the beginning of the SGIP, which later merged with SEPA. He also noted that there is a lot of great work by SEPA including in the area of standards.

Action: Ron B. and Jaime K. to contact Roseanne Jones at IEEE to discuss development of a partnership with RE+ for the upcoming GWAC conference.

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GRIDWISE Architecture Council

GWAC Face-to-Face Meetings

• Discuss F2F meetings for 2024

  • Spring meeting planned for April 16 -18 2024
    OATI, Bloomington MN
        Microgrid Technology Center
    • 20th GWAC Anniversary

  • September 13 (after the conference)
    • Casa Bernstein, RE+?, Energy Coalition

OATI suggested hotel information has gone out. Jaime thanked Farrokh Rahimi and OATI for the invitation to host a GWAC Face to Face this April.

Jaime has a Spring F2F group that is meeting to plan the agenda. Farrokh is on that committee. A meeting with the OATI organizers will be forthcoming. Jaime will coordinate with Farrokh on that.

Jaime stressed that this meeting with be the 20th anniversary of the GWAC.

Farrokh said that they are planning on 25 to 30 attendees. He asked if a meeting will be schedule soon with OATI staff.

Action: Schedule a meeting with GWAC representative and OATI for meeting plans.

Jaime said the meeting will be a 20th anniversary celebration of the GWAC.

The possibility for a fall F2F on Sept 13 after the conference is up for discussion. Marc Costa may have a venue for us at the Energy Coalition or Ron B's home was also offered (1.5 hours away).

Action: Discuss the September F2F at the next GWAC meeting.

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GWAC Strategic Outreach Plan

Jaime reviewed the Strategic Outreach plan. He mentioned the videos from recent past presentation that are now on the GWAC website and said that a new video about the GWAC will be published soon.

Jaime would like to socialize the upcoming GWAC related conferences and who will be presenting at those conferences. No one objected to that suggestion. Linked In is one outreach path and a new webpage on the GWAC site is another path.

GRIDWISE Architecture Council

Grid Architecture White Paper

- Working Group: Seemita Pal, Ron Cunningham, David Wollman, Ron Bernstein, Ahlmahz Negash, Larisa Dobriansky, David Forfia, Kay Aikin, Aaron Snyder, Ron Ambrosio, Lorenzo Kristov, Farrokh Rahimi, Rahul Bahadur, Gerald Gray, Mark Paterson, Timothy Schoechle, Jeff Morris, Leonard Tillman, Andrew Bordine, Chris Villarreal, Ron Melton
- White paper contents reviewed, revised and finalized. **Contents ready!**
- Next steps
  - The white paper formatting and look are being further enhanced – pretty straightforward and would be complete soon.
  - "About the Council" section is being made consistent with the Future States paper.
  - Blog post will be created to advertise the publication

Jaime has been reviewing the About the Council page in the Grid Future States report with changes in mind from the Mission and Vision refresh discussions. Jaime will move the About the Council to the back of the paper to be consistent with other PNNL publications.

Jaime said that he and Ron Cunningham have agreed that the Future States paper is now a report, not a white paper due to the length. Jaime has reviewed and will be sending it back to him.

Ron C. said that he will need a website landing spot for an artifact related to Grid Future States from the Grid 3.0 effort. It is the original set of future states identified from the Grid 3.0 effort some years back. The PNNL editor identified the need for the reference.

Dave Wollman suggested that the content be added as an appendix.

Ron B. asked about the length of the material.

Ron C. replied that it is 1 or 2 pages long; it tallies out the future states.

David W. and Ron B. agreed that putting the material in as an appendix would be perfect. Jaime suggested he and Ron C talk later.

Action: Jaime to talk more with Ron C. about finalizing the Grid Future States White Paper.

BV

GRIDWISE Architecture Council

Grid Architecture for Regulators

- **Team members: Lorenzo Kristov, Kay Aikin, Larisa Dobriansky, Jeff Morris, Mark Paterson, Farrokh Rahimi, Chris Villarreal, Ron Bernstein**

- White paper will be aimed primarily to GWAC community:
    - Document experiences, observations & lessons learned from the use/non-use/value of Grid Architecture in policy & regulation venues
    - Provide a basis for strategies to promote Grid Architecture among policy makers
    - Paper will be a living document, starting with a few initial case studies and adding new case studies as available

- Initial case studies
    - U.S. — FERC Order 2222
    - State — Xcel Minnesota rate case; CPUC High-DER docket
    - Municipal — Portland Maine
    - International — Ontario, Canada

- Tentative target date: Draft for GWAC review by mid-November; ready for posting early 2024.

Lorenzo Kristov – no updates to the Regulator paper. Lorenzo said he needs to push the next version and hopes to have it next time.

Lorenzo still needs to get an Ontario use case from David Katz. Lorenzo said he planned to write it himself from his own ISO experience. Jaime will try to get them connected on David's use case idea.

Jaime noted that Mark Paterson is not on today. He is leading the Applying Grid Architecture Concepts… paper. Anyone who wants to join this working group please let Jaime and Susie know so they can get you on the meeting invite list.

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GRIDWISE Architecture Council

GWAC Future Work Products Discussion

Applying Grid Architecture Concepts to Bridge Back from the Future Grid
in concert with current work and building on the previous GridWise Architecture Council work products, this document attempts to provide a roadmap for operators, planners, developers, integrators, and policy makers as guidance to develop interoperable systems that will architect the grid of the future as described in the future states. This paper will include discussions of motivating participation of customer owned assets and opportunities for avoided costs by working toward a long-term vision rather than only short-term needs. This document will be completed in FY24.

  • Committee : **Mark Paterson**, Marc Costa, Ron Ambrosio, David Forfia, Kay Aikin, Lorenzo Kristov, Farrokh Rahimi, Farrokh Rahimi, Aaron Snyder,

  • 2:00 PM PT/ 5:00 PM ET Thursday 2 times 1st and 3rd Thursday of the month

GRIDWISE Architecture Council

GWAC Future Work Products Discussion

Grid Architecture Concept Model for Interconnection, Electrification, and Decarbonization
Analyze various visions of the electrification of fossil fuel-based systems and identify areas where GWAC concepts could provide architectural value to bridge and coordinate between customer and grid objectives. Electrification will introduce dependencies such as those seen in the transportation sector due to electrification. Grid Architecture will be used to describe the touchpoints (for example through sector coupling) that will require collaboration. GMLC reference cases will be included. This activity will take place in FY24 and be completed FY25.

  • Committee interest: Ron Cunningham, Farrokh Rahimi, Mark Ortiz, David Forfia, Aaron Snyder, Lorenzo Kristov, Seemita Pal, Paul DeMartini

  • 1:00 PM PT/ 4:00 PM ET, 4th Tuesday Of the month starting in January

Anyone who wants to join either of the work groups for these new papers please contact Jaime and Susie to be added to the committee. This paper on Grid Architecture Concept Model…is getting started. If you are interested in participating in this effort, please let Jaime or Susie know.

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GRIDWISE Architecture Council

Liaison Reports

- NIST – David Wollman
- Green Button – Jeremy Roberts (*New*)
- EPRI – Sean Crimmins, Ben Ealey
- IEEE PES – Farrokh Rahimi
- ASHRAE, CTA, ASHB (formerly CABA) – Ron Bernstein
- ISO/IEC, IREC – Ken Wacks
- SEPA – Aaron Smallwood
- NARUC – Jeff Morris

- *Are there other organizations we should be hearing from?*

David Wollman NIST; there are two updates, D.J. Anand is going to INL, in the DC office. He has been an outstanding contributor.

Also, a journal paper by one of our previous SURF students was published in Applied Energy. It's titled "Method for Evaluating Fairness of Electricity Tariffs with Regard to Income Level of Residential Buildings." https://www.sciencedirect.com/science/article/abs/pii/S0306261923014940?via%3Dihub

Jeremy Roberts -Green Button held their Annual Meeting in the last month and they will publish the meeting online and on YouTube so that everyone can watch it – these will go live to members at the end of this month and to the public after a review. Green Button has given a sort of demo of the new directory services which is a searchable listing of utility platform providers and includes 3rd party service providers, solar folks, and energy management folks.

Green Button continues to move ahead with certifications and are now at about 180 implementations at different utilities.

Sean Crimmins – EPRI; Sean said that the Lisbon conference is coming up and will be attended by EU universities, industries, and utilities.

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Jaime noted that PNNL and EPRI will be collaborating on a V2G paper and project that EPRI recently won.

Farrokh Rahimi with IEEE – reminded everyone of the IEEE ISGT North America Conference is coming up in Washington DC with several GWAC people attending, and also the PES GM Seattle in July. Several GWAC people will attend that meeting as well.

Ron M. mentioned that he and Farrokh are both representing the IEEE PES Blockchain Technical Community governing board. There will be a panel at the IEEE PES General meeting that Umit Kali is organizing. They will also have a table at the event where people can stop and find out more information from work group representatives.

Ron M. also said that the IEEE GM is by the CAMLIN WorldMark Seattle for Worldmark points holders.

Ron B. said the ASHRAE Winter meeting next week in conjunction with the AHR Expo in Chicago. He reviewed the agenda. Smart bldg. and tech – capability and requirements of specs for decarb. A meeting on that Sat and then again on Tues.

Ron B. mentioned that the ASHRAE Chair of the Decarbonization effort for ASHRAE might be a good guest speaker for GWAC, he is from University of Kentucky.

He also reviewed the ASHRAE Winter meeting agenda that will be held in conjunction with the AHR Expo in Chicago.

Ron B. will be speaking at the Energy Exchange event in Pittsburgh, Ron will speak on smart buildings and new technology and how it relates to Cyber Security.

Ron also mentioned a new training course that he helped to create for a DOE sponsored event along with a company called SlipStream. From that there are some new training courses on smart buildings . Ron will share it with GWAC when it becomes public.

Ken Wacks ISO/IEC – The group is starting a new ballot process for a standard that is a revision of an existing standard that he wrote which became a standard in 2012. It regards specifying a framework for energy management. The group has been working on updating it for a couple of years. The member nations approved the project last year and the group worked on it last year at the meeting in Berlin in October. It is going out to the member nations for approval and a 2/3 majority is needed as well as fewer than 25% to disagree. It is a framework for energy management using the concept of the energy management agent or EMA. It is a conceptual controller that automates selection of external and DER energy sources and helps the consumer allocate power according to consumer priorities and goals regarding their budget, their desire for convenience and any green goals they may have.

The primary reason for redoing the standard is to recognize the shift from utility centric to consumer centric.

Meeting Minutes

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IREC – Ken Wacks chairs the Customer Grid Edge committee. IREC has no membership requirement to attend. Empower home networks – roundtable on configuration. Lead by CEO for Techology & Smart Systems. They have new generation of communications interface router. It can be thought of as a combination router and the international standard energy management agent, at least in Ken's view.

Jaime suggested that Ken give us a presentation to update the GWAC on his energy management system at a future GWAC meeting.

SEPA – Ron Melton noted that leadership changes are pending. The TE working group is very active. SEPA has a new tier of membership that allows organizations to participate in some demo projects. SEPA is complementary to GWAC. If you are interested, please contact Ron M. or Ron C. Ron mentioned the Grid Architecture Primer – a new supplement may be developed. Also, there is a white paper in development on the importance of using network models in modern distribution systems. Also, Ron C. is working on some ontology related stuff.

Ron C. added that they are hoping to get the TE foundational taxonomy and ontology built. They are planning a white paper on the value and use of ontologies, especially to utilities. Awareness is increasing and may indicate a potential workshop to gather current uses in industry for some of the tooling and techniques and best practices. Also, they have some work on CIM standards and its various parts through the process of inclusion into the CPU catalog of standards.

Jeff Morris noted the NASEO 2024 Energy Policy Outlook Conference to be held in Washington, DC, Feb. 6 – 9, 2024 https://www.naseo.org/event?EventID=7963

He also noted the 2024 **NARUC** Winter Policy Summit, Feb. 25 – 28 in DC, link: https://www.naruc.org/meetings-and-events/naruc-winter-policy-summits/2024-winter-policy-summit/agenda/

Jeff also mentioned that **Schneider Electric** is going to need some panel ides coming up in the regulatory area. He will reach out to Lorenzo Kristov to see if the regulatory committee might have some ideas.

Jaime offered to help Jeff put some panels together when needed.

New Business

Marc Costa mentioned Measurement verification of DERS. Things are coming to a head in the area of bridging the gap between buildings and power systems. Marc has spoken to people at EVO, and they had two divisions on the demand side for international standards on measurement and verification and it seems that the bottom line is there is no international consensus on how to measure energy consumption or production in buildings simultaneously. This has a ripple effect in terms of how do we project building load in terms of hosting capacity interconnection? What does it mean for load forecasts? How does it feed into the IRP process and in distribution planning.

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It seems like the "wild west." He knows a lot of the labs through FAST DERMS have some stochastic methods of trying to forecast those loads. In those scenarios when you do have say, energy efficiency and solar plus storage – is that anything that people are working on, and does it have a home in what we are talking about in terms of measuring and forecasting these simultaneous things that are changing on the grid?

Ron B. – said these fits in with ASHRAE somewhat. He said there is a lot of working going with core data models from buildings up to other services starting with foundational things like metadata and how we exchange, but also how systems exchange to other systems.

There is some good work going on in the Consortium for Smaller Buildings, C4SB which is looking at application interoperability for system A to system B that are completely independent of each other. He offered to talk to Marc more about this offline.

Jaime said he would like to be included in this conversation. It pertains to something PNNL recently published on the GMLC Energy Service Interface, the development guide. One challenge he is seeing Buildings operating at the edge, is that ASHRAE and Grid Side standards are not necessarily aligned. We've been looking for places where we can come to some sort of harmonization. He would love to hear Ron B.'s insights on this.

Ron B. said there is a subcommittee within ASHRAE focused on building to grid, and not only grid, but the energy services, microgrids and local supply and the sourcing of energy, although it's not necessarily about data exchange. It is about getting players and policy – on the regulatory side of hurdles.

Ron B. said we could even set up a panel discussion during a GWAC meeting on this.

Ken then gave a reply about standards …

Marc said he would be happy to be a part of that conversation. He said even having some international folks with written standards join the conversation would be interesting. He noted that in the EU they had a feed in tariff across each country, so they have a bifurcation of telemetry. But here in the US it's kind of all jumbled so we have to rely on engineering calculations. If you are not going to have a digital twin or other stuff but we could go down a rabbit hole here, I am happy to follow up offline about it.

Ken Wacks had a reply about the international area there are two standards that would apply here. One is to take the energy management agent and combine it with a network of measuring devices. It's called EMMA. It provides measurements throughout the building, depending on what technology and interfaces people want to put in, but it is a framework for doing that for measurement and verification.

And on the subject of interoperability, Ron Ambrosio started a standard 20 years ago at IBM, and it is advanced to a stage where we have a whole family of standards that allow applications developed by companies that don't speak to each other, to have these applications interoperate by having a lexicon

that acts as a sort of man the middle as a translator among disparate applications. It is a framework that is quite advanced in the number of pods that have already been published as world standards.

Ron A. said that work was the basis of the Olympic Peninsula Demo and the Pacific Northwest Smart Grid Demonstration.

Lorenzo asked a question based on Jeff's mention of Virtual Power Plants, VPPS. He commented that as he has looked at what is going on, he was stuck by what was happening is nothing more than aggregated demand response. That is really what they are doing with VPPs. They have a whole new term for something – aggregated demand response – which has been around for a very long time. So, he is asking himself as he reviews it, "what is new here?" He suspects that they answer is "not much." There are new technologies doing it but from a market and grid perspective, it's pretty much the same thing. ADR is not new; he would be interested in other's perspective about VPP's compared to ADR.

Jaime agreed that the term gets tossed around. VPPs don't perform anything like a power plant.

Ron M. said there is a slight change to that but Amen to his comment. He agrees with the comment. Historically it was just ADR, but it was dispatchable by somebody, but it was on mass. So, you would have a significant amount in theory. Now it is not just passive demand response it can include dispatch of DER including storage, rooftop solar and potentially V2G. The term is misleading, and it has been popularized recently by the loan program office in DOE as a segway to being able to manage large quantities of DER, but they still got it have got a backwards based term that you have referenced.

Kay Aikin would love it if the Council would take a position on this. She added that currently VPP's are not locational, and the problem will become locational.

Ron Melton said there is nothing to do to nip it in the bud now.

Lorenzo said that the point he wanted to make is that even though there are new technologies involved, so you might have behind the meter or battery storage or V2G, and the like, it's still just modifying load and the insidious thing about it is that it combines DERS to be load modifiers instead of looking at them as supply resources for renewable energy. He sees huge potential to building out DG as a supply resource to meet renewable energy goals, but once you confine them behind the meter to provide energy response you really completely cut off that potential.

Ron Melton said he would be happy to share more information with Lorenzo offline.

Jeremy J. Roberts (GBA) added that he would like to return to the term Demand-Side Energy Management (DESM) as a term.

Doug Houseman added that DSM is a defined industry term.

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Anthony James asked in the chat, "isn't there is an emergency view of VPP - Shed DR (Texas ADER pilot) and an operational view of VPP's - reliability (e.g., Green Mountain Power)."

David Forfia said, "I think we have a discussion topic for our February meeting."

Doug Houseman added, "Load shedding, industrial load shedding and rolling blackouts, 3 of 13 program types for DSM."

GRIDWISE Architecture Council

Upcoming GWAC Meetings

Date	Topic or Speaker	Format	Other
February 14, 2024	Moved date up to not conflict with ISGT and DTech		
September 9-12, 2024	GWAC 2024 Conference, name TBD		Anaheim, CA

Jaime Kolln asked everyone to send him and Susie their ideas for monthly meeting speakers.

GRIDWISE Architecture Council

Adjourn

Next meeting – February 14, 2024

https://gridwiseac.org/

Chair Ron Bernstein thanked everyone for their participation today and great discussions and adjourned the meeting.