

Meeting Minutes

June 19, 2024

GWAC Members

Ron Ambrosio, Independent Energy Transformation Professional, Acting Chair

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

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

Shawn Chandler, Director, Guidehouse

Marc Costa, Dir. Policy Planning, the Energy Coalition

David Forfia, Principal Consultant, Utilicast

Ahlmahz Negash, Sr. Power Analyst, Tacoma Power

Mark Ortiz, Lead Architect, Dist. Energy Sys., Schneider Electric

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

Ron Cunningham, Emeritus

Mark Knight, Emeritus

Jeff Morris, Associate

Ken Wacks, Emeritus

GWAC Guest Speaker

Jim Ogle, PNNL

GWAC Friends

Don Hammerstrom

Jeremy Harrison

Anthony James

Jeff Katz

Dave LeVee

Stephan MacDonald

Alaa Mahjoub

James Orenstein

Harry Peterson

Darius Rafinejad

Jeremy Roberts, Green Button

Mark Siira

PNNL Support

Jaime Kolln, PNNL GWAC Administrator

Susie McGuire, GWAC Coordinator

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Jaime Kolln opened the meeting quorum due to the Juneteenth Holiday.

Ron Bernstein announced that we did reach quorum.

Jaime read the proprietary notice.

Jeremy Roberts gave a conf link to Smart Energy Oct. 16 and 17, 2024.

<https://smartenergycc.org/event/seccs-2024-members-meeting-fall-workshop/>

Action: Add Smart Energy Fall Workshop to the Conference list.

Action: Add IEEE PES Grid Edge, San Diego, January 2025.

Action: GWAC members are asked to complete their “We are the Council” templates and post in LinkedIn and then encourage the remaining Council members to post weekly.

Action: Add the ACEEE Summer Study to the conference list. Marc Costa has the information.



Recording Notice

To assist with the preparation of accurate notes, the discussions at this meeting are being recorded. The recording will not be used for any other purpose than preparing meeting notes.



Jaime noted that there are now nine speaker videos posted on the GWAC website and after today Ron B. will post four more.

Jaime thanked Ron B. for his efforts in editing the GWAC speaker videos.

It was suggested that GWAC hold the vote on the meeting minutes until the next meeting.

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7/19/24 10:30 AM - PowerPoint



Agenda

Call to Order and Roll Call

- Welcome

GWAC Administrative Business

- Minutes
- Upcoming events
- GWAC Accomplishments
- Action Items

Guest Speaker – Jim Ogle, PNNL – 10:30am

Future Activities

- Planning 2024 GWAC Conference
- GWAC Strategic Outreach Plan

Work Product Status Reports

- Working Party Status Update
 - 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 noted that today's speaker is Jim Ogle, PNNL. He is planning to present at the Fall Symposium.

Jaime reviewed the agenda for today.

New guests introduced themselves at Jaime's invitation:

Jeff Katz, former IBM Chief Technology Officer in IBM's Energy and Utility Industry group, and former coworker of GWAC's Ron Ambrosio. He also headed computer science at ABB in Nuclear and corporate research prior to his time at IBM. He later moved into IBM academics program.

Mark Siira with IEEE SC21 which sponsors the 1547 standards and some of the 2030 series and interoperability standards. He is very interested in the work of the GWAC. He said he is very interested in any work to revise the 20305 standard. Jaime has worked with him several times regarding standards and also at energy storage conferences.

Nick Freeman introduced himself as an independent consultant located in San Francisco, working at the nexus of data driven optimization and edge-based design. He works with Peter Reeve, PNNL, on some

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projects. He’s worked with some key people on carbon load specification for data driven 3rd party authentication.

Jamie Harrison introduced himself noting that he has been in decentralized energy for about forty years or so. In the last six years he moved to consultancy and is working on the energy transition noting they work with network operation distribution groups in Europe, and recently they are looking at models including business models for energy communities and how we might integrate those. He is with the European Energy Company EON.

Action: The GWAC July speaker is Jeremy Harrison

Action: Hold the vote on the June minutes until next month since they went out shortly before the meeting.

Conferences and Events

Date	Event	Location	Attend	Speaker	Topic
June 22-26, 2024	ASHRAE Annual Conference	Indianapolis	Ron Bernstein		
July 21 – 25, 2024	IEEE PES General Meeting	Seattle, WA	Jaime Kolln, Farrokh Rahimi, Ron Melton, Ahlmahz Negash		
August 4 - 9, 2024	ACEEE 2024 Summer Study	Pacific Grove, CA		Marc Costa	Energy Efficiency in Buildings
Sept 9 - 12, 2024	RE+ Anaheim, CA & GWAC Symposium	Anaheim, CA	GWAC		
Oct. 1 – 2, 2024	Grid FWD 2024	Banff, Canada	Jaime Kolln, Ahlmahz Negash		
Oct 15-16, 2024	Design Lights Consortium Summit	Milwaukee, WI	Ron Bernstein		
Oct. 16, 2024	Smart Energy Consumer Collaborative	Reston, VA	Ken Wacks, Jeremy Roberts		
Jan. 21 – 23, 2025	IEEE PES Grid Edge Technologies Conf	San Diego, CA	Kay Aikin, Jaime Kolln		
Feb. 10 – 12, 2025	AHR Expo and ASHRAE Winter Conf	Orlando FL	Ron Bernstein	Ron Bernstein	Grid Arch/Future States
March 24-27, 2025	DistribuTECH	Dallas, TX	Forfia, Rahimi		

Farrokh Rahimi noted that he will be chairing a session and presenting on “Navigating Electricity Grid Transformation and Energy Transition,” at the IEEE PES Grid Edge Technologies Conference, San Diego in January 2025.

Ron Bernstein noted that he will be giving a presentation at the Design Lights Conference in October.

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Ron B. also noted that he will be speaking February 2025 at the AHR Expo/ASHRAE in Orlando. He suggested that GWAC plan to hold a GWAC F2F at that event.

Action: GWAC will plan to hold a F2F meeting Feb. 2025 in Orlando, FL during the ASHRAE/AHR Expo.

Jaime noted that he will be presenting a tutorial session on the harmonization of standards related to 1547 on the Sunday before the IEEE PES General Meeting in Seattle. Those who are interested in learning more about interconnection and how we align standards may want to plan to attend.

If anyone wants to add any conferences, please drop it in the chat or email Jaime Kolln and Susie McGuire.



GWAC Accomplishments

- 2024 – [A Practical Introduction to Common Grid Architecture Techniques](#) (NEW)
- 2023 – Current GWAC Speaker Video [Presentations](#)
- 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](#)



GWAC YouTube Channel



Jaime noted the new 2024 GWAC publication, “A Practical Introduction to Common Grid Architecture Techniques,” that was led by Seemita Pal and Dave Wollman has been added to the GWAC Accomplishments slide and it is posted on the GWAC website under Publications and is also available at OSTI.gov

Jaime updated the group including author Ron Cunningham that the Appendix is being added to the Grid Future States paper. It is with PNNL editors. Styles will be matched. Once the editors have completed their work it will be sent to Ron Cunningham for review and final approval. This will be the 2nd white paper published by GWAC in 2024.

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GRIDWISE Architecture Council

GWAC Accomplishments

2015 – [Valuation of Transactive Energy Systems Proceedings](#)

2007-2012 Grid-Interop Forum

2011 – [GWAC Interoperability Constitution Whitepaper](#) PNNL-20728

2011 – [Smart Grid Interoperability Maturity Model](#) Beta Version
Electrical Power Engineering Academic Landscape

2010 - [Interoperability Decision Maker's Checklist update](#)

2009 – Interoperability Benefits Papers

- [Environmental Benefits](#)
- [Financial Benefits](#)
- [Reliability Benefits](#)

2008 – [Interoperability Context-Setting Framework](#) PNNL-17399

2007 – Interoperability Decision Maker's Checklist

2006 – [Interoperability Constitution:](#)
- [GWAC Constitution: Summary of Constitution Interview Process and Feedback January 2006](#)

Documents available internationally through the ISO/IEC:

ISO/IEC TR 15067-3-2:2016 -- Information technology -- Home Electronic System (HES) application model -- Part 3-2: GridWise interoperability context-setting framework

ISO/IEC TR 15067-3-7:2020 -- Information technology -- Home Electronic System (HES) application model -- Part 3-7: GridWise transactive energy systems research, development and deployment roadmap

ISO/IEC TR 15067-3-8:2020 -- Information technology -- Home Electronic System (HES) application model -- Part 3-8: GridWise transactive energy framework



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Action Items

- Send speaker ideas to Jaime Kolln and Ron Bernstein and copy Susie McGuire.
- **Update Mission/Vision and About the Council Page**
 - Add an “About the Council” slide to template
 - Make slide deck templates available to GWAC members.
 - Meeting with PNNL Comm’s to discuss the about the About the Council video.
- Website updates
 - **LinkedIn post highlighting Mission/Vision Update**
 - **LinkedIn Post highlighting new whitepaper**
 - Continue to add video presentations including speakers to GWAC database bureau post on the website.
 - Feedback requested on format and errors

Jaime asked for speaker ideas to fill the month of August. It’s possible to have two speakers in a month particularly if they are related to the GWAC Symposium. Any suggestions for speakers should be sent to Jaime Kolln, Ron Bernstein, and Susie McGuire.

Jaime noted that GWAC revised Mission and Vision is complete and that it will affect the “About the Council” page on the website. He asked for a couple of council members to volunteer to review the About the Council tab on the GWAC website and suggest modifications.

Likewise, once the About the Council page is done an update will be needed to the GWAC slide template for GWAC presentations.

GWAC PowerPoint slide templates are located in TEAMS and if anyone needs to use them feel free to reach out to Jaime, Ron Bernstein, or Susie to have them emailed to you. They are available on the GWAC Teams site.

There is a GWAC about the Council video that Jaime would like to update. A meeting with PNNL Communications staff is planned for later this week.

Ron Bernstein said he has the video materials for these videos saved and he can participate in planning for the new video.

Jaime asked for volunteers to do a Linked In post to announce the new Mission and Vision page on the GWAC website and also one for the recently published GWAC white paper, “A Practical Introduction to Common Grid Architecture Techniques that Seemita Pal and Dave Wollman authored.”

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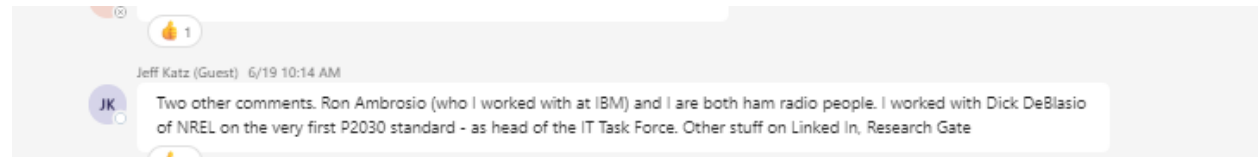
<https://www.pnnl.gov/publications/practical-introduction-common-grid-architecture-techniques>

Kay Aikin offered to do the Linked In Post for the white paper.

Action: Kay to do the Linked In Post.

Stephan McDonald – EPRI – Energy Interop group – - discuss in new business at the end of the meeting

New:



Ron Bernstein suggested that for the GWAC guest speakers we do an introduction then a 3 second pause and then be ready with the slides. The first slide should be up before the introduction. All the participants will be muted during the talk and questions can be asked at the end.

Jaime Kolln introduced today's speaker, Jim Ogle, a principal engineer in the Electricity Infrastructure and Buildings group at PNNL.

Jim thanked everyone for the opportunity to present



Guest Speaker

Jim Ogle, Principal Electrical Engineer, PNNL



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Navigating Distribution Grid Transformation

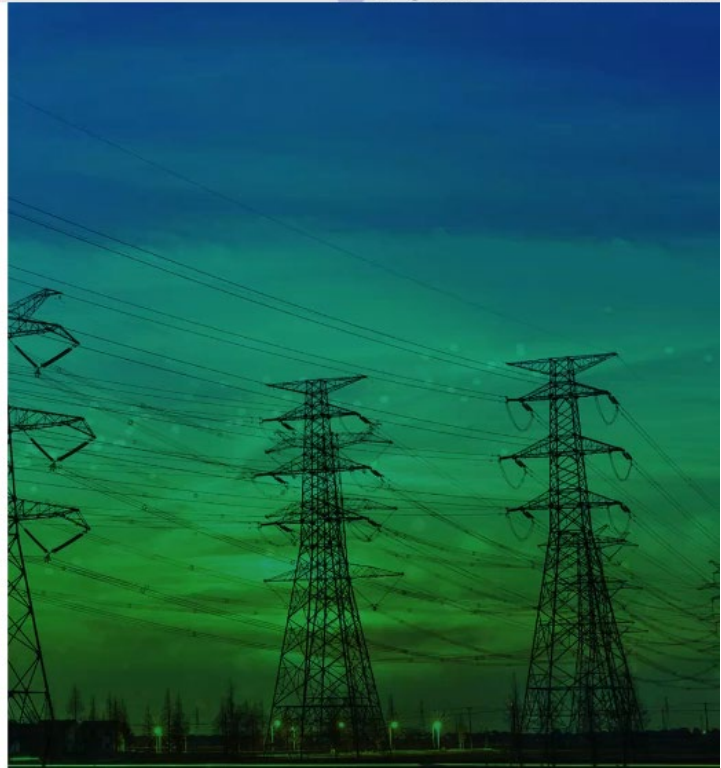
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Jim Ogle

Pacific Northwest National Laboratory



PNNL is operated by Battelle for the U.S. Department of Energy



Jim said he will highlight some things that PNNL is doing to move towards Distribution Grid Transformation and navigating through this transition.

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Grid Transformation Fuels Decarbonization

100% Clean Energy by 2035



Reduce overall emissions
by 2.4 gigatons



Avoid \$200 billion per
year in climate damages



Equitable reduction in
health damages by \$40B

U.S. Department of Energy, "On The Path to 100% Clean Electricity". Available at: <https://www.energy.gov/sites/default/files/2023-05/DOE%20-%20100%25%20Clean%20Electricity%20-%20Final.pdf>

He noted that 2035 is not so far away now, much of this work is becoming more urgent.

Aging infrastructure and more severe weather events are putting stress on the energy grid.

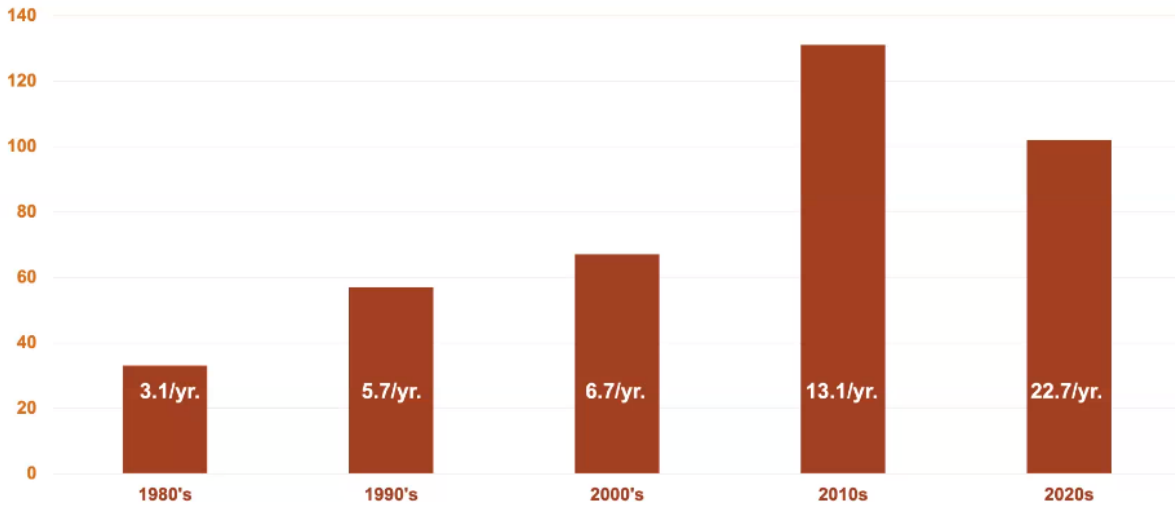
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Grid Under Increasing Stress

Weather Events with > \$1B in Damages



Data from: NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2024)



Grid Transformation To-Do List



INCREASE CLEAN ENERGY SUPPLY



INCREASE TRANSMISSION & DISTRIBUTION CAPACITY



ADAPT OPERATIONS TO INVERTER-BASED RESOURCES



EQUITABLY EMPOWER CONSUMERS AND BUSINESS MODELS



SECURE AGAINST NATURAL AND MAN-MADE THREATS

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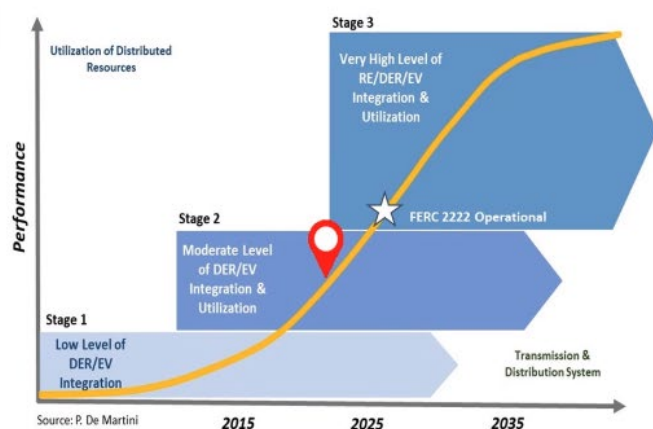
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Jim summarized the changes that have taken place. He said there is more change now than in the previous 30 years of his career. We are moving up a steep incline with a short amount of time.

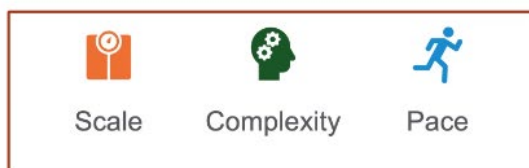


The Grand Challenge & Opportunity

The grid will be in a state of significant transition over the next 15 years



Grid Transition Characteristics



The grid needs to undergo significant change across all dimensions at an unprecedented pace.

These changes will be applied in a variety of landscapes. It will require innovation to navigate more changes in the next 5 to 15 years than in the previous 30 years.

We don't have a consistent landscape that these changes apply to. There are different regulatory environments, business models, technology adoption rates for navigation and the pace is critical.






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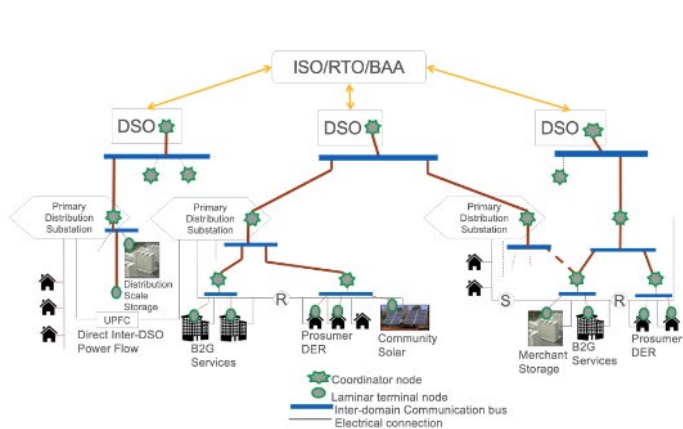


Distribution System as a Transformation Enabler

Future Distribution System Capabilities

-  Distributed reliability & resilience
-  Multi-directional energy flow management
-  Extract flexibility from edge resources
-  Coordinate scheduled and real-time energy flows at T&D interface
-  Distributed Balancing

Transformed Distribution System Structure Example



Jim noted as we build on the grid architecture work of the past, we must decide how to apply system design. He pulled a slide of recent work in this realm. A lot of large structure work has been done.

Jim had talked with a utility colleague who said this is the direction we should be going but I’m not sure what steps to make to get from where he is to this vision of the future. The conversation inspired Jim in his work.

From the grid modernization era of 2001, everyone looked out at 2035 and they were a long way off. But now the dates are closer, and the next steps will be critical.

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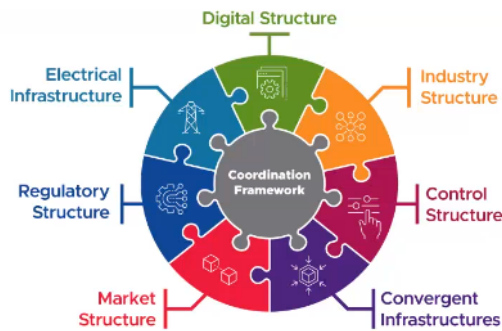
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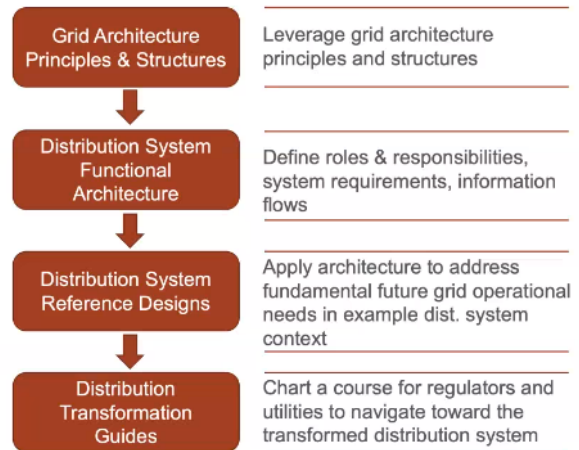
Distribution System Transformation Project

Objective:

Provide regulators and utilities an architectural based reference and guides to systematically transform today's distribution system to support the decarbonized, resilient, and equitable energy objectives of the future grid



Grid Architecture



In the research that Jim is involved with he said they are trying to touch on different aspects and apply good architecture principals and work our way to some guidelines that can be provided to industry, utilities, and regulators to help them navigate this transition. That is the focus of the remainder of this presentation.

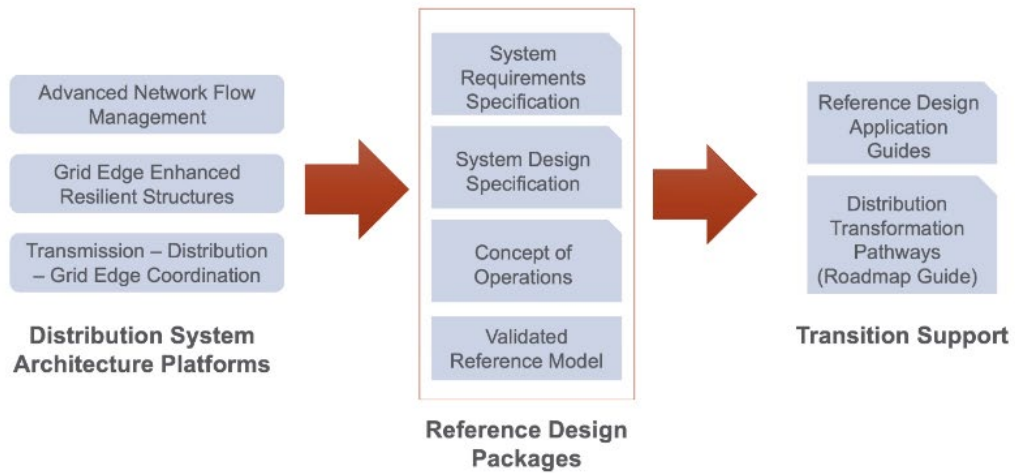
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Distribution System Transformation Project

Applied Grid Architecture to System Design Guidance



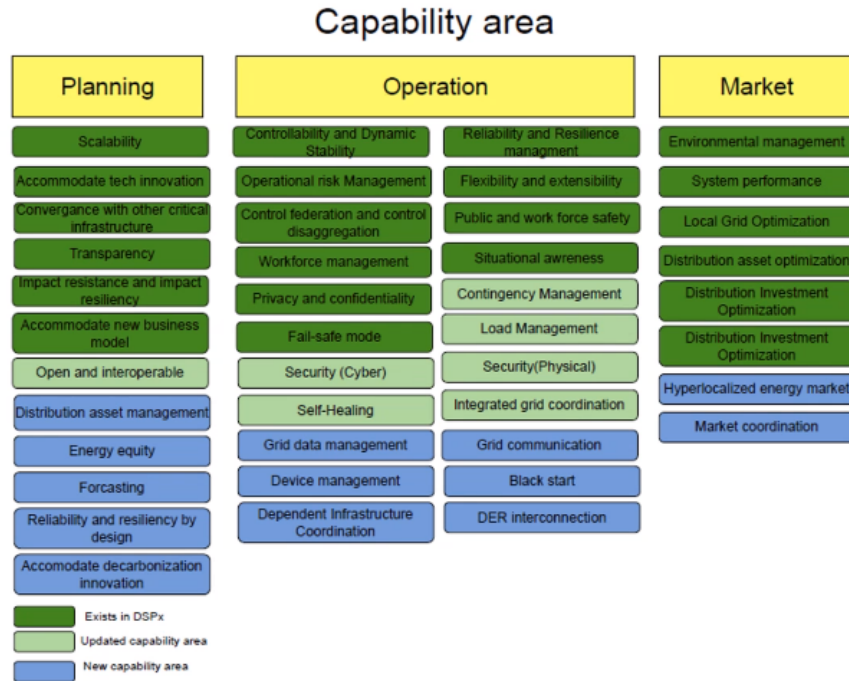
They have organized the work around some key structures and reference designs that we can put into a representative model that can be analyzed and validated.

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Refresh Distribution System Capabilities Analysis



rived from: U.S. Department of Energy, "Modern Distribution Grid (DSPx), Volume 1", Nov 2019. Available at: https://gridarchitecture.pnnl.gov/media/Modern-Distribution-Grid_Volume_1_v2_0.pdf

Jim said they are not starting from scratch; they are moving from previous work such as DSPx as cited above.

Items in darker green show prior work. Blue shows what wasn't covered originally. Light green shows things that have been updated.

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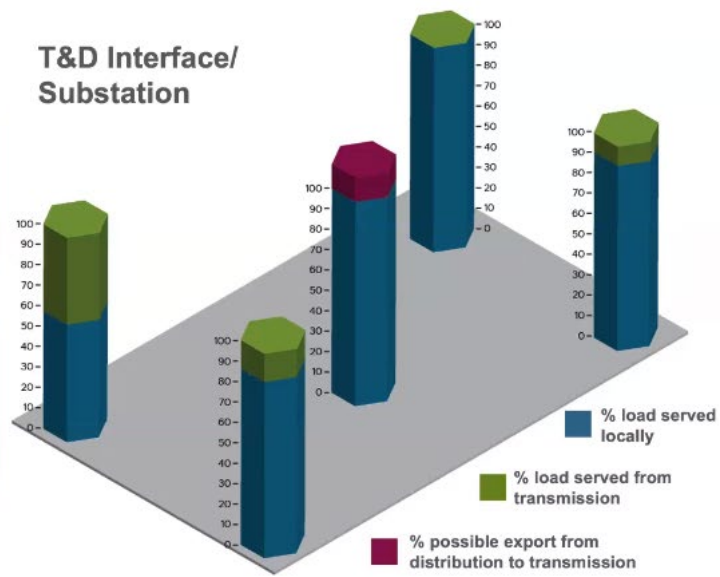
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Distribution System as an Enabling Platform

 Highly Available and Reliable Energy Transport

 Facilitator of Energy Services Transactions



The dynamic flow problem – addressing scale – applying architectures.

This starts to feel like balancing to address supply and demand.

Jim showed a local energy concept that came out before the project started:

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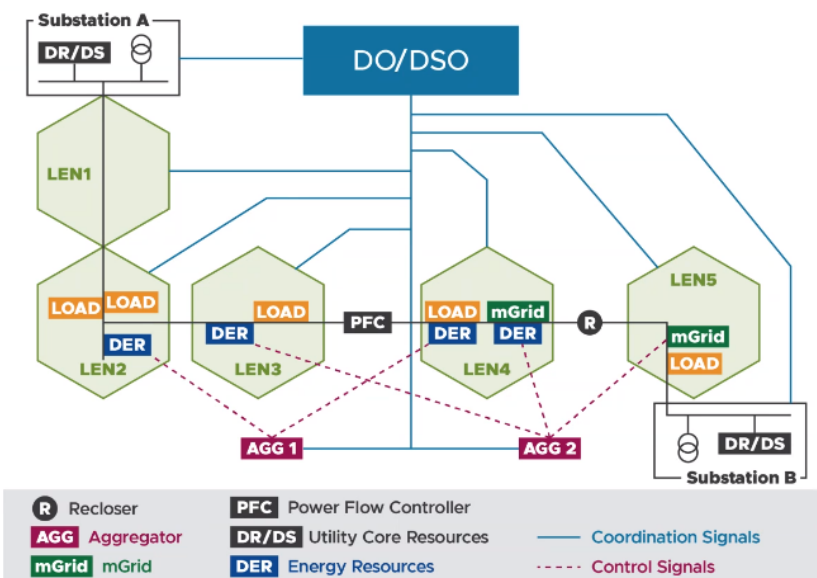
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Logical/Local Energy Networks (LENs) Local Coordination Zones

- A LEN is a segment of a primary feeder with associated devices and loads
- Multiple energy sources:
 - Multiple primary feeders
 - Local 'DER'
- Two classes of DER
 - DER – not utility owned
 - DR/DS – utility owned and controlled

- **Scale through distributed coordination**
- **Manage complexity through platform structures and Energy Services Interfaces**



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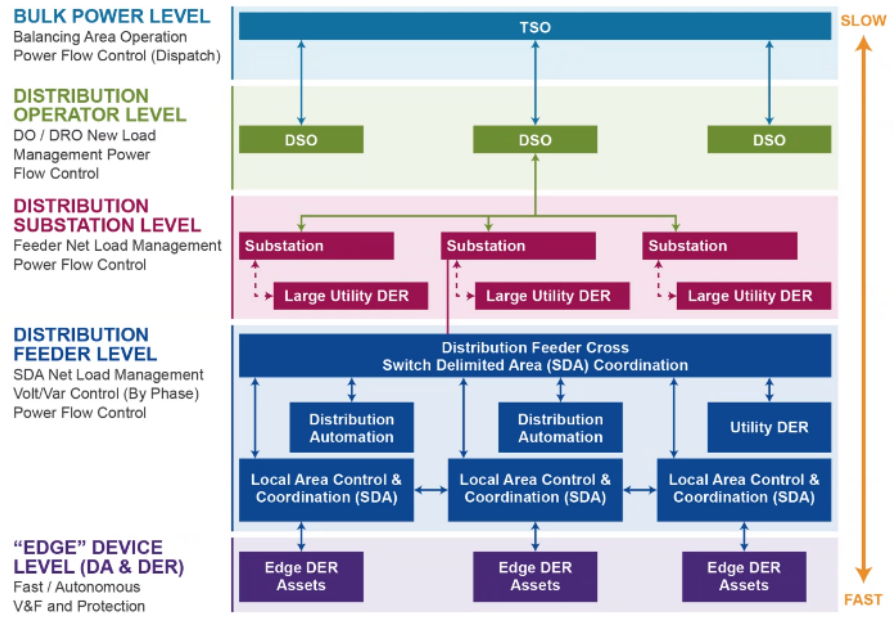
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High DER Distribution Systems

A Grid Architecture Construct

- Layered control & coordination
- Hyper localization of switch delimited areas



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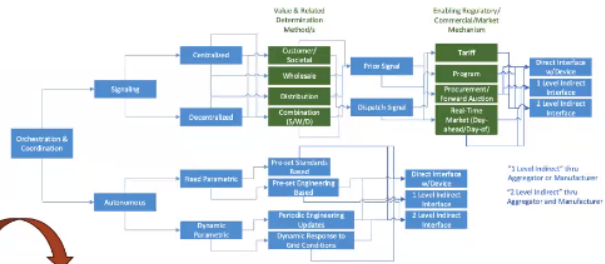
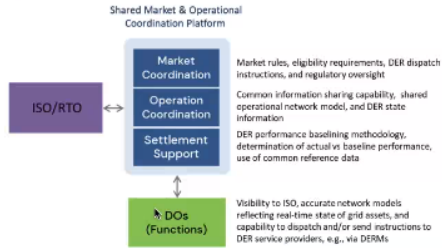
There are different ways to decompose the cells. As Jim’s and his colleagues worked with projects with distributed controls presented a challenge for utilities. Where to divide, where is the intelligence, where to centralize and where to decentralize?

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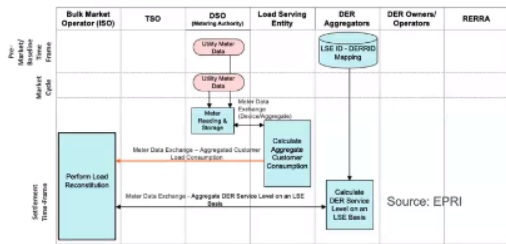
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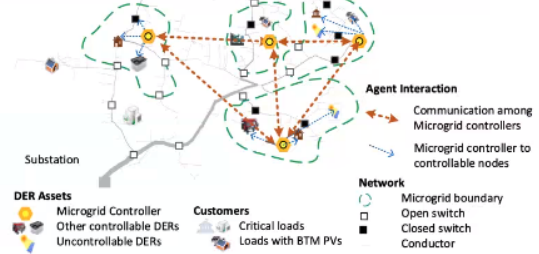
From Architecture To Reference Designs



1. Requirements Analysis & Specification



2. Functional Architecture Model

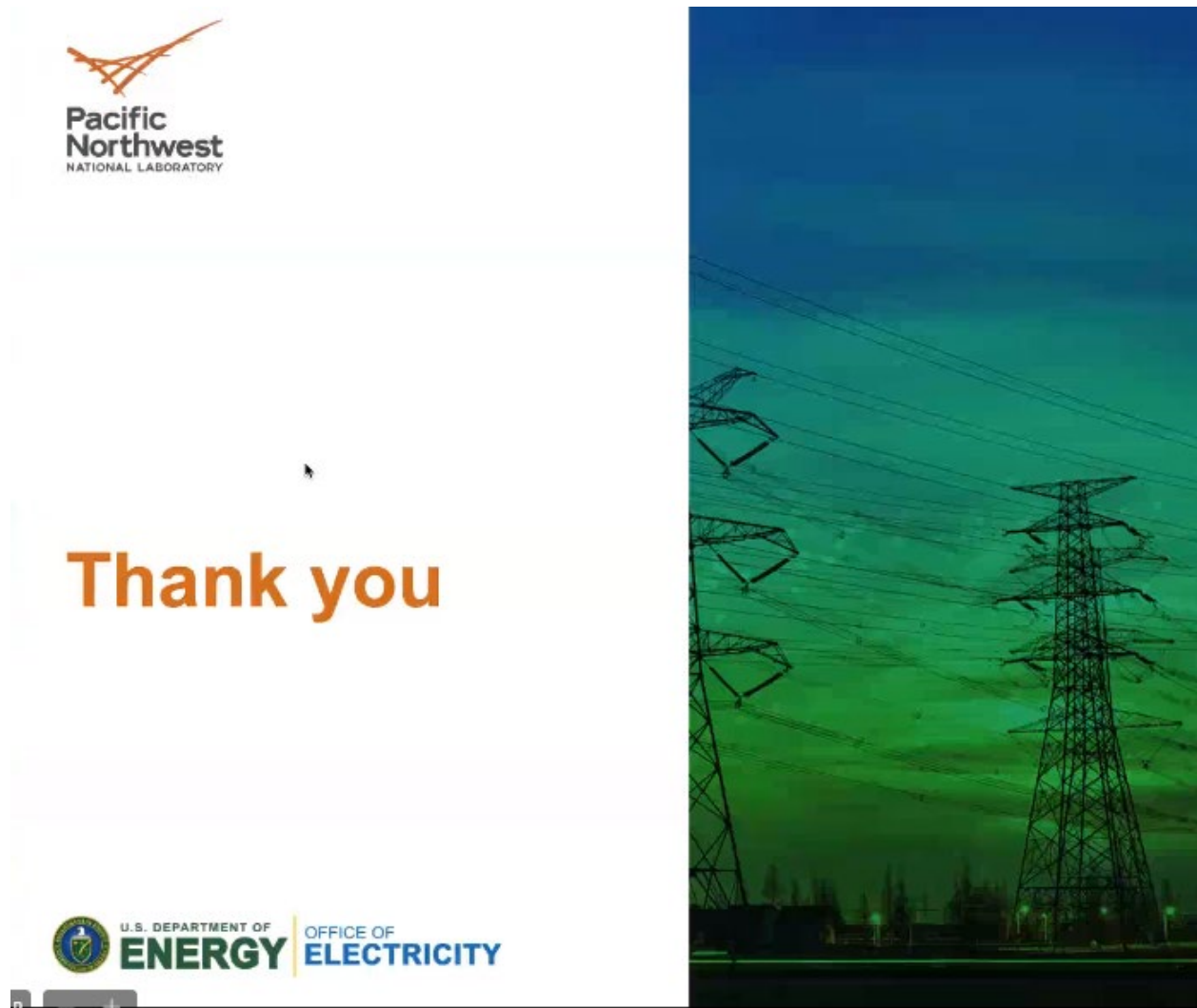


3. Functional Allocation & Characterization

4. Design Standards and Concept of Operations

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Anthony James asked about a list of grid requirements and how to follow it through the three steps?

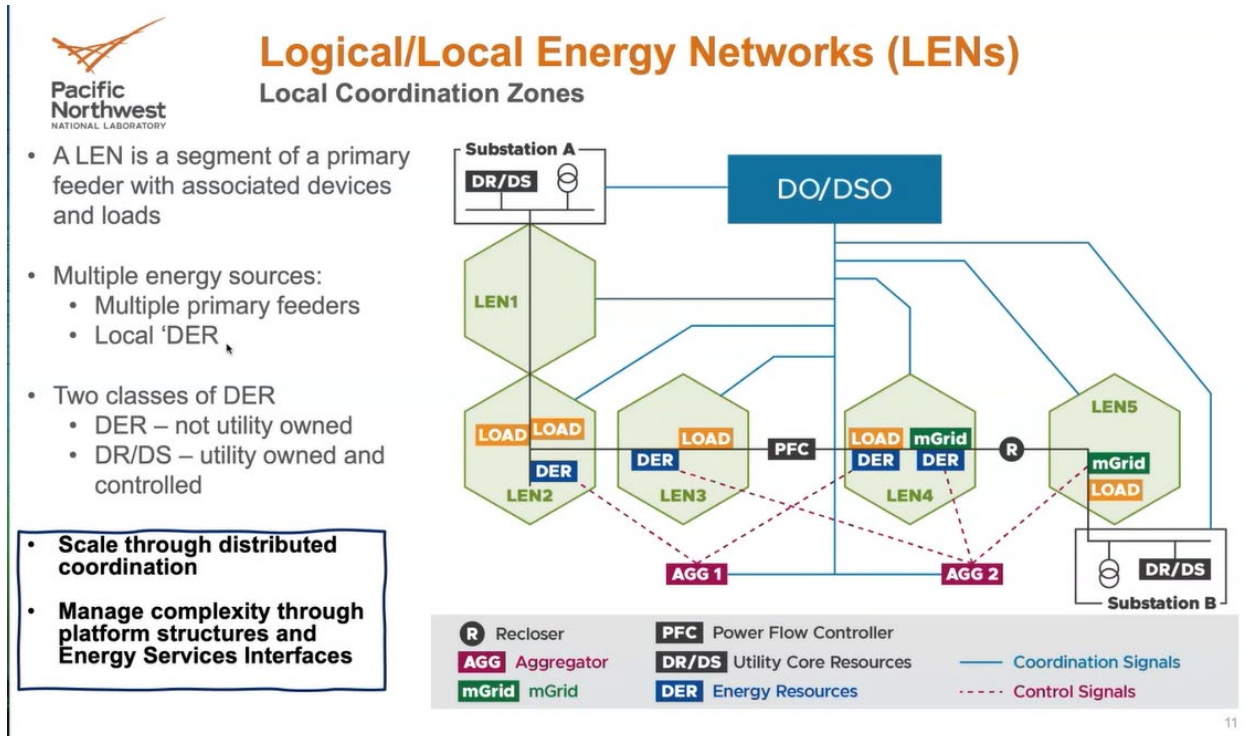
Jim said yes there is, and he said on the left side of the Distribution System Transformation Project slide are the grid qualities that they are trying to provide at the top level. And traceability through the steps is important to trace back system requirements to meet operational needs.

Anthony asked about logical breaks in the distribution system on a feeder for local energy networks.

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Jim said they want to start putting in tangible guidelines. He referred to some switches for recovery, resiliency, and restoration. He said they want to balance tradeoffs and create some answers for those types of questions.



Kay asked about the LEN side and also about the free flow processing. She said for the next 3 to 5 years looking at how to do FERC 2222 and start integrating...Kay is working on the bridge of the future – picking the right incremental steps. Kay worries about the framing of the question – which elicits certain answers. Such as what to do in the next 3 to 5 years to implement 2222. This slide shows the complexity of this situation.

Such when as two integrators working on the same one...how we ask the question might give us a bad result if we ask it wrong. She gave a scenario of what she was referring to and said on a mass scale this is really hard to do.

Jim appreciated the question and noted that late last week they were looking at the aggregators for these cells (on the LEN slide). And there was some chaos in what they were looking at.

Jim mentioned that a paper is coming out soon that looks at 2040 and the bigger picture. The 2222 comment will come sooner but we want to have the bigger architecture. He gave an example that he sees and the “tricky dance.” The pressure is on to do things fast but as architectural engineers we have to make rational, strong decisions for the long-term future.

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Jim gave a scenario from his own experience and said the systems approach becomes more critical and we should not be jumping at near term decisions; we have a tricky dance right now because of that time frame – there is no denying that. There is pressure to do things fast.

He concluded that as system engineers we need to make decisions based on some sort of strong rational system analysis.

Mark Siira asked about the observations of the High DER Distribution Systems slide. He asked if the model is consistent with other models? Jim said it is based on work from a large project of the DOE with several participating labs.

Jim said this model came out of some DOE PNNL grid architecture work with multiple labs participating. As we look through this there are other similar distributed structures that we are also looking at and considering as input to our processes.

Jim said he looks forward to syncing with GWAC participants on these issues.

Jaime noted that Mark Paterson has advised on some of the work that Jim presented today.

Jaime thanked Jim for presenting to the Council today. As we get closer to the GWAC Symposium we will discuss incorporating this into panels for the Symposium. Jaime noted that the work is something that Mark Paterson has participated in.



Planning the GWAC Conference

- Co-Located at RE+ in Anaheim, CA September 9-12, 2024
 - Planning on plenaries and two tracks
 - RE+ Technical Session is Monday and Tuesday.
 - GWAC Technical Session will be Wednesday and Thursday
- Schedule Organizing Committee (OC) Meeting
 - Coordinating with Lesley Fondren and Lori Smith (RE+)
 - Discuss regular meeting schedule
- Council Members Participating in the Organizing Committee
 - At Least 4 Council Members
 - No papers this year
 - Need to understand associated fees. Will be tiered based on SEPA/SEIA membership.
- Panels being populated and potential speakers contacted
 - Include a timeline of due dates for presenters.
- Logo developed
- LinkedIn – We are the council! Ron Bernstein Draft complete.



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Jaime noted the new Symposium logo that PNNL graphics staff have designed. This is available for use to promote the GWAC Symposium at RE+. If anyone would like to use it, please contact Jaime Kolln or Susie McGuire.

Jaime is looking for Symposium volunteers and also doesn't want anyone to feel overwhelmed. Ron A. is fine in helping lead several panels but doesn't want to be the lead because of travel conflicts.

Jim wants people to tell him what their concerns and conflicts are so that he makes the right assignments. He can pull in some from PNNL if needed. Please talk with Jaime Kolln directly if you have any concerns or reservations. If you can't be involved with a panel but can help with other aspects please contact Jaime, Ron B., and Susie. We will be sure you are included in the planning.

Jim has reached out to Jim Rodrigues with DOE.

Jaime moved the discussion to the Linked In posts called "We are the Council." This assignment for everyone. Ron Bernstein has designed his and is ready to post. Andy Bordine will be the next one to post. Jaime will reach out to whoever is next to keep the pace for the posts.

Ron B. suggested that everyone include the name of the Council member and their position. Ron B. included the horizontal version of the Symposium banner.

Ron B. will send a template out to the Council.



GWAC Strategic Outreach Plan

• GWAC Mission and Vision Statements

Vision

The GridWise® Architecture Council supports a vision of a decarbonized, decentralized, and democratized electricity system to ensure the energy needs of today and that of future generations.

Mission

The GridWise® Architecture Council (GWAC) was formed in 2004 by the U.S. Department of Energy to propose principles for and accelerate the development and adoption of interoperability concepts and standards across all applications operating and interfacing with electric systems.

The Council's mission is to engage with stakeholders to accelerate the development and application of grid architecture concepts and principles. This leads to:

- Identification of critical paths to facilitate the effective evolution of the systems, devices, and entities that encompass the electric systems and achieve societal objectives.
 - Advancement of standards, applications, and systems interfacing with the current and future electric systems to ensure they are sustainable, reliable, resilient, efficient, extensible, and equitable.
-
- Guest speaker recordings continue to be developed and published to YouTube
 - Outreach through conference presentations
 - Slide deck to be developed with template and GWAC outreach slides.
 - Other organizations to "cross-pollinate" ideas with.
 - Identify liaison volunteers, e.g. INCOSE

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Jaime noted that Ron Melton may not be available to help Farrokh Rahimi cover IEEE conferences going forward. Shawn Chandler said that is something he would be interested in doing.



“Next Big Thing” / “Back from the Future”

- Originally presented at AHR Expo
- Ron Ambrosio and Rahul Bahadur are leading a committee to develop a webinar on "The Next Big Thing"
 - Rahul Bahadur and Ron Ambrosio Updates
- Next Steps
 - Development of a concise slide deck
 - Draft presentation will be reviewed by GWAC
 - Web Page with details including GWAC activities



Ron A. will be resuming the meetings for this work group soon. He is over his hip surgery recovery. He said there is not a lot left to do on the paper.

Jaime noted that the Grid Future States white paper is with the PNNL editor. It will have the same cover and structure as the recently published grid architecture paper.

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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 is not on the call today. Jaime will follow up with him about the feedback he received at the F2F meeting at OATI which suggested some restructuring.

Action: Jaime to talk with Lorenzo about next steps for the white paper based on feedback from the F2F meeting in April at OATI.

Jaime will also ask Lorenzo about a conference panel that he was volunteered to lead.

Jaime asked March Costa or Ron Bernstein to volunteer to be the GWAC meeting point of contact for the white paper on “Applying Grid Architecture Concepts to Bridge Back from the Future Grid,” that Mark Paterson is leading. The time zone difference makes it hard for Mark to give updates at GWAC meetings.

Kay Aikin attends the meetings. She said that people are taking sections for drafting. Kay did hers and Shawn is helping review that section. Most sections are relatively short. There is a clear outline about what is needed.

Jaime noted that one doesn’t have to be a GWAC Council member to participate on writing the white papers. Others who attend meetings and would like to contribute to work products are welcome to do so.

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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, Aaron Snyder,
- 2:00 PM PT/ 5:00 PM ET Thursday 2 times 1st and 3rd Thursday of the month

Action: Jaime to check in with Lorenzo on the regulators paper and ask about the feedback from OATI and also ask about a panel at the GWAC symposium that he could lead.

Kay said that some people are drafting their sections. Kay and Shawn are working together on one. They are looking for people to go into Mark's version of SPS and write sections. The ask is clear but the paper needs fleshing out.

The work products are opportunity for all GWAC participants to join in on, it's not just for Council members.

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GWAC Future Work Products Discussion

Grid Architecture Concept Model for Transportation Electrification

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.

- 15-20 page whitepaper
- Committee: Ron Cunningham, Farrokh Rahimi, Mark Ortiz, David Forfia, Aaron Snyder, Lorenzo Kristov, Bhaskar Mitra, Paul DeMartini
- 1:00 PM PT/ 4:00 PM ET, 4th Tuesday of the month

Jaime noted that he has reached out to Aaron Smallwood about the Transportation Electrification paper and he's happy to have GWAC build on that work and cite the SEPA work.

Although Ron Cunningham is not the lead on this paper, he provided the foundational knowledge base. Ron has been giving Jaime an education on this topic which is his area of expertise.

The last meeting was a rather small group, so Jaime said there is room to add new people who are interested in this topic and would like to contribute. Transportation Electrification is the key topic. After the conference these meetings will go to twice a month.

Jaime said that this is really a high level of the interdependencies for the electricity and transportation sectors that folks should be considering when they are building the grid of the future.

Liaison Reports

IEEE - Shawn Chandler is working with Virtual Power Plant work group is progressing, Shawn is involved. Also, there is a new Block Chain for Energy Standard. There may be a related panel at the GWAC Symposium under New Industry Structures. 2418.5 has just gone through voting. They didn't get enough response so it's open for 30 more days. If you are a member of Blockchain for Energy 2418.5 consortium, please log on to your Microsoft account and vote.

Jaime added to the IEEE report that there is a revision for base standard 1547.4 is going on, Jaime was at the related meeting in Boston earlier this month.

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1547.4 which is intentionally islanded systems on microgrids containing area EPS equipment is an interesting standard. Jaime is the vice chair.

1547.10 also is on interconnection also. If anyone is interested there is no shortage of fun activities for you to participate in. 2800.2 is another one.

Ron B. ASHRAE – the summer meeting starts this Sat. There is a lot in the built environment along with some decarbonization efforts that are trickling down into specification development.

Ron B. attended a training this week in Oklahoma on large refrigeration for zero energy using CO2 and glycol for large refrigeration systems. That is a tie-in to grid related activities.

ASHRAE anticipates a new building automation guide specification to be published in the next few months.

Ron B. also mentioned the Design Lights Consortium. The Lighting Industry is looking into integration with other systems such as lighting to grid.

Ken Wacks with ISO IEC – Ken chairs the home electronics systems committee namely networks in homes and buildings and applications for most of which is energy management, will resume the spring meeting next week in Zoom. Our focus is heavily on energy management, and in particular implementing the energy management agent on a platform based on a gateway in the home. They will meet for three days next week and may continue into the following week. The fall meeting will be in September in Japan.

They had the first standard based on AI to help building managers and consumers manage their energy. That standard is complete and will be for sale soon.

Ken Wacks IREC - Ken chairs the Customer Grid Edge committee – this Friday they will feature guest speaker Stephanie Whelan with the California Energy Commission. She will giving a presentation on motivating consumers to use energy when available and from clean sources. California has a major project underway that involves the pricing of electricity. Pricing data and the development of appliances that are responsive in their operating mode to pricing data. The meeting will be at 1:30pm eastern this Friday via zoom. No preregistration is needed and there is no cost. Sign up at IREC CGE. Ken is committee chair.

Jaime said he hears many good things about these IREC meetings.

Ron Cunningham - SEPA is working on several presentations including some for RE+. They are re-platforming to help make collaborations easier. The research advisory council that several GWAC members are involved with are providing guidance to the organization at large and also to work groups.

They will be doing an information report on grid architecture with a collaborative survey with the grid architecture work group on things that can be added. Seemita Pal had led the primer for SEPA. There

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should be some new reports to follow on to that topic. Seemita and Ron Cunningham are co-chairing the Grid Architecture working group.

Ron B. noted upcoming DOE calls on EV battery funding opportunities, such as EV battery funding for upgrading existing facilities from traditional manufacturing of automobiles to electric vehicles. There was another one on heat pump technology about enhancing heat pumps and on shore heat pump manufacturing in the US. Another was on K-12 schools and Energy Efficiency upgrades for an energy audit plan mainly focused on HVAC. Ron B. would be happy to link people to reviews needed. He said typically they send you 3 to 5 proposals to review. Most are volunteer effort.

Kay Aikin current has ARPA-E open vision awards to review and could link people to some proposals. Kays are preliminary proposal and mostly one-pagers.

Marc Costa has also done some reviews.

Jaime said that a FOA update topic could be added to Liaison reports. Jaime also asked about NAESB and INCOSE as possible liaison reports that could be added.

Ron B. suggested someone from DOE BTO give a talk for GWAC and Jaime suggested someone from DOE OE and maybe someone on the joint office.

Ron A. and Ron B. agreed that NAESB could be added.

Ron C. suggested having a speaker from the GridWise Alliance.

Ron A. said he used to be on the board of the GridWise Alliance. He thought a liaison with them would be good.

Marc said he has good BTO connections. He also said the California Community Energy Program Office might be a good liaison. He mentioned Chris Castro who could represent the community scale aspect; it is focused on buildings and grid, a bit more toward buildings.

Kay mentioned the Grid Deployment office, GDO.

Ron A. noted that Stephan MacDonald had to drop off but had a message in the chat.

Jaime mentioned Ben Ealey and Brian Seal and interoperability work at EPRI. He said their work is focused on DER and interoperability. They are taking input from utilities but also from us at the national level to address problems and propose solutions. We will keep GWAC posted on this work.

Ron A. said EPRI is asking the work group to bring information, ideas and EI and IEEE escrow models – Stephan wants to set up a short, recurring meeting. He sent an email to Ron A. and to Mark Siira. Ron said that Stephen needs to create a presentation for EPRI on this and wanted some GWAC input on it. Mark and Ron A. are willing to work directly with Stephan.

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Mark Siira said that the group Stephan is talking about is also working on E2030 revision project. This is the one that Ben and Brian are leading that Jaime mentioned. Jaime has participated in that some as well.

Kay said she will post in Linked In on the recently published white paper that Seemita Pal had led. Kay has access to the GWAC LinkedIn account. She will tag everyone.

Jaime will create a Word doc with the tag. Kay liked that idea.

Jaime, Ron B. have been talking about Steve W. He will be at the GWAC Symposium and also at the San Diego F2F and so will some of the emeritus members. Ron B. is contacting a couple of emeritus and others may be as well.

Ron Bernstein will coordinate the GWAC pins, Mark Knight and David Forfia offered to pitch in.

The group looked ahead at the next GWAC meetings.



Upcoming GWAC Meetings

Date	Topic or Speaker	Format	Other
June 19, 2024	Jim Ogle, PNNL	Virtual	Distribution Transformation
July 10th, 2024	Jeremy Harrison, LCP Delta	Virtual	Community DSO
August 6, 2024 (Tues.)		Virtual	
September 9-12, 2024	GWAC 2024 Symposium	In Person	Anaheim, CA
September 13th, 2024	GWAC Face-to-face and 20th Anniversary Celebration	In-Person	San Diego, Casa Bernstein

Future speakers ideas:

Chair Ron Bernstein adjourned the meeting at the top of the hour.

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KnighT, Mark R. (External) 6/19 11:21 AM

MK It seems to me like we need a taxonomy for Mark/c references as we had/have for Rons

Mark Siira (External) 6/19 11:23 AM

MS There have been a number of IEEE standards dealing with aspects of Transportation Electrification, V2g, Fast Charging

Kolln, Jaime T 6/19 11:25 AM

IEEE 1815.2 is out for ballot as well. Formerly known as MESA-DER (IEC 61850-7-420 mapped to DNP3)

Mark Siira 6/19/2024, 11:23 AM

There have been a number of IEEE standards dealing with aspects of Transportation Electrification, V2g, Fast Charging

Feel free to post them in the chat.

Mark Siira (External) 6/19 11:28 AM

MS IEEE P2030.13 - Guide for Electric Transportation Fast Charging Station Management System Functional Specification

Shawn Chandler 6/19 11:36 AM

SC thank you team, need to drop with apologies

Shawn Chandler left the chat.

6/19 11:38 AM

NAESB - Jeff Morris has updated GWAC at times on their meetings and activities

Stephen MacDonald (External) 6/19 11:40 AM

SM Need to drop. Thanks all, great call.

I was going to highlight the EPRI effort on DER Interoperability, and they asked me to put together a PPT preso on the effort and was going to solitict if any one in GWAC would like to contribute to my efforts so I get the GWAC input. Reach me to StephenMacDonald@EnergyProfitLLC.com

Ron Ambrosio (Guest) 6/19 11:41 AM

RA

Stephen MacDonald 6/19/2024, 11:40 AM

Need to drop. Thanks all, great call. I was going to highlight the EPRI effort on DER Interoperability, and they asked me to put together a...

Thanks for that update Stephen.

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Adjourn

GWAC online July 10, 2024

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