

Meeting Minutes

May 17, 2023

GWAC Members

Ron Bernstein, GWAC Chair and President
RBCG, LLC

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

Ron Ambrosio, Independent Energy
Transformation Professional

Andrew Bordine

Ron Cunningham, IT Enterprise Architect,
American Electric Power

David Forfia, Principal Consultant, Utilicast

Paul DeMartini, Managing Partner, Newport
Consulting

Ahlmahz Negash, Sr. Power Analyst, Tacoma
Power

Mark Ortiz, Lead Architect, Schneider Electric,
New GWAC member

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, Sr. Mgr. R &D, VMWare, Inc.

Marc Costa, Director of Policy and Planning, The
Energy Coalition

Ken Wacks, GWAC Emeritus

GWAC Friends

Alex Ghanem

Anthony James

Steffi Muhanji

Michael Murray (Guest)

Hayden Reeve

David Wollman, NIST

GWAC Members and Assoc. not present

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

Jeff Morris, Dir. State Gov. Relations, Schneider
Electric

Mark Paterson, Managing Dir., Lead Systems
Architect, Strategen

PNNL Support

Susan McGuire, GWAC Coordinator

Ron Melton, PNNL Administrator

Jaime Kolln, PNN

Meeting Minutes

May 17, 2023

GWAC Chair Ron Bernstein opened the meeting with a quorum.

The April meeting minutes are not ready for a vote and will be held until next month.

Ron Bernstein asked Hayden Reeve and Marc Costa to brief GWAC on the Efficiency Exchange 2023 meeting held May 2 – 3 in Portland, OR.

Hayden noted that the Pacific Northwest has a strong energy efficiency community, and he noted participation by Avista Utilities. The group was interested in how demand flexibility invigoration is different than energy efficiency in terms of infrastructure and with decisions about program deployment.

Marc was on Hayden's panel. He said it would be great to get information out of some of the participants. He said even demand flexibility seemed to be a new technology for many attendees. He suggested that GWAC help put out some basic learning tools for people to help them come up to speed.

Hayden noted the need to project future impacts of changing power needs. He said some sort of capacity plan or resource adequacy as a future topic. Noting recent events in Texas and California he said the Pacific Northwest has had some near misses with blackouts but nothing with significant impact to really focus regional decision makers on preventing potential energy disasters.

Jaime Kolln pointed to the potential Cascadia event and said that with no previous major event and subsequent lessons learned, that could be very disastrous.

Hayden said that a major heat wave is another likely scenario and he noted that the Northwest has a history of being good with energy efficiency, but he said that understanding flexibility is a bit different.

Kay Aikin said this topic is the basis of the microgrid talk she will give in Dublin Ireland in June. The audience will primarily be energy efficiency experts and Kay will discuss the need to be interactive with the grid and the significance of this as a way of getting through energy transitions, primarily with buildings. The talk will focus on transactive energy tariffs for microgrids.

Jaime asked Kay to consider presenting an overview of the talk at a future GWAC meeting.

Ken Wacks will be speaking on "Smart Appliances for Energy Management" later this month at Connections 2023 near Dallas.

Ron B. said for the ASHRAE Summer meeting he will present two talks: one on building specifications development and another on semantic interoperability.

Ron B. also noted the article he contributed to the ASHRAE Journal May edition and noted that it is a cover article on cyber security for buildings: <https://lnkd.in/gxE5nccj>

Marc Costa noted the California Climate and Energy Forum to be held in Santa Rosa mid-June. He is hosting a panel and asked GWAC if anyone is interested in speaking. The topic would be in the broad

Meeting Minutes

May 17, 2023

realm of local government and the energy landscape. Please contact Marc, the dates are June 12 and 13 if you are interested.

Rahul Bahadur expressed interest.

Ron B. had an idea for a panel, possibly for next year. Marc will coordinate with him.

Jaime reviewed progress on the recorded GWAC panel talks that have come in from AHR. Ron M. and Ron A. are working on theirs. Jaime and Kay will coordinate the split between their talks. Ron C, Leonard and Ron B. have turned theirs in.



Actions

- GWAC participants who have suggested topics or presenters please let Jaime Kolln, Ron Melton, and Ron Bernstein know and copy Susie.
- Speakers from AHR Expo to record presentations
- Look into speakers for future GWAC meetings. Possible speakers: DOE EERE, OE
- 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.
- Add a discussion of the GWAC Mission statement to a future GWAC meeting

Jaime is planning how to get the GWAC videos as a thumbnail on the website. They would be housed as YouTube videos and embedded on the website.

Jaime asked the group their thoughts on a revamp of the GWAC Mission and Vision statements. Ron Bernstein voiced his support for a refresh.

Action: Jaime Kolln will send out the GWAC Mission Statement and get feedback from GWAC on potential changes.

James Mater is planning to speak at an upcoming GWAC meeting on vehicle to grid.

Ken Wacks suggested adding the three GWAC papers that have been reviewed and approved for publication by the experts at the ISO/IEC be added to the GWAC history slide. He will send a list of them with their ISO/IEC catalog numbers and titles to Susie.

Action: Add the three ISO/IEC approved documents to the GWAC History slide. (done)

Meeting Minutes

May 17, 2023

A TESC 24 organizing committee is being formed. A general meeting was held on May 22 and a meeting with SEPA was held on June 2.

transcribed. Privacy policy

GWAC Projects

Project	Grid Arch for Regulators	Grid Architecture White Paper	Grid Future States	GWAC Blog Content and Review Committee	THE NEXT BIG THING
Scope	Applying Grid Architecture in the Policy & Regulatory arenas	An introduction to Grid Architecture -- including best practices and real-world examples	Update Grid 3.0 Future States	Decarbonization, GA for Policy	Council's primary focus for the next year – results of F2F meeting.
Audience	Policy Makers	Geared to stakeholders who aren't familiar with grid architecture	Industry Stakeholders	Industry stakeholders, public facing website	Council, Friends, All Stakeholders
Status	Case studies	Collected inputs and comments from working party members	Submitted to PNNL for editing and information release	5 blogs released, 2 in queue	Seminar AHR Expo Presented
Actions	Group: Lorenzo Kristov, Larisa Dobriansky, Kay Aikin, Farrokh Rahimi, Chris Villarreal, Mark Paterson	Finalize draft, polish graphics	Respond to Comments from GWAC Members	Group: Kay Aikin, Ahlmahz Negash, Larisa Dobriansky, Ron Bernstein, Rahul Bahadur, Leonard Tillman, David Katz, Tim Schoechle, Heather Donaldson	Record Presenter Videos
Leadership	Lorenzo Kristov	Seemita Pal, PNNL	Ron Cunningham	Kay Aikin	Council

GWAC Blog – Jaime asked the GWAC to send any ideas for new blog posts to him and please copy Kay Aikin, Ron Melton, and Susie McGuire.

Ron Bernstein suggested that anyone who publishes an article should consider sending the abstract to GWAC as a brief summary and we could set up a link to the article. He also said something similar for panel discussions could also be posted. It's a way of repurposing content that has already been created. Video links to the presentation could be added.

Jaime noted that citations for the work should be included for content and graphics.

Jamie requested that flipping the order of the Accomplishment slide so that the most relevant is at the top of the list.

Action: Reverse the timeline of GWAC history publications and accomplishments. Newest at the top. (done)

Meeting Minutes

May 17, 2023



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

- Presented at AHR Expo
- Recordings to be Developed and Published to YouTube
- What next?
 - Webinar planning
 - Development of a concise slide deck
 - More web page updates 😊



Ron Melton gave a quick overview of the challenge of crossing technology gaps and moving to highly decarbonized systems saying that GWAC has discussed creating a detailed explanation to inform decision makers as to why it's important to take the holistic view provided by grid architecture methodologies to represent the nature of the systems of the future with high DER deployments, high decarbonization, high electrification and so on. He noted the challenge of crossing technology gaps and how they affect the ability to implement change.

Ron M. recalled that Mark Paterson had pointed out these challenges in his talk at the Fall F2F as a problem for the industry as a whole and how problems will be created by trying to take small incremental steps to reach the future. Instead, he had suggested that without being pulled to the future with an understanding of what the future is likely to be, we run the risk of not being able to cross the technology gaps. Without that future vision a huge expanse of stranded assets and like systems that were not able to be moved into the future because of the way they were developed or because planning led to the legacy systems that were invested in a time frame where the investment isn't really recouped before you need to abandon it and move to the future.

Ron M. said that the traditional approach for industry as a whole takes incremental steps with maybe some hops. But if we can have a better idea of the future and take bigger leaps to cross technology gaps – in spite of legacy systems and other constraints through a managed future the transition could go smoothly. Otherwise, incremental investments may not be recouped before the need to abandon them and move forward.

Ron M. asked the group to think about how we can help educate regulators and executives on what the wholistic approach “looks like,” adding that while GWAC can't define the view of the future, we can raise industry awareness of available tools and how to manage, mitigate, or avoid risk along the way.

Meeting Minutes

May 17, 2023

Ron B. said one resource will be the slide set from the AHR GWAC panel presentation that we are working on getting out there. Also, we are also talking about hosting some on-going webinars to bring people into discussion. Once we have a good slide deck can we post a webinar. There is general agreement to bring people in at the next conference. The theme can address where do we need to get to and how do we get there?

Ron C. noted that there will be major shifts and big gaps, to be overcome.

Ron M. mentioned some work that is being done by Lisa Schwartz at LBNL and Paul DeMartini has some involvement.

Jaime said he was on a panel at the recent Grid Edge conference that covered some of that work. He said that material would be good for a future GWAC meeting presentation.

Ken Wacks said that sometimes the audience for a talk will embrace the shift toward the grid edge but other times they seem to feel that GWAC is overreaching. He noted the challenge to broaden the audience to invite in the non-skeptics.

Ron M. said that while it may not be the role of GWAC to urge acceptance of climate change and the need for decarbonization we instead can operate from the stance that these changes will come, and we need to be ready to accommodate them. The need will be there to shift and change in terms of the grid structure.

Ron A. said that while what Ken is saying is important, we should strive to avoid discussions and disagreements that may be more political and divisive in nature.

Ron B. said that GWAC is a tough leadership group and must stay focused on what we can do to move industry forward.

Jaime added that getting the videos out and getting the webinars started is a good example of what we can do as a council to inform stakeholders, and increased knowledge may bridge understanding.

Ron B. mentioned gaining audience with social media and said that he is seeing more interest lately from his posts on Linked In.

Ron M. said that we should continue with Linked In it seems to be a successful path for us.

Ron B. had talked to Anto who said we should try to add in a picture and then a link which is what he did with the recent ASHRAE cover. A picture can add to the story.

Jaime gave Farrokh an introduction so he could present his liaison report for IEEE.

Farrokh Rahimi said that IEEE PES General Meeting is this July in Orlando and then IEEE will host a meeting in Puerto Rico in November. He and Ron Melton are planning to be there.

Farrokh asked about the next GWAC TESC conference.

Meeting Minutes

May 17, 2023

Jaime said that the next TESC conference may be held in conjunction with either SEPA or IEEE, but it is moving forward. He noted some upcoming changes by IEEE that is the impetus of that. We will keep Farrokh updated as things progress.

Jaime Kolln introduced Michael Murray with Mission Data.

Michael Murray said that Mission Data is interested in Smart Grid and Interoperability. He described it briefly as a small nonprofit that has been around for about ten years. They advocate for data portability. They work with about 30 companies that have a common set of challenges regarding how to access customer data for various applications and how that data can be used. The method of capturing data varies from jurisdiction to jurisdiction. They have helped to implement mandates for data portability that benefit about 36 million electric meters. He presented a map to illustrate this, and it includes states where legislation is pending.

They also work some with Ontario, Canada.

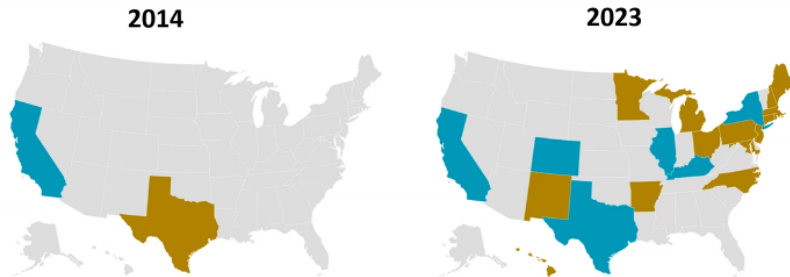
He added that data portability is a very big topic, much larger than just in the utility industry. For example, healthcare data portability and banking data portability.



He noted that the trend in the US and abroad is to give customers control over their own information. He said that philosophically this increases customer choice and also options for competitive market offerings that would not otherwise be accessible.

Meeting Minutes

May 17, 2023

MISSION:DATA
empowering energy savings



 Policy established
 Under consideration



missiondata.io/reports

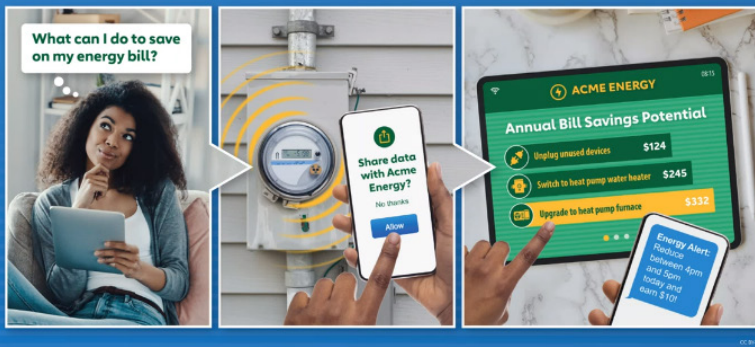
36+ million meters and growing...



MISSION:DATA
empowering energy savings



How energy data portability benefits consumers



APIs can also:

- Get a customer's rate schedule to optimize appliances/devices/EVs
- Change a customer's rate on their behalf to optimize (California)
- Get the customer's **real-time** usage data to orchestrate BTM devices




He gave examples of what a customer could do and how data could be shared, noting that currently there is a lack of standardization.

Meeting Minutes

May 17, 2023

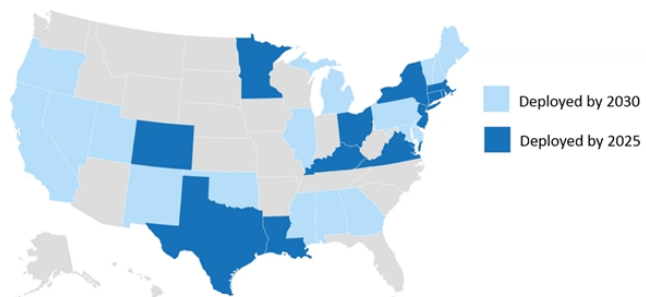
FOCUS AREAS

MISSION DATA
empowering energy savings

<p>SMART METER + COMPUTER</p>  <p>Linux + “App Store” – the new standard Real-time usage data via IEEE2030.5 over Wifi 10M+ by 2025, 54M+ by 2030 Supporting open access</p>	 <p>Green Button Connect My Data API</p> <p>36M+ nationwide today</p> <p>9 more states actively considering</p>	 <p>Real-time usage data</p> <p>Established in 5 states today</p> <p>Support “bring your own device” connectivity</p>
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Trends: Smart Meters v2.0 coming nationwide

SMART METER + COMPUTER



- “Edge computing” (think of a Raspberry Pi with 2GB memory)
- 55+ million meters to be installed by 2030 (35%+ of U.S.) at a cost of \$15+ billion
- Accelerant: ENERGY spending \$3 billion in IJA funds to accelerate “smart grid”

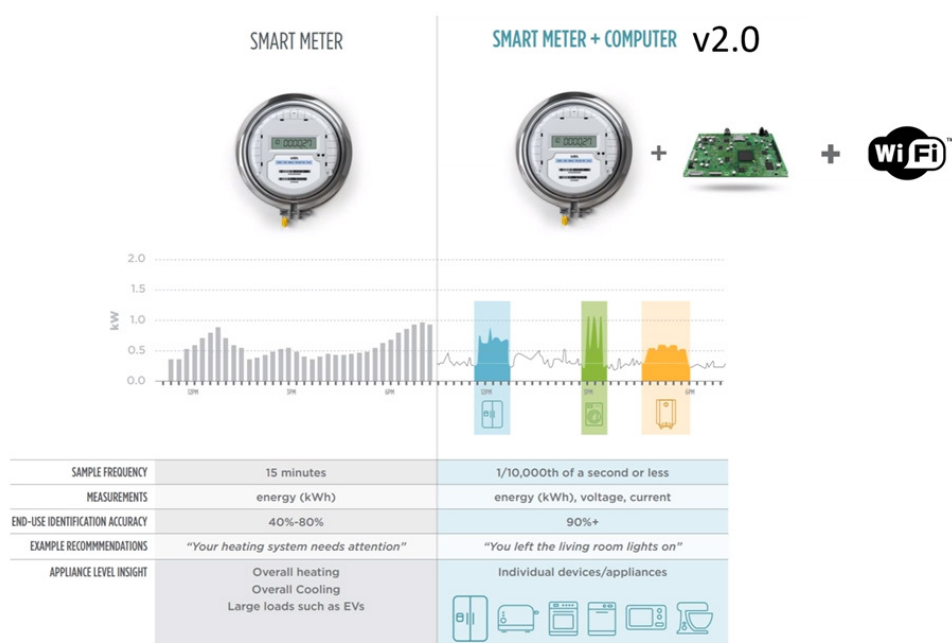


Meeting Minutes

May 17, 2023

Michael noted the current trend for smart meters is similar to a raspberry Pi in capability at the grid edge.

He noted that in California, some API's will soon be able to allow your water heater to change the rate that you are on with your permission, to be more optimized.



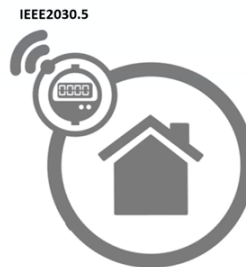
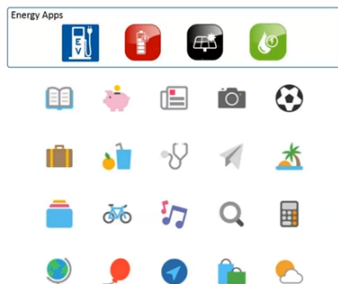
He sees things changing exponentially and the capability of what data we can give the customer is rapidly changing. The potential is there for predicting appliance and device failures.

The potential of a type of App Store is coming; major manufacturers may offer them in their meter portfolio.

Meeting Minutes

May 17, 2023

Energy App Stores



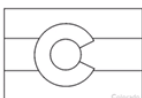
- Who can write an app?
- Who can access Wifi easily?
- What terms apply?
- What are the monopoly's limits?

State policy implications

Examples:



- Texas: PUC rules are based upon 15-minute interval data
- Colorado: Meter data is “maintained” by a utility in “the ordinary course of business.” Is high-frequency data ephemeral? Does that matter?



Raw data vs. insights: What is portable?



Meeting Minutes

May 17, 2023

Federal Funding and Customer Data Portability



1. IRA: HOMES (\$29.8 million)

“SEOs shall...use open-source advanced measurement and verification software, as approved by the Secretary, for determining and documenting the monthly and hourly (if available) weather-normalized energy use of a home before and after the implementation of a home energy efficiency retrofit...”

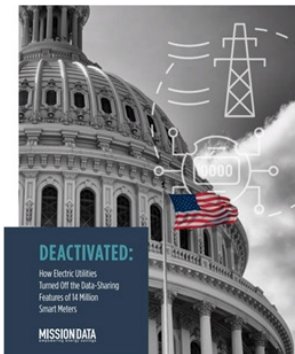


2. IJJA: Smart Grid Grants (up to \$50 million)

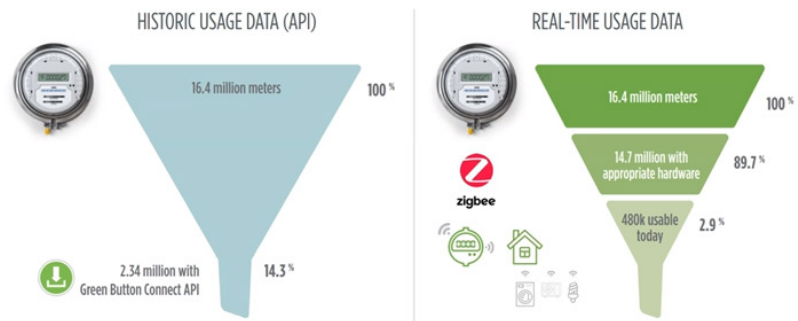
“DOE will require that projects support data standards (e.g., Green Button Connect), interoperability, and nondiscriminatory data access on a real-time basis.”

Next funding round: Q1 2024

Recovering From a Poor Federal Record on Data Portability



www.missiondata.io/reports



Meeting Minutes

May 17, 2023



—○ Planning the "TE" Conference

- Proposed months in 2024: May, June, September, October
 - Mid-week; two full days and a half day
 - Tutorials are usually offered in advance of the conference
- Schedule Organizing Committee (OC) Meeting
 - Coordinate with Masoud Nazari (IEEE SBLCS Architecture Subcommittee)
- Council Members Participating in the Organizing Committee?
 - At Least 4 Council Members
 - GWAC will Share Leadership Roles w IEEE OC Members
 - Sponsorship lead is one of the key spots needed
 - David Forfia has volunteered to be the Treasurer
 - The IEEE application is the first step and also a conference budget.

Jaime Kolln thanked Michael Murray for his presentation.

TESC 2024

David Forfia has agreed to be the treasurer.

Ron Bernstein suggested forming a committee for the technical program.

Jaime told the group there is an option to work with SEPA again and he noted that IEEE is in the process of reforming their conference hosting policy.

Ron Melton said he heard about some of IEEE's plans at Grid Edge although nothing is yet definite and the GWAC conference may be untouched, but it's uncertain at this point.

David Forfia has talked with Aaron Smallwood to see if SEPA could be an option. His idea was to align the GWAC conference with RE+, it is being looked at as a possibility. David suggested that if GWAC does want to go with SEPA that we need to start that discussion soon.

SEPA would take on the financial responsibility, similar to the 2018 conference.

Jaime said the last RE+ in Anaheim was attended by over 26K people.

Ron M. would like to meet with Aaron about this. He sees good alignment between SEPA working groups and GWAC.

Meeting Minutes

May 17, 2023

- The conference might be a bit different in format
- We might want to have a workshop
- There might be other changes
- A core group with conf organization experience should look at this
- We should plan to decide at the June GWAC meeting

Action: set up a call with Ron M., Jaime K., Ron B., David Forfia, Ron Cunningham, and Aaron Smallwood about the potential of hosting TESC in conjunction with RE+. It would be an exploratory conversation.

We will hold on selecting a location if we go with SEPA because RE+ would be the location. David thought it would be in Anaheim again, Sept 9- 12, 2024

Jaime gave Seemita's update – Jim Ogle will peer review it.

—🕒 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, Jeffrey Morris, Leonard Tillman, Andrew Bordine, Chris Villarreal, Ron Melton
- White paper draft will be uploaded for review of working group today on Teams site. Please review and provide feedback so that we can finalize for publication. Seemita will email the draft to those who do not have access to Teams channel – please let her know.
- Next steps
 - Please provide feedback before next GWAC meeting
 - Any feedbacks will be addressed; final version will be run through PNNL's approval process and then finally published

—🕒 Grid Vision & Future State White Paper

- Submitted to PNNL technical editors for final review

Maura Z., a PNNL editor is reviewing the Future States paper

Meeting Minutes

May 17, 2023

◉ Grid Architecture for Regulators

Feb. 2023 update

- Team = Kay Aikin, Larisa Dobriansky, Jeff Morris, Mark Paterson, Farrokh Rahimi, Chris Villarreal, Ron Bernstein, Lorenzo Kristov
- White paper will be aimed primarily to GWAC Community:
 - Document our experience, observations and lessons learned from the use/non-use/value of GA in policy and regulation venues
 - Provide a basis for strategies to promote Grid Architecture among policy makers.
- Case studies identified thus far
 - National — FERC Order 2222; Multi-states' DSP approaches
 - State — NY REV; Maine legislative targets; Xcel MN rate case; CPUC High-DER docket; Colorado DSP settlement
 - Municipal — Portland ME; Hartford CT; Washington DC; Smart-city smart-grid connections
 - International — Ontario; Australia
- Tentative target for completion: TBD => Little progress on first drafts to date as contributors have been consumed by other priorities.

For Regulators – the date has moved out – everyone is still working on the portion of the paper.



—◉ Liaison Reports

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

- Are there other organizations we should be hearing from?
- Candidates: OpenADR, Green Button, eMerge, SunSpec, CEA

Meeting Minutes

May 17, 2023

David Wollman – NIST update: The May 2023 NIST smart connected systems newsletter was published Monday this week – <https://content.govdelivery.com/accounts/USNIST/bulletins/35a9819>

Ron M. asked about NIST Smart Grid related efforts.

Dave said when they moved – they had funds designated to other things. With the internal reallocation they have had to reconsider some things. Staff are being integrated with IoT to continue some smart grid areas as a theme, not as a group.

He said another group at NIST is doing some engineering work, and he said are still sorting things out. It's definitely a slimming and a redirection.

Jeremy Roberts and Sean Crimmins are not on the call.

Rob B. said that CTA is moving some standards for networking and control to IEEE. He updated GWAC with additional information about the moving of these standards. He related this work to the talk by Michael Murray today.

CTA will do more with IEEE going forward. He noted that semantic interoperability may have some good grid-related modeling capability.

Ron B. proved a URL to his LinkedIn article on cyber security.

https://www.linkedin.com/posts/ron-bernstein-bb21295_cybersecurity-for-building-control-systems-activity-7061741946477703168-U7fz?utm_source=share&utm_medium=member_desktop

Ken Wacks – ISO/IEC has been meeting this month. There are three standards to be published this month and another four that just got final international approval to come out soon. Another dozen or more are in the pipeline.

IREC - the meeting scheduled this Friday, May 19 at 1:30pm Eastern time will feature a talk on "Scaling Microgrids with Fleet Management, Control, and Optimization." The speaker is from New Sun Road, which is called a Public Benefit Corporation. They work on specialty microgrids. Please contact Ken Wacks for the Zoom link to this IREC Customer Grid Edge (CGE) meeting.

Meeting Minutes

May 17, 2023



Upcoming GWAC Meetings

Date	Topic or Speaker	Format	Other
May 17, 2023	GWAC Meeting – 10:00am to 12:00pm PT Michael Murray (Mission Data)	Online	Michael Murray
June 21, 2023	GWAC Meeting - 10:00am to 12:00pm PT James Mater (Quality Logic)	Online	
July 12, 2023	GWAC Meeting - 10:00am to 12:00pm PT	Online	Jeremy Roberts (tentative) Rescheduled for PES GM
August 16, 2023	GWAC Meeting - 10:00am to 12:00pm PT	Online	
September 20, 2023	GWAC Meeting - 10:00am to 12:00pm PT	Online	
October 3-4, 2023	GWAC Face to Face Meeting?	In Person	EnerNex (Knoxville)

Ron B. and Jaime will talk offline about the October F2F meeting.

Action: Ron B., Ron M., and Jaime K. will meet to discuss the Fall F2F in Knoxville, TN with Aaron Snyder in the next two weeks.

Aaron Snyder reminded the group that there is a 30-day security requirement to visit so some lead time is needed for confirming participation.

Chair Ron Bernstein thanks Michael Murray for presenting and adjourned the meeting.