

Meeting Minutes

April 15, 2020

GWAC Members

David Forfia, GWAC Chair

Ron Ambrosio, Chief Scientist, Utopus Insights, Inc.

Tanya Barham, Principal, Community Energy Labs

Ron Bernstein, President, RBCG, LLC

Ron Cunningham, American Electric Power

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

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

Stuart McCafferty, Managing Director, IoT Architect, Black & Veatch

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

Leonard Tillman, Partner, Balch & Bingham, LLP

Aaron Snyder, EnerNex, Director of Grid Technology Consulting

GWAC Members not present

Andrew Bordine, VP Energy Mkts & Innovation, Anterix

Stephen Knapp, Vice President of Quality Assurance & Energy Markets, Power Analytics Corporation

GWAC Associates & Emeritus

Kay Aikin, CEO, Introspective Systems

Rahul Bahadur, Mgr. of Engineering, VMWare

Mark Knight, Burns & McDonnell

Chris Villarreal, President, Plugged In Strategies

Ken Wacks, Home, Building & Utility Systems

GWAC Guests

Robert Burke, Robert Burke Consulting

H. Ward Camp, Energy Blockchain Consortium

Larisa Dobriansky, General Microgrids

Chris Irwin, US DOE

Dave LeVee, PwrCast

Jaime Kolln, PNNL

David Wollman, NIST

PNNL Support

Ron Melton, PNNL, Administrator

Karen Studarus, PNNL Administrator

Susan McGuire, GWAC Coordinator

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Administrative Business

David Forfia reminded the group that the GWAC March minutes have been distributed. He asked for a motion to approve the minutes. Tanya Barham gave the motion and Farrokh Rahimi seconded the motion. There were no objections and the minutes were approved. The March minutes will be posted to the GWAC website along with a copy of the presentation by Abhinav Tiwari of Alectra.

Ron Melton also noted that Abhinav Tiwari's presentation and audio from the March meeting was approved for release and has been posted on Ron Bernstein's website: <http://rb-cg.com/gwac/>

Conferences and Events

(**Bold** indicates GWAC speakers)

- **CABA Smart Buildings Summit, Florida, May 3 – 5, 2020 *still scheduled on the web***
- **IEEE PES General Meeting 2020, Montreal, August 2 – 6, 2020**
- **IEEE PES T&D Power Forward 2020, Chicago, October 12 – 15, 2020 (rescheduled)**
- **IEEE (GWAC) TESC 2020, Portland, OR, December 8 – 10, 2020**
- **AHR Expo 2021, Chicago, IL, January 25 – 27, 2021**

Review Meeting Minutes & Actions

- Approve minutes from March GWAC Meeting

Action items from previous meetings

- **All:** please let Ron know if you will be unable to attend a call ahead of time.
- ✓ Action: Include a history slide on the GWAC accomplishment matrix for completed actions – Ron Melton
- ✓ Get permission and post presentation from Abhinav Tiwari
- Action: Ron M to send the Resilience paper rewrite out to the white paper committee when complete. Action: Ron M to send the Resilience paper rewrite out to the white paper committee when complete.
- ✓ Ron M to delete Grid 3.0 from the GWAC activity matrix
- Tanya and Ron B to draft a GWAC TE FAQ

Ken Wacks verified that CABA Smart Buildings Summit in Florida is cancelled.

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GWAC Website Refresh

- Restarted this effort
- Have determined that PNNL hosting can continue with access by small number outside PNNL managed by PNNL
- Drupal vs. WordPress - discussion
- Next Step
 - Decide on Drupal vs. WordPress
 - Finalize cost estimate and inform Chris Irwin
 - Proceed with refresh

GWAC Projects – April 2020 Update

Project	TE FAW	Decision Makers Checklist Refresh	Smart Buildings as Transactive Hub White Paper	Economic Resilience White Paper	TESC Conference
Scope	Short document reiterating key features of TE systems as documented in TE Framework, etc.	GWAC publication will provide decision-makers with background information	Discuss use case for building integration with grid and how/what a TE model might look like	Overview of TE impact on resiliency issues. Possible interoperability, control, monitoring, real-time data sourcing and related solutions	Annual GWAC sponsored conference focused on Transactive Energy and related topics
Audience	Policy, Regulators, Legislators, TE Practitioners	Utilities, regulators, transactive platform providers, service providers, consumers	Building owners, energy managers, utilities, end users	Utilities, integrators, solution providers, policy makers	Decision makers, solution providers, labs, academics, policy, solution providers
Status	Started	Working group meetings completed. Draft ready for GWAC review	Extensive inputs by team in place.	Rework underway in response to PNNL review and suggested approach	Call for participation issued
Actions	Expand on outline created in February	Overview of draft followed by GWAC review period	Distill inputs into first draft of white paper	Continue rework - target completion with GWAC review by mid-May	Engaging partners and stakeholders, edit website
Leadership	Tany Barham	Jaime Kolin, David Forfia	Ron Melton, Ron Bernstein	Rahul Bahadur, Farrokh Rahimi, Don Hammerstrom	Various – Ron Melton Lead

Ron Bernstein proposed adding the GWAC website refresh activity to the matrix – Ron M. agreed to do so if it will fit on the page.

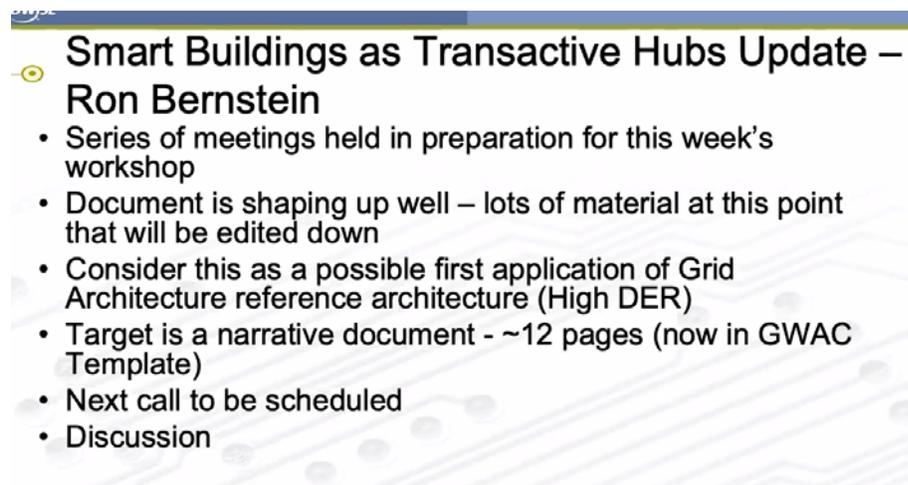
Ron M. noted that the recent FAQ task will be discussed later today.

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Regarding TESC20, Ron M. said he has been contacted by the Oregon IEEE and they are offering help to this year's conference.

Asked about a poster session at TESC20, Ron M. said there will be one if enough good papers are submitted.



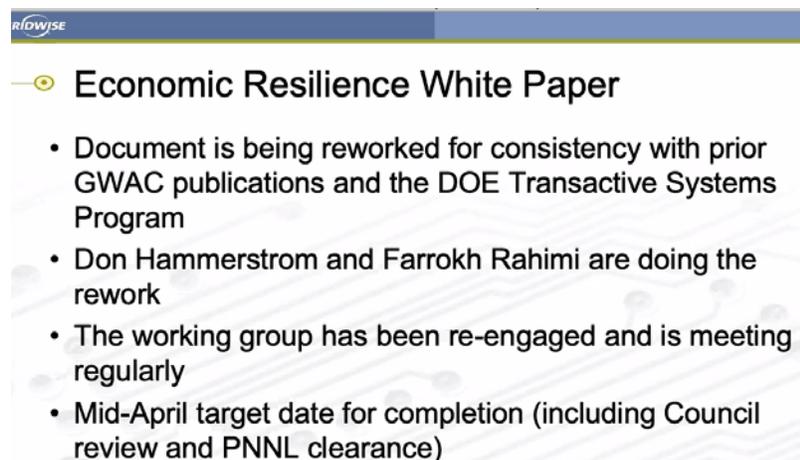
Smart Buildings as Transactive Hubs Update – Ron Bernstein

- Series of meetings held in preparation for this week's workshop
- Document is shaping up well – lots of material at this point that will be edited down
- Consider this as a possible first application of Grid Architecture reference architecture (High DER)
- Target is a narrative document - ~12 pages (now in GWAC Template)
- Next call to be scheduled
- Discussion

Smart Buildings as TE Hub White Paper

Tanya Barham noted that the white paper is currently at 36 pages, but she intends to work with the team to make edits to reduce the size. The group generally agreed that edits were called for; an appendix was also suggested. Ron M. said if there is enough material a second white paper might be called for.

Action: Ron B. Tanya and Ron M. to meet to discuss the white paper next steps



Economic Resilience White Paper

- Document is being reworked for consistency with prior GWAC publications and the DOE Transactive Systems Program
- Don Hammerstrom and Farrokh Rahimi are doing the rework
- The working group has been re-engaged and is meeting regularly
- Mid-April target date for completion (including Council review and PNNL clearance)

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Economic Resilience White Paper

Farrokh Rahimi commented that the group is hoping to have the Economic Resilience white paper ready for review at the end of April. Ron M. said that after review they would like to have the paper published by mid-May.

David Forfia noted that the paper would be published as a GWAC document.

Lorenzo Kristov asked for consideration of the word Economic in the title. Ron M. said it is more like the Economics of Resilience. Farrokh said that originally there were two papers, one on economics and one on resilience but now they are meshed together. He said it is more like economics and resilience in Transactive Energy.

Ken Wacks asked if resilience referred to an external event or to an economic downturn?

Ron M. replied that the paper refers to when an electric power system is under stress how the system benefits from transactive energy systems. The system must be resilient to react to the stress without failing. To be a benefit we must value different things to act upon them. There is also a discussion as to the nature of resilience. Farrokh said this comes in the Use Cases.

Dave LeVee asked about the review of the paper. Ron M. said the review will be by the GWAC members.



Interoperability Decision Maker's Checklist – update

- Revising v 1.5 (2010)
- Jaime Kolln from PNNL has drafted the update
- Meeting to review final edits took place last week
- Presentation today of the revisions
- Draft ready for full GWAC review
- Comments due to Jaime Kolln by April 30th
(jaime.kolln@pnnl.gov)

Decision Makers Checklist Refresh

Ron M. reviewed the progress of the Decision Makers Checklist committee. Jaime Kolln would like to have comments back by April 30 at the latest.

David Forfia noted that the document version is only moving from 1.5 to 1.6. It was not a fundamental rewrite. The refresh is more contemporary; things have been clarified. He asked reviewers to please keep that in mind as you review it; it is not meant to be a fundamental change.

The document was sent out to the GWAC broad list yesterday.

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Contemporary Language/Examples

- From Decision Makers Checklist 1.5
"75% of American adults have a cell phone and use such devices to take pictures, listen to music, handle e-mail, watch a video, surf the Web, play games, vote for an American Idol – and even talk on the phone."
- Updated version: Decision Makers Checklist 1.6
"96% of American adults have a cell phone and use such devices to take pictures, listen to music, handle text messaging and e-mail, watch or post videos, surf the Web, play games, map locations and monitor traffic, and even talk on the phone."

Technical updates

- Smart inverters
- DER and how they interact with other assets
- Load shifting based on pricing
- Aggregators
- Non-wires alternatives
- IoT
- Testing and certification
- Bidirectional energy flow
- SGIP now SEPA and reference related work
- Openly available and agreed upon standards
- Profiles

Jaime Kolln gave an overview of the kind of changes that have been made to the DMC. He also noted that a couple of supplemental worksheets have been added as an appendix, and some definitions have been added to help the understanding. He reviewed the graphics that will be included. The group has added a lot more references throughout the document.

Leonard Tillman complimented Jamie for his diligence on the rewrite. Ron Melton seconded this and recognized the hard work of the committee.

David Forfia said the original target date was April 15 and he appreciated Jaime for his efforts toward keeping the project on schedule.

TE FAQ update

Tanya Barham is leading this team. The group plans to keep the ten FAQ answers kept to the length of a Twitter Tweet. They have finished the first 3 questions and are slowly working through the summaries. She said that based on current progress it should be complete by mid-May. Tanya said the group consists of Ron Bernstein, Kay Aikin, Rahul Bahadur and Lorenzo Kristov.

Ron B. noted that the FAQ working documents are all located on the GWAC Sharepoint site in an FAQ folder.

Kay asked about the longer document that the group had worked from. Tanya said that the full-length document was one of three documents that the group used as a starting point. The long document was

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something that she had worked on with Ken Wacks, Lorenzo Kristov and Mark Knight a few years back. Kay said the group will be careful to cut the length but keep the facts correct and consistent. Tanya said they will also cross check with the TE Framework for consistency.

GWAC Fall Face to Face Meeting Planning

Ron said that this year's fall face to face meeting will include a workshop like the one in the fall of 2019. He noted that this meeting should be considered as a potential virtual meeting based on current working conditions related to COVID19. The theme should be discussed but would involve grid architecture or a related topic. An organizing committee will be needed.

Dates and location – we have a standing offer from Ron Bernstein to meet at his home in San Diego. He noted that it is a casual environment; no board room tables for example.

Kay Aikin is on the organizing committee for Distributed Energy Conference in Chicago on Oct. 19 – 21. She could probably get a room for the GWAC F2F.

Ron M. noted that ideally, we should have a meeting space and food for the meeting. Kay said food might be doable as well.

Rahul said that VMWare might also be able to provide a location in Palo Alto and they could also provide food for the meeting.

Ron asked Kay and Rahul to send the details about availability to him, Karen Studarus and Susie McGuire.

Action: Kay and Rahul to send details to Ron Melton, Karen Studarus and Susie McGuire about location options that they could support

Fall F2F Topical ideas

Ron Cunningham pointed out the need to address Grid 3.0 issues and said we should look at Future States that have not been visited and talk about architectural gaps that might exist in those areas.

Ron Ambrosio added that this meeting is a natural step toward preparation for the TE Conf which will have a heavy focus on Grid Architecture. He suggested that as we plan the conference, we should likewise think of topics for the fall meeting.

Tanya noted that this might also give us direction for selecting the keynote speakers.

Ron agreed and said this might lead us to the basis of the TESC20 Foundational Session. This session will be one of the activities at the fall meeting.

In the sidebar Kay Aikin suggested, “transactive energy as transwarp conduits for utilities.”

Also, in the sidebar Mark Knight suggested “Jeffries Tubes.”

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Tanya asked if any keynote topics and speakers have been identified. Ron M. replied that these are not yet planned but coming soon.

Tanya said that some of the stakeholders identified in the GWAC Stack would be a good place to outreach for speakers and topics.

Lorenzo Kristov noted that topics around Transactive Energy have been concentrated on the distribution side of the power system and yet there has been a lot of evolution in the wholesale power markets; as we move more toward a grid architecture focused discussion, we must look at the whole system. We should watch how changes in the wholesale market characteristics and trends relate to what we are doing and TE on the distribution side. He remembers what he saw in the 90s when restructuring was first occurring in California. He is again seeing how people working with wholesale markets and those working on the distribution side are separated and generally don't talk to each other.

Ron M. agreed and said that maybe if we asked "Is there a relationship" between bulk power and distribution – that might be the topic, adding if not, what relationship should there be?

Lorenzo agreed with this and described them as two separate silos in the design evolution. Ultimately, they do come together and interact and affect each other. If we ignore that interaction it will cause problems. California did have a problem with their progression in the past.

Ron M. said that Jeff Taft recently had Paul DeMartini present to the grid architecture core team on the impacts of growth and DER deployments in the distribution systems on the bulk power system – they concluded that by the time the energy imbalance market gets established in California it will not be relevant because the drivers will have changed. He said changes are happening very rapidly.

Larisa Dobriansky agreed that this is timely saying that she heard last month (March 2020) from FERC chairman Chatterjee; he said they are refocusing on DER aggregation as part of the original order 841. It has been some time since they had a technical conference with representatives from both levels (wholesale and retail transmission distribution) and they intend to come up with an order this year to relate the two levels, based on the technical conference and the direction that order 841 has been going with respect to energy storage.

Dave LaVee commented on a paper that he has been working on for SGIP on the economic fundamentals that apply throughout industry – from supply, grid operators, down to the customer level; the fundamentals that he advocates addresses appropriate economic incentives and tie together all those things. The fundamentals and economic drivers apply across industry and that provide economic value universally.

Chris Villarreal – Another big issue not only with the alignment of transition planning and distribution planning but IRPS in states with IRP'S - silos are still not occurring. Utilities are struggling as to how to make that happen. It's not just limited to how the transition systems and distribution are going to be operated but it's how planning and resource planning is going to be impacted. Those silos are not being broken down either. All this results in higher costs to everybody.

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Ron Ambrosio said that in planning meetings he has reminded groups to careful not to let transactive energy be portrayed as a distribution only thing. There are lots of flexible energy resources emerging at the bulk level and at the supply end such as hybrid farms, large scale battery systems, etc.; we have to look at it not only from architectural point of view on the technical side but also on the business and policy side across the higher supply chain.

Larisa said this is what FERC is taking up; they are looking at what are the roles to be played in the future by the transmission at the wholesale and retail level – how to you harmonize and differentiate? Considerations such as Reliability and Resiliency are an issue. What should the priorities be? The mechanisms for coordinating and harmonizing the ICO and the DSO are in the equation. Many considerations are coming out in the FERC order.

Ron M. asked if there is a way to tie in the concerns of buildings and smart cities?

Ron A. said yes – as you include the whole energy supply chain like with smart buildings and campuses – IPP'S on renewable hybrid farms and smart cities are overlaid on top of the whole energy supply chain.

Tanya said for IT you have a lot of aggregation of sub-metered loads at the building level and the IT problem with centralized systems, but the cool thing about TE and the GWAC stack is when you look from an architectural standpoint, the people who are working on solutions and have to cross the silos must think about how to architect a solution given the fundamental technology changes and use case changes from wholesale market participation to reliability and voltage stabilization and other grid services... how can you use the same IT architecture for both use cases as the broader system evolves? When we think about the solution, there is still applicability to using smart cities sub-metered loads and disbursed products. You can have them working in a Federated distribution control system but still taking a signal from a bulk power markets...or be related to power markets instead of the grid operator at the distribution level.

Ron M. said he sees a lot of energy around a theme the covers energy supply chain from end to end, and identifying the silos that need to be broken down...is that a rough recap?

David Forfia disagreed saying that if you look at it from the TE info graphic with all the issues with the seams from the bulk all the way down to IOT and the individual nano grid...maybe that is the theme. The issues around bridging the seams between each one of those zones is what he summarized.

Ron M. said, “are the seams speed bumps or conduits.”?

Lorenzo added also, “are the seams well defined yet? They seem to be shifting.”

Ron M. said with that in mind he would like GWAC members Lorenzo Kristov, Ron Cunningham, and Stuart McCafferty to work on the initial draft of the F2F Fall Meeting Agenda. Dave LeVee also offered to work on it. Ron appreciated this but said they would start with a GWAC committee and then go from there.

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David Katz suggested that Ron B. could bring smart buildings to that group and the silos of green, and energy efficiency and smart could come together. He and Ron B. are working with CABA on this topic.

David Forfia offered to cover if Stuart can't make it. Ron M. also wanted someone on the edge – Tonya volunteered and said Ron B. or Kay could do that. Ron M. said all three could be on the invite and then see who can make the meetings. Tonya said she would step in but if she can't be that Ron B. or Kay could step in.

Action: Schedule a Fall F2F Agenda Planning meeting to include Lorenzo Kristov, Ron Cunningham, Stuart McCafferty, Ron Bernstein (smart buildings), and Tonya Barham (Edge) with Kay Aikin as an Edge alternate.

Ron M. suggested that the meeting timeframe is expected to be late September to early October and suggested that the F2F could be a virtual workshop and if needed and as part of planning GWAC should consider how to optimize our opportunity for success with the virtual approach.

Leonard Tillman shared that at his firm 90 day rolling period of no travel. He said this is not just due to health risks but also economic factors. They anticipate it to extend into the future not just from health perspective but also for economic reasons.

Ron M. agreed, but he said we have some time to think about it for now but at the next GWAC meeting in May we can decide if the Fall meeting should be virtual or face to face. He said he hopes that everyone can give input as to how to successfully do a virtual workshop or if they think there will be enough travel taking place that we could hold the meeting face to face.

Several on the call expressed a concern about having many people in a room for an extended period. David Forfia, Ron Bernstein, Kay Aikin and others said they were ready to make the decision today to start planning the Fall meeting as a virtual meeting now and then if things were to change there would still be enough time to move to a Face to Face meeting.

Action: GWAC members should think of ideas for a successful virtual Fall Face to Face meeting and bring ideas to the May GWAC meeting.

Liaison Reports

NIST - David Wollman – We are working on the NIST SmartGrid Framework 4.0 for finalization and lawyer review, and the federal register notice approval which is taking a bit longer than expected. We are also setting up a technical working committee for ADS (automated driving system safety) on operational design domain; this builds on a previous meeting. If you are interested in this group, please contact me offline and I can give you some additional information. Regarding supply chain, we are working on a response to the current situation around COVID19, and we have an agile production concept to reengineer the supply chain on the fly and cross domain interactions. On smart cities work we have a report out on the public safety super cluster working in a US/EU cluster and are taking a key performance indicator approach.

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He asked Chris Villarreal about the Smart Grid Interoperability report for smart grid operators to engage utilities?

Chris replied that it is at NIST for review. David said they are reviewing it; it looks good and hopefully it will be out soon.

ISO/IEC – Ken Wacks said they are proceeding with the semi-annual meeting which will be done remotely as a virtual meeting. The meeting notice went out last night. ISO uses Zoom for meetings. The meetings start on May 11 with rolling start times depending on what time zone you are in. It will be completed in 2-hour increments and spread out over the days as needed. He is asking project managers to do as much as they can offline such as roster updates to keep the meetings as efficient as possible. If you would like to participate as a guest or if you are interested in being a technical expert as part of the US delegation, please let Ken know and he will work with you to make that happen. He can send you the agenda or other information if you are interested.

Ken is chairing ISO/IEC JTC 1/SC 25/WG 1, the international committee that is developing a family of standards (60 so far) called the "Home Electronic System." These standards support interworking devices and IoT-related applications in homes and buildings with communication protocols, interface specifications, the residential gateway, cybersecurity, privacy protection, interoperability, and applications such as energy management. They have produced sophisticated energy management standards by specifying the Energy Management Agent (EMA) to help the occupant acquire power from public and local sources (wind, solar, and storage) and allocate this power to appliances and EVs according to customer preferences and budget. The EMA is now being expanded to apartment complexes by incorporating artificial intelligence (AI) features. Please contact Ken (<https://protect2.fireeye.com/v1/url?k=da325e3c-868760f3-da327429-0cc47adc5e60-027d8506394de152&q=1&e=dfe3afed-5a17-4ef3-9457-e081d0b3a7b7&u=http%3A%2F%2Fwww.kenwacks.com%2F>) about participating in the development of these world standards.

ISO/IEC have published several GWAC publications as international documents. The TE Framework is out for ballot now, results are due in a few weeks.

SEPA - David Forfia – on behalf of Aaron Smallwood

- They successfully launched the Smart Grid Ontology at DistribuTech and held a well-attended industry webinar
- SEPA is launching an Energy IoT Task Force within the next few months led by Michael Cohen of MITRE
- They are exploring options for parallel and virtual and options for SEPA major events (Grid Evolution Summit, Solar Power International and some of the regional events).
- Just launched (with NIST) the new SEPA Catalog of Test Programs and have had good traffic with expectations of growth over time as the catalog grows and is refined: <https://store.sepapower.org/s/searchdirectory?id=a3u1J000000c1RZ>

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- Aaron Smallwood sent kudos for Mark Knight due for the Conceptual model for TE coming out of the TE working group headed by Mark.
- The working groups for Architecture or Grid Edge may want to add their comments.
- Aaron wanted everyone to know that he does very much appreciate the opportunity to provide SEPA updates to GWAC

Ron Cunningham added that the TE ontology document was a draft of the initial thoughts of a small subset of the TE group. For the rest of the group on the call last Friday- they got more feedback for this document, also for the bigger picture of TE from its conceptual model and from high level architecture. They are trying to find the middle ground between the two – and deciding if they should they be two separate efforts? He noted that there is more to come out of the effort that Aaron had reported on.

Ron M. – shared that at the Grid Architecture working group meeting this past Monday they had an interesting discussion while preparing for the Grid Evolution Summit on Ontology and it may spill over into GWAC as they go forward with it. They will continue the discussion – they discussed ontology this week – including CIM and Multi-Speak issues.

EPRI - Gerald Gray – CIM started as an EPRI project in the 90s as far as the data model that underpins various CIM related standards such as network model exchange application integration transmission distribution energy markets. There has been a dustup at the IEC regarding standards. They take care of the standards themselves. The model has been maintained by the CIM User Group. So, in consultation with Margaret Goodrich EPRI released any of their claims to the underlying data model and granted the CIM User Group or rather the UCAIUG (the parent organization) an open source license to the model itself. In a similar vein EPRI has recently created several test scripts that can be used to demo compliance with some of the CIM standards and they are in the process of granting an open source license to the UCAIUG for their use as well. They were originally going to be used at the CIM compliance testing event that was to be held in Dallas that was postponed in March due to COVID. They are planning a relaunch.

Ron M. expressed interest in the CIM testing event and said some of the group has been trying to convince Margaret to do the event as a Virtual meeting and he asked if Gerry could help convince Margaret to try this approach.

Gerald understood the need but said it is challenging to set up a test environment. He noted that EPRI's test environment to support the test scripts runs on the Amazon Cloud so he noted that if they could come to an agreement [EPRI] could support that. He and Ron M. are open to talking more about this and talking with Margaret.

ASHRAE - Ron Bernstein – noted that the Consumer Technology Association (CTA) Spring meeting will be virtual and he thought of one interesting topic related to “the edge” on smart energy round table – smart home devices, distributed energy resources, and energy cloud aggregate. He said that CTA typically deals with a lot of home related products and solutions but here they are talking about DERs.

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Consumer Technology Association - Smart Energy Roundtable

Wednesday, May 13, 1-3 PM ET

Join industry experts to discuss the business of smart energy and chart the course for future smart home devices, distributed energy resources and energy cloud aggregators.

Ron B. added that he was asked this week to be interviewed for an article in a journal called Building Operating Management. He noted it is one of the larger publications on facilities and it has been around for many years. The article is on ASCO Microgrids.

Speakers will review existing communication standards and future of interoperability, and they will discuss potential gaps facing industry. The article will look at challenges and hurdles around interoperability in the area of microgrids, buildings and grid.

Ron posted this description of the paper in the chat window:

ASCO Microgrids white paper for Building Operating Management. The white paper will define microgrids and their benefits for commercial and institutional facilities. Power reliability, resilience and use of renewable energy will be covered, as well as emerging trends that could drive interest in microgrids. Other issues to be addressed include loads electrification, energy storage, building-grid integration and third party microgrids. For this white paper, we will be using Lawrence Berkeley National Laboratories (<https://building-microgrid.lbl.gov/>) definition of the two types of microgrids: "microgrids wholly on one site, akin to a traditional utility customer, which are usually called customer microgrids or true microgrids (μ grids), and microgrids that involve a segment of the legacy regulated grid, often called milligrids (mgrids)." For this white paper, the primary focus is on the narrower definition ("true microgrids").

URL: <https://building-microgrid.lbl.gov/>

He said the paper will define microgrids and their benefits for commercial and institutional facilities. Power reliability, resilience and use of renewable energy will be covered, as well as emerging trends that could drive interest in microgrids. Other issues to be addressed include loads electrification, energy storage, building-grid integration and third party microgrids. He mentioned the work of GWAC in the interview.

EBC – David Forfia filling in for Ward Camp: EBC is working on their not for profit status and making use of virtual meetings as part of that process.

NARUC - Chris Villarreal – NARUC is finalizing the draft of document on Smart Grid Interoperability with NIST which was mentioned earlier by David Wollman. It references the NIST Smart Grid Framework as well as the GWAC interoperability context study framework. This document will assist state commissions who are increasingly being asked to review increasingly technical distribution investments. NARUC is considering hosting a webinar about this document. If they do decide to do it Chris will share the meeting invitation with the GWAC.

Chair David Forfia asked for a motion to adjourn. Ron Bernstein gave the motion and Ron Cunningham gave the second.

Upon hearing no objections, David Forfia adjourned the meeting.