

## Meeting Minutes

July 25, 2018

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### GWAC Members

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David Forfia, Director, Enterprise Architecture & IT Transformation, Electric Reliability Council, TX

Ron Ambrosio, Chief Scientist, Utopus Insights, Inc.

Tanya Barham, Director of Operations, PECI

Ron Bernstein, President, RBCG, LLC

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

Stephen Knapp, Vice Pres. of Quality Assurance & Energy Markets, Power Analytics Corp.

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

James Mater, Co-Founder and Director, QualityLogic, Inc.

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

Tom Sloan, State Representative, Kansas

Leonard Tillman, Balch & Bingham, LLP

### Members Not Present

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Joe Hagerman, Senior Program Manager, ICF

Doug Houseman, Grid Modernization Lead, Burns & McDonnell

### GWAC Associates & Emeritus

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Chris Villarreal, President, Plugged In Strategies

Robert Burke, Principal, R. Burke, Consulting

Ken Wacks, Home, Building and Utility Systems

### GWAC Guests

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Rahul Bahadur, VMware

Trevor Gionet, Introspective Systems

Tanguy Hurbert, EPRI

Dave LeVee, Powercast

Aaron Snyder, EnerNex

### PNNL Support

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Mark Knight, GWAC Administrator

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### GWAC Online Meeting

Mark Knight opened the meeting and gave an overview of the meeting agenda.

Mark noted that the May minutes have been distributed to the Council. Farrokh Rahimi had sent in a correction which has been made. David Forfia asked if there was a motion to accept the May minutes with the correction by Farrokh. Tom Sloan gave the motion and Farrokh Rahim seconded the motion. David asked for approval by the council and the minutes were unanimously approved and will be added to the meeting records.

Chris Villarreal noted four upcoming regional meetings hosted by state commissions to talk about Grid Architecture, which DOE GMLC labs are involved in. They will be Sept. 12 for the Georgia PSC SE region, Sept. 27 for the Indiana Utility Regulatory Commission in Indianapolis for the Midwest region, San Francisco for the CA PUC Oct. 16, West region, and Nov. 7 in Warwick RI for NE region. These are open to the public, and NIST, NARUC and state commissions are coordinating. Input and feedback for NIST regarding the Interoperability Framework are requested. There will be a two day meeting on the Framework on Nov. 13, 14 or 12, 13, not sure. The framework will be addressed on Day 1, Day 2 is Cyber Security.

**Action: Chris will send an email out to the GWAC list.**

### Review Action Items

Mark Knight reminded GWAC participants to let him know in advance if you will miss any GWAC meetings.

Mark noted that he has created a list of upcoming meetings and GWAC participants are noted as well as speaking opportunities relevant to GWAC participants.

Mark has added Robert Burke to the GWAC Smart Building white paper effort.

### GWAC Related Conferences and Events

- IEEE PES General Meeting, August 5-9, 2018 Portland, OR
- ISO/IEC Tysons Corner, VA, Sep 24-28
- World Engineering Summit, Charlotte, October 17-19
- GWAC / Grid 3.0 Resilience Workshop, DC, Oct. 30 – 31, 2018
- POWER-GEN International, Orlando, FL, December 4 – 6, 2018
- ASHRAE Winter Conference, Atlanta, GA, Jan 12-16, 2019

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- Smart Energy Summit, Austin, TX, Feb. 18 – 20, 2019
- DistribuTECH, New Orleans, Feb 4 – 7, 2019
- IEEE ISGT, Washington DC, Feb. 18 – 21, 2019

James Mater also noted that there are three upcoming conferences that he is involved in; Solar Power International in Sept (SEPA), Sept. 24 – 27, 2018, James has two papers there, and another one hosted by CEATI on Oct 2, 3 - the Anaheim Smart Grid Conference, James is presenting there also. The 5<sup>th</sup> Annual Demand Response and Distributed Energy Resources in Oct. 16 – 17 in Costa Mesa, CA; James will have a DER panel on communications and interoperability. And lastly, the Smart Grid Northwest Conference, Grid FWD, in Vancouver BC, Oct 10 and 11, 2018.

Mark asked that James send him a quick email. Mark can ask Bryce about Smart Grid NW.

### **Action James Mater to send an email about the meetings with links to Mark Knight**

Mark is looking for GWAC panel ideas for who should be on the panel for the ASHRAE Winter conference in Atlanta GA, Jan. 14 - 16 2019. The panels will close at the end of August but abstracts are due this week. Mark will need ideas for a good panel and who to put on it. Mark should be at the conference, Ron Bernstein may be there, not certain.

David Forfia suggested that we do something around buildings, and DER integration - Mark will look into it.

### **Action: GWAC meeting participants if you have ideas please email ideas to Mark**

**Mark: Look into David's suggestion (NASPI, Linked in)**

### **Recap of TESC18**

We had 125 attendees with many GWAC members. The tutorial was standing room only. Attendees were from five continents. Mark Knight received good lots of good feedback and observed a lot of networking during breaks.

Ron Bernstein has created a website that houses all the conference presentations as well as audio files of the speakers for both TESC17 and TESC18: <http://www.rb-cg.com/GWAC/>

David Forfia noted that SEPA worked very hard to make TESC18 a success this year, its first time on the east coast. He urged all TESC18 GWAC attendees to be sure and say thank you to their SEPA contacts for hosting this year's conference. He also noted that if SEPA can collect registration fees from those who arrived on site without previously registering it will make the difference in a profitable conference or not. SEPA was not able to collect funds at the meeting but took business cards. If you know someone who has not yet paid please encourage them to do so soon. Mark or David can help get them in touch with the right SEPA contact to do so.

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Mark Knight noted that a GWAC article that will appear in Public Utilities Fortnightly (PUF); Five characteristics of a natural monopoly by Mark Knight and Tom Sloan.

Mark noted that the Grid Evolution Summit was held in July. Mark lead a SEPA Transactive Energy working group face to face meeting, on the last day of the conference, starting at 8:00am. Turnout was impressive with 55 attendees. The meeting held a policy panel with EEI, NARUC, NRECA and NYSSGC. Kerry Worthington with NARUC was the panel moderator. This SEPA working group is working on papers on TE and blockchain and also a TE conceptual model. Mark will circulate the drafts of these documents for review by the GWAC once they are ready.

**Action Mark: When SEPA drafts are ready circulate to the council.**

SEPA organizers of the Grid Evolution Summit have talked to David Forfia and Mark Knight about doing both a panel and a half day or full day workshop at next year's conference, both on Transactive Energy. For the half day workshop we would probably tap the people who helped put on the TESC18 tutorial which would be Tanya Barham, Ron Bernstein and Ron Melton. We have agreed to help out with a workshop of a yet to be determined duration.

David noted that next year's SEPA GES event will have a change of venue to the Grand Hyatt Hotel. David also noted that the SEPA working group at the Summit that Mark mentioned a few minutes ago had actually close to 100 attendees at the start of the meeting until a session on electric vehicles began and then several left but many of them stopped David later on to say how interested they were in Transactive Energy and they wished they could have stayed longer.

Regarding the future of the TESC, Mark and David have met with SEPA and they will not be partnering on this conference in the future. SEPA is interested in having it as a track within the Grid Evolution Summit but GWAC feedback favors keeping the meeting as a standalone event.

Mark noted the excellent working relationship that the conference had with SEPA throughout this year's conference.

Mark and David are talking with contacts at IEEE as a potential partner for next year's conference. Also Mark will be talking with SGNW about moving back to Portland Oregon next year. Also MIT has contacted Mark three times to say how much they enjoyed helping to host the conference this year and they have proposed hosting it next time at the Sloan business school in 2019.

University of Minnesota has expressed interest in hosting TESC19.

Tanya Barham asked about Arizona as a location given their newly passed legislation or Univ. of Minnesota given their interest in the past. Mark said that might be a mutually beneficial tie in if a group would step up as a potential host. She also noted that were the conference in Minnesota we might find support from the Wisconsin Energy Institute located in Madison, Wisconsin and also the Institute for Local Self Reliance.

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Chris Villarreal also suggested that there are several large companies located near Minneapolis such as Siemens, Honeywell and Eaton to name a few.

David Forfia noted that we need to act now to get some decisions made and narrow the field to a couple of choices to give us time to find not only a location but also a partner who can do the contracting portion that the GWAC cannot do. He stressed the need for urgency on this, and he suggested that we have this by the September meeting.

Chris Villarreal suggested that if Arizona was the choice, that we look at March or April due to the high summer temperatures. He agreed that we should pick a location and start targeting soon.

Tanya and Chris talked a bit more about Minnesota. Mark noted that hotel costs would be very reasonable. Tanya was very excited about Minnesota and thought we could get good support from Ellen Anderson again with Univ. of Minnesota, and that there was a lot of interest in the TESC18 panel that she hosted.

Ron Bernstein noted that all of the TESC18 slide decks and audio files are now on line, SEPA has sent out the link. He suggested that speakers put a link to their talk and audio on their linked in profile to help get a bit more promotion going.

**Action Mark: Check out the TESC18 files that Ron Bernstein created. Also contact Rachel Henderson so that she can send the link to everyone on her list.**

**Action: Mark Add the RCBG link to the minutes regarding TESC18 materials.**

Leonard Tillman noted that Arizona might also be a good choice if we can find a relevant sponsor. They are doing something no one else is doing right now. He would like Arizona as well as Minnesota to stay on the list.

Mark noted that he is still working with IEEE as a possible sponsor. He wants to be sure that we have other options in case they don't come through.

David Forfia summarized; Minnesota in late spring or early summer, Arizona in the fall, and IEEE are the three options that are going through.

David noted we could also tag team after the South by Southwest conference in Austin (the Energy Thought Summit, a 4 day event.) The hotel blocks would be already set up and we might be able to piggy back off that. We would need to team with the ECS team. The cons are it would be a short cycle. He thought it would be tough to squeeze in by March 20. It seems like it would be a struggle with the limited timeline and a volunteer team.

Farrokh thought that the Minnesota option might go well since Massoud Amin is in charge of IEEE Smart Grid Operations committee. If IEEE wants to partner and if U MN is available to host, that might be a good combination.

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Mark agreed, but he had reservations because IEEE is very large and moves rather slow. This could be an option but we need to have alternatives.

Ron Bernstein asked if SEPA could share their metrics from this last conference to influence other potential partners.

Mark said we don't have those metrics yet but we do know that it's borderline if the conference was in the black based on if all attendees, including the walk-ins, pay their registrations.

Tanya thought we could find academic partners that want to show thought leadership, they might not be concerned about staying in the black. Mark noted that U of Minnesota could provide a low cost facility. At MIT the auditorium was fairly expensive.

**Action Mark: look into the combination of University of Minnesota and IEEE.**

### TE Framework Update

Mark Knight is feeling pretty good about it. Lorenzo, Farrokh, Doug, Chris and Leonard have put some drafts together and they are looking pretty good, Mark will pull it all together then send it back for feedback. Mark discussed architecture top down and bottom up with Gerald Gray at the TESC18 and there is a feedback loop that can benefit design. We need to take a high level look at things. They talked about a diagram.

We want to have our updated draft completed by the end of September. Gerald Gray thinks it won't be easy but it's doable. The impact assessment is always tough. This could be a trigger for an architectural review if you have a technology change. He has some ideas for it. Gerald Gray sent a rewrite of his section on guiding principles to Ron Ambrosio. Ron said he has it but he hasn't updated the draft yet but he has looked through it. When we get back into the calls to update, he would like to review it with the same 4.3 team.

Chris Villarreal is making edits to 4.1 and will combine this with Leonard's and get it back to Mark.

**Action Mark: set up a meeting with Ron Ambrosio, Gerald Gray and others from that team.**

Mark announced the GWAC F2F and Grid 3.0 Resilience workshop will be Oct 30 and 31 at the NEMA offices in Rosslyn office just outside of Washington DC. It will start midday on the 30<sup>th</sup> and continue to the 31. We have a room for both days. GWAC members will be able to attend the Resilience portion but otherwise attendance is somewhat limited. On the morning of the 30<sup>st</sup> we will have a face to face meeting and the next day and a half will be the Resilience workshop. We will work on the Framework. Day 1 afternoon (for the Resilience workshop) will get everyone on the same page and then we will have discussion sessions. If we get enough GWAC members we can keep our offline discussions going as well into the evening.

Ron Melton, Ron Cunningham and Mark Knight talked at the Grid Evolution Summit about the Resilience Workshop agenda. Mark noted that there is no registration needed for GWAC members. Grid 3.0 is a

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loose alliance of industry thought leaders and organizations. The GMLC and national labs are involved, but it's on an informal level. The address for the NEMA office is 3200 17<sup>th</sup> Street North, # 900, Arlington, VA 22209. It is only 3 MTA stops from National Airport, near the metro. Key Bridge Marriott is close and several other hotels.

**Action Mark: Find out if we can use the NEMA Hotel rates. Mark will add the address to the agenda.**

### GWAC Associate Nominations

Mark Knight noted that July is the month where GWAC members can nominate for GWAC associate status. We have had a lot of email threads about this year's nominees. We have nominations so far, but we have a few days left if anyone still wants to nominate new associate members. We have a solid list of candidates and plenty of enthusiasm.

**Action: Mark will be putting a list together and arranging an online vote for associate GWAC members**

### GWAC White Papers Progress

Smart Buildings as Transactive Hubs: Ron Bernstein, Gerald Gray, Joe Hagerman, Phil Davis, Ken Wacks, Robert Burke.

Status: emails have been exchanged, plans are taking shape

Valuing Control in a TES / Economic evaluation metric for TES: Stephen Knapp, Farrokh Rahimi, Dave LeVee, Rahul Bahadur

Status: Need to plan scope and title

Mark noted that the Smart Buildings as Transactive Hubs papers is underway. The Valuation paper is still not really taking shape.

Mark is hoping to have a leader who can organize the calls for each paper.

Stephen Knapp agreed that the Valuation group, himself, Farrokh, David LeVee and Rahul Bahadur, they should go ahead and move forward and then start the process as an end of 2018 process. Mark will work with Stephen to come up with a title and then the group can work on the scope. Mark got some suggestions from Ron Bernstein and Joe Hagerman. Mark said he would be willing to lead it at first and Stephen said it's ready to move forward without any issues.

Ron Bernstein agreed that now is also a good time to move on the Smart Buildings piece. This topic could be valuable for the AHR ASHRAE meeting. Mark agreed that these papers will be good topics for GWAC sponsored panels. We can get these to Kim at AHR and these can be the background for the GWAC panels. We could have them as handouts for those panels.

Ron Bernstein said AHR will be in Atlanta in January 2019 and speakers will be needed, maybe some of the panel members would be interested.

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## EBC Proposed MOU with GWAC

Mark Knight noted that the blockchain session at TESC18 was moderated by Tony Giroti, a GWAC Emeritus member. Tony has started up an Energy Blockchain Consortium (EBC). Tony has asked David Forfia and Mark Knight about an MOU with GWAC. They have asked if GWAC would do an MOU with the energy consortium. Mark is still trying to figure out if this is a good fit for GWAC. GWAC has had an MOU with Gridwise Alliance, SEPA and SGIP in the past. Ward Camp is also looking at this with Tony.

### EBC Proposed MOU Areas

1. Message: Create and disperse a common message that helps articulate how Transactive energy use cases (problems) can be solved using an open Blockchain (proposed by EBC) and the importance of interoperability and Standards to achieving this vision.
2. Policy Framework: Identify a high level policy framework required to enable the execution of Transactive energy use cases using Blockchain.
3. Reference Architecture: GWAC to work with EBC to assist in the development of the Open Blockchain Reference Architecture. This initiative includes mapping the GWAC Stack to the EBC Open Blockchain Architecture. The architecture will serve as a reference architecture for Transactive energy use case implementations using Blockchain.
4. Participate in prioritizing implementation areas and identify partners and participants in implementations.
5. Participate in joint studies, grants & projects and help in consultative capacity on public and private projects.
6. Use Case types: To identify and document energy use cases or "types" of energy use cases that can be implemented using Blockchain.
7. Definition of Interoperability Standards: Identify areas of Blockchain Interoperability standards that includes standards for device, application and data interoperability within blockchain and across blockchains.
8. Help in the definition and design of programs that promotes Interoperability of apps and devices over Blockchain.
9. Participate and promote EBC initiatives (conference, webinars, others)
10. Participate in EBC conducted Use Case workshops, Executive industry roundtables, Summits, and other initiatives.

Mark read through the MOU areas that were proposed by EBC, noting that while some points are relevant to what the GWAC does, some areas were outside of the mission of the GWAC. Collaborating with them might be useful but it's not certain that an MOU is needed. Mark and David are interested in what the GWAC members think about it.

IEEE has a Standards group 2418 that Gerald Gray is participating in, IEEE has a broader view of blockchain certainly in the energy domain, and transactive energy use case is of some interest.

GWAC does not want to back a specific implementation approach for TE/blockchain. Ron Ambrosio commented that GWAC doesn't want to imply a firm endorsement of blockchain simply by having an MOU. He is not sure how valuable an MOU is to the council, it is probably more valuable to the EBC.

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Ron Bernstein noted that he has done a lot of MOUs with his groups and he always looks for a balance. He feels they would have a benefit from the GWAC's association with the DOE without much value to the GWAC.

Farrokh Rahimi feels energy blockchain is not yet well defined. There is a lot going on with it, maybe GWAC could help define what is meant by Energy Blockchain.

Lorenzo Kristov also noted the lack of definition and the use case discussion, which GWAC discussed at a meeting last spring to better define the TE use cases and draw up examples in some detail. We didn't get far enough in that exercise to even know if blockchain is a valuable tool for keeping those use cases. He concluded that Blockchain with regard to energy is a fuzzy concept at this point and he doesn't really see a lot of value for GWAC with the EBC MOU.

Mark Knight thought we can work with them but that an MOU is not needed, although energy blockchain is an interesting area. EBC will have a conference the same week as the Grid 3.0 workshop. Mark Knight and David Forfia have been invited to speak.

### News from Arizona

Regarding the news from Arizona Mark Knight provided a link, below, which explains how they are opening the first US transactive energy docket. Mark said link is a short article, well worth the read. He noted that if GWAC doesn't end up in Arizona for the TESC19 then we should try to get someone from Arizona on a panel or involved in the discussions.

Arizona regulators open first US transactive energy docket: <https://www.utilitydive.com/news/arizona-regulators-open-first-us-transactive-energy-docket/527900/>

The Arizona Commission on Monday, July 16 opened the nation's first state regulatory docket expressly focused on transactive energy at the request of Commissioner Andy Tobin.

### Request from GWAC Associate Mark Paterson

Mark Paterson, GWAC Associate had sent out a link to a newly published document by the Australian Energy Market Operator, entitled, "Open Energy Networks," to the extended council about a week ago. He is interested in receiving any observations or suggestions from GWAC members. Anyone on the call is welcome to contact him. They are looking at ways to integrate DER in the Australian system better and are also looking at including DSO. Mark Knight had trouble finding the document on the website. If you are interested we can contact Mark Paterson directly for a copy. Here is the link that he had sent:

<https://www.energynetworks.com.au/>

### GWAC Liaison Reports

Mark Knight noted the current GWAC Liaison Reports by organization:

SEPA – David Forfia

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NIST – David Wollman

ASHRAE / Buildings – Ron Bernstein

ISO / IEC – Ken Wacks

EPRI – Gerald Gray

IEEE – Doug Houseman

Others – (need to maintain a formal list of liaisons)

GWAC current Liaison role from the bylaws:

*A Liaison services a coordination and communication role between the GWAC and outside organizations. Liaisons represent the interests of their respective outside organizations to the GWAC and reciprocally are expected to represent the activities and decisions of the GWAC back to their organizations. Liaisons between other organizations are ex-officio members, though such positions can be filled by GWAC members. People holding liaison positions are nominated and so recognized by a vote of the GWAC.*

Mark Knight discussed the liaison role for GWAC which is outlined in the bylaws. The liaisons are considered exofficio GWAC positions and this group cannot vote but they are GWAC members. They represent the interest of their organization. Mark noted some of the organizations that could be represented. Mark suggests that we create a formal list of liaisons and vote on them. Mark asked Ron Ambrosio if he knew more about this. Ron Ambrosio said that Ron Melton and Steve Widergren might remember this. Ron Ambrosio doesn't remember anything like this other than having liaison contributions in the meeting agendas. Mark thought that having a blockchain liaison role might be better than having an MOU with EBC. It might be a good way to form a mutually beneficial relationship. Both Ron Ambrosio and Ron Bernstein thought this might be a good idea.

Ron Bernstein suggested adding an ANSI liaison for smart grid standards development and he could put his name in for it as a representative from LonMark International.

Aaron Snyder suggested adding UCAlug, an international users group.

Ken Wacks has been asked to be a volunteer liaison regarding international standards. Mark suggested that if Ken wants to keep doing that we can perhaps formalize it according to the bylaws.

Ken also noted that the next semi-annual meeting of ISO/IEC JTC 1/SC 25, developing international standards for home and building automation (including energy management), will be held September 24-28 in Falls Church, Virginia (near Washington, DC).

The meeting agenda includes standards for cyber security protection embedded in a gateway and energy management in apartment buildings.

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Anyone interested in attending this meeting may contact Ken (please see [www.kenwacks.com](http://www.kenwacks.com) for contact data). He also asked if GWAC has a document for him to introduce as a proposed international standard or technical report.

NARUC was suggested by David Katz. Mark agreed to add them to the list. They have referenced our work quite a bit.

Chris Villarreal said that he thought the GMLC architecture meeting at the SEPA Grid Evolution was really good. David Forfia suggested Mark tell Jeff Taft.

**Action: Mark add UCAIug, ANSI and NARUC as GWAC liaison groups.**

### Adjourn

David thanked everyone for attending today and asked for a motion to adjourn. Ron Bernstein gave the motion and Gerald Gray seconded the motion but quickly thanked his EPRI associate Hubert Tanguy who was attending as a guest today.

David thanked everyone and adjourned the meeting.