

## Day 1 Meeting Minutes May 21, 2013

---

### *Members*

Ron Ambrosio, IBM T.J. Watson Research Center  
Ward Camp, Landis + Gyr  
Paul De Martini, Newport Consulting Group  
Erich Gunther, EnerNex Corporation  
Alex Levinson, Lockheed Martin  
Tracy Markie, Engenuity, Small Box Energy  
Ken Wacks, consultant to Sensus Metering Systems Inc.  
Mark Knight, CGI  
David Forfia, Electric Reliability Council of Texas  
Jeff Gooding, Southern California Edison  
James Mater, QualityLogic

### *Support – Pacific Northwest National Laboratory (PNNL)*

Sherry Kowalski, PNNL  
Ron Melton, GWAC Administrator  
Andrew Nicholls, PNNL  
Andrew Steckley, PNNL  
Abhishek Somani, PNNL

### *Speakers and Guests*

H. Neal Allen, Southern Company Services  
Ed Cazalet', TeMix, Inc. (R)  
William Cox, Cox Software Architects  
Jerry Gibson, Alternate Energy Systems  
Joe Hagerman, U.S. Department of Energy  
Ali Ipakchi, Open Access Technology International, Inc. (OATI)  
Chris Irwin, U.S. Department of Energy  
Larry Lackey  
Terry Oliver, Bonneville Power Administration  
Farrokh Rahimi, Open Access Technology International, Inc. (OATI)  
Dave Wollman, NIST

### *Members – not present*

Tom Sloan, Kansas State Legislator  
Jeff Taft, Cisco

### *Members Emeritus*

Dave Harding

## Proprietary Information Notice

Ron Melton read the proprietary information disclosure policy according to the bylaws to the members and guests.

## Welcome and Administrative Business

### *Mark Knight, GWAC Chairman*

Mark Knight called the meeting to order at 8:07 am. Mark reviewed the agenda, discussed the changes in format, and asked for any additions.

Minutes from the web meeting that was held on March 20, 2013, and April 15, 2013 were presented to the council via e-mail. Erich Gunther motioned to accept the minutes as presented, Ken Wacks seconded the motion and the minutes were approved.

Ron Melton reviewed the calendar for the GWAC meetings and asked the Council for date and venue suggestions for face-to face meetings

**Events:**

- **October 28-30 - GridWeek 2013:** Event will be held at the Regan Center in Washington DC. The Council discussed the opportunity to socialize the Transactive Energy Framework document at GridWeek and decided to hold a brief GWAC face-to-face meeting in conjunction with event. Mark Knight and Ron Melton are to coordinate a GWAC meeting at GridWeek 2013 with the GridWeek Planning Committee.
- **GridInterop 2013:** Ron Melton reported that the feedback that he has received from the Department of Energy is that their priority for the Council is the transactive energy framework work and if that takes the majority of GWAC's budget then GridInterop will not be funded. Ron also mentioned that there were several people who wanted to share their work and the 2013 Transactive Energy Conference but the program committee was unable to offer them a speaking opportunity. There is a community that would like to talk more in-depth about their work they are doing around transactive energy and there needs to be a venue for this to be accomplished, such as a follow-up conference that would be focused on transactive energy.

Erich Gunther suggested that if the Council chooses not to hold GridInterop this year that they concentrate on the messaging. Discussion continued on the transition of GridInterop to transactive energy event verses continuing GridInterop with the focus on interoperability. Mark Knight recommended that GridInterop continue in 2014 for the purpose of continuing work on the Smart Grid Interoperability Model, which remains as beta document.

James Mater recommended that the Council create a short paper or report surrounding interoperability issues past and present GWAC's interoperability accomplishments and the future of interoperability.

Erich Gunther suggested that the Council use the GridWeek time-slot for a face-to-face meeting to cover where Interop is today and the transition to transactive energy.

Paul De Martini reported that Caltech is interested in having a workshop focusing on transactive energy. Paul suggested that they expand the meeting to include practitioner discussions in conjunction with a two-day GWAC meeting. The information that would be exchanged might be quite rich.

Paul De Martini suggested that CalTech would organize the meeting in terms of logistics and GWAC can focus on the practitioner speakers. Hosting a meeting the week of December 9 would not conflict with University of Florida workshop. Paul De Martini will coordinate with a Resnick activity.

Ron Melton reported that the next ISGT meeting will have a track on transactive energy, which he volunteered to be the track lead. Ron Melton suggested that we look into using this as a substitute to GridInterop.

Discussion continued regarding possible venues to socialize and collect feedback on the GWAC Transactive Energy Framework document.

- The Continental Automated Buildings Association Connection Home Council is having a forum in conjunction with Green Buildings November 19. Ken Wacks is building a session and he could weave in transactive energy. Ken is submitting an article for their magazine, “iHomes and Buildings,” on Transactive Energy.
- Tracy Markie will focus on the connection between buildings and transactive energy at the January 2014 ASHRAE Conference. Two separate sessions are planned Ron Melton shared that there are three documents being prepared by EERE:
  1. The Transactive Energy Framework
  2. The Technologies Opportunities Report
  3. Reference Report (SS from PNNL is leading this effort)

Joe Hagerman provided additional information about the reports during his presentation later that afternoon.

- **Fall Webcast:** – Marty Rosenberg suggested a webcast as a way to introduce the Transactive Energy Framework document to the broader community but after discussion the Council determined it would be more appropriate to postpone the webcast until fall when the document will be complete.

If Marty Rosenberg was to host the webinar he would seek out potential sponsorships to defray the webinar cost. A second option would be to have GWAC or PNNL host simple webinars. Mark Knight recommended the option of 5-10 minute podcasts that could be posted on the GWAC website. Ron Melton stated that Marty’s value proposition is, as EnergyBiz’s editor he has access to C-level utility executives.

#### Meetings:

The following meeting dates and actions were discussed and collectively decided upon by the Council.

- **June 26, 2013:** GWAC web Meeting
- **July 17:** GWAC Web Meeting
- **August 27/28/29:** Face to Face meeting in Washington DC
- **September 18:** Web Meeting
- **November 13:** Web Meeting
- **December (Week of the 9-13):** Face-to-Face meeting at LA - Paul De Martini has offered to host in conjunction with a meeting at the Resnick Institute. Offered Caltech to organize the event, will get more academics involved.

Discussion continued on side meeting planned for tomorrow:

De Martini – 3 documents.

Navigant Report (Paul to send a link to report)

EERE LBNL on Certs that is not closing the gap

## Welcome and Administrative Business

Ron Melton reviewed the actions items with the council.

- Ron Melton and Mark Knight to meet and plan future GWAC face-to-face meeting dates.
- Council members are to email thoughts and ideas regarding holding GridInterop 2013 to Ron Melton and Mark Knight.
- Ron Melton and Sherry Kowalski are to draft and distribute a second press release prompting smart grid community to register for conference.

## Liaison Reports

### *Ron Melton, GWAC Administrator*

- Ron Melton: - Ron Melton was asked by the DOE Department of International Policy to attend the International Smart Grid Action Network (ISGAN) Annex 6 meeting in Austria. The Annex 6 is the group that is working on integration and interface of transmission and distribution. Ron noted that there was a terminology difference that he needed to adjust to when partaking in the discussions. ISGAN sees challenges with Germany's aggressive renewable portfolio. ISGAN created a list with the 8 largest challenges between the interface between transmission and distribution. Interoperability was one of the eight items on the list of challenges.
- Tracy Markie: – Tracy Markie reported that he has been working to push transactive energy into the organizations that he is involved with such as LonMark. Conference material on the First International Transactive Energy Conference was mailed out to the LonMark members. Tracy Markie will lead two GWAC outreach/education sessions at the annual ASHRAE convention and tradeshow. This year's conference is planned January 18-22 in New York City.
- Ward Camp: – Ward Camp is organizing a speaker to discuss transactive energy at the National Town Meeting, in National Town Hall on demand response in Washington, D.C. in July.
- Bill Cox: – The International Electrotechnical Commission (IEC) PC118 has some focus on transactive interfaces and discussions. The group is working in conjunction with the International Electrotechnical Commission (IEC) TC57 group
- Jeff Gooding:- Zigbee Alliance completed SEP 2.0. SEP 2.0 is going to be moved out of Zigbee Alliance to IEEE P2030.05 working group. Wi-Fi Alliance, Zigbee, HomePlug, and Grid-to-Home are all working this summer through the testing and certification of devices. Jeff expects to see some Wi-Fi devices running SEP2 by the end of this year.
- Ken Wacks: – At the international Standards Meeting ISO/IEC under JTC1 (information technology) there is a subcommittee working on standards for the interconnection of IT equipment. Ken Wacks chairs the Working Group on the "Home Electronic System," which develops home and building system standards. ISO/IEC published a standard that Ken authored and edited called "The Energy Management Demand Response Model." The standard was originally published ten years ago as a technical report, went through extensive updates, and was published last summer as an international standard. Ken was asked to start planning the next generation of the standard over the next two years. A meeting was held in Washington D.C in April to start the thinking for the next generation standard. Ken invited speakers to address the working group about recent

- developments. Ken spoke on transactive energy and shared Paul De Martini's and Shawn Chandler's materials. Other speakers included Robbie Simpson, who spoke on SEP2, Rolf Bainer and Barry Hasser discussed Open ADR, and Joann Donelon introduced the ClimateTalk Alliance.
- Paul De Martini: – This summer there are several business model discussions where people are starting to rethink the business utility model, third-party business model Greg Ander from the Energy Foundation has identified twenty different initiatives focused on business models sustainability issues for the industry. Paul De Martini suggested the Council focus in the area in the future.
  - Erich Gunther:
    - The GWAC Stack as an IEEE standard process is moving forward.
    - IEEE Grid Vision 2050 Roadmap has been released and is available through IEEE Xplorer.
  - James Mater:
    - James Mater has been attending OpenADR Alliance meetings and has convince them to become a sponsor of the Transactive Energy Conference. Barry Hasser will be attending the conference
    - Media Plant will be doing a "Clean Tech" spread and are interested in including a grid component and they are excited in do a feature on the Transactive Energy Conference. James Mater to get Media Planet contact information to Ron Melton.
  - Ron Ambrosio: – GridWise Alliance will be releasing a report on grid resiliency, this report was prompted by Hurricane Sandy.
  - David Forfia: – SGIP 2.0 integration – SGIP membership is up to 180 paid memberships. The portal is up and running for paid members. There is an administrative staff of 2. The first face-to-face Technical Committee will be held the first week of June at NRECA facility. The Committee is addressing oversight and overlap issues within the committees and Domain Expert Working Groups.
  - Dave LeVee: –Works for PwrCast which provides forecasts to incorporate demand response in the electric energy market.

## Lunch Presentation

### ***Jeff Hammarlund, Portland State University.***

Jeff Hammarlund is an Adjunct Associate Professor at Portland State University's Mark Hatfield School of Government, a Senior Research Fellow at PSU's Executive Leadership Institute. He teaches graduate courses on energy, environmental and natural resource policy. During the past two years, his courses have included a new team-taught interdisciplinary course for graduate students and mid-career professionals called Planning the Smart Grid for Sustainable Communities.

Jeff Hammarlund presented on the Portland State University Smart Grid Course and the Pacific Northwest Center of Excellence for Clean Energy.

## EERE Family of Reports

### *Joe Hagerman, Department of Energy*

Joe Hagerman, the senior advisor for the Buildings Office provided an update of recent activities within the DOE's Energy Efficiency and Renewable Energy (EERE).

The EERE Buildings and Technology Office focuses on three areas that are all integrated:

- Research and Development - High impact technologies (5 year horizon to market)
- Market stimulation - accelerating tech to market
- Standards and Codes - Locking in the savings. Energy Star authority is shared with EPA - DOE oversees enforcement and the technical dimensions such as testing.

The goal of Building and Technology Office is to reduce building energy use by (compared to a 2010 baseline) and it is BTO's belief that the grid is largely there to serve buildings.

Joe Hagerman shared some of the successes of the BTO programs over the past 3-4 years and then discussed the new line of thinking BTO is taking in the future.

BTO is thinking about standards in new ways by engaging with utilities to find ways to increase the adoption of energy efficient products and to get higher penetration of new technology in the market place for consumers.

BTO is thinking about research in new ways by challenging and rewarding the industry to solve specific problems. Two examples of this are:

- The wireless sub-metering price increase by challenging the industry to create a meter at a \$100 per unit price point.
- The challenge to create a super-efficient rooftop unit for Wal-Mart which was met by Dakin McQuay who successfully tested and passed a new unit and then other major manufacturers followed suit with their own units.
- Open control system using Voltron Light is a market controller with a free version right which is an open source.

BTO is thinking of resources in new ways, for example:

- Energy Information Handbook for building automation systems have been created and available on Amazon
- Building performance database - actuarially based energy efficiency savings on existing buildings to estimate the probability of savings for new projects.

BTO is thinking across the meter in new ways, for example they are working on a list of materials that relate to the integration of technologies.

- Buildings to Grid Integration Technology Opportunities Report, this is a high level report that will discuss the characteristics, issues and opportunities and value propositions and needs. This report is pending publishing for public comment and the Council has been asked to review and comment on the report.
- Reference document on transactive based controls which is a pre-architecture document for a solution.

## **Transactive Energy Framework Working Session**

*Paul De Martini, GWAC Member & Mark Knight, GWAC*

Ron Melton introduced Abhishek Somani and Andrew Steckley from Pacific Northwest National Laboratory as resources that will be assisting with the creation of the Transactive Framework Document.

Mark Knight shared the written purpose and objective(s) of the TE Framework.

### **Purpose**

The purpose of the Transactive Energy framework is to provide the context for identifying and debating relevant issues to advance policy action, business development and technology development that make integration and monetization of distributed energy resources within the complex power system easier.

### **Objective(s)**

One objective of the framework is to facilitate discussion and ultimately agreement across many layers of interest. These layers span the details of the processes and technology involved to link systems together, to the understanding of the information exchanged, to the objectives of customers, businesses, organizations and economic and regulatory policy.

Discussion continued on the best approach to compile the Council's work for the TEF. Erich Gunther recommended that we need to leverage the materials we gather at this week's TEC and find a way to make it practical.

Jeff Gooding recommended that the Council identify when transactive energy in an appropriate mechanism for a particular area of the country. What has to be true in order for the transactive energy value proposition to make sense to all parties in a particular area?

Ron Melton shared that one of the key motivations for putting together this framework document is to frame the transactive energy discussion. The framework would provide an overarching point of reference that is not specific to any specific approach and that any give approach can be discussed in the framework.

Bill Cox recommends that the Council keeps in mind that not only can there be differences in approaches but also in semantics.

Ron Melton mentioned that Joe Hagerman wanted us to proceed independently from the reference document that Pacific Northwest National Laboratory is creating and then to compare products later. PNNL's document will be from the buildings and GWAC's view should be broader.

Discussion continued on if we could use the vision or definition as a starting point.

Jeff Taft explanation to a lay faith-based audience was transactive energy is an effort to provide the right signals and the ability to allow consumers to respond appropriately and shift their load to utilize electricity during times when sources, such as wind and sun are available, and monetarily rewarding consumers for doing the right thing and shifting their load. Transactive energy allows consumers a way to be part of the solution. Examples used moving water to reservoirs when excess wind is available.

Gordon Matthews discussed that transactive energy meets the need as a mechanism to dispatch loads to meet variable generation.

Paul De Martini wants the framework to make clear why any stakeholder should care about transactive energy. This should be at the front of the document such as an executive summary.

Discussion continued on retail time pricing and how is a consumers real time price going to be determined.

Paul De Martini stated that he felt it's important to understand the VIN diagram of the two documents being developed from PNNL for EERE. This would help distinguish the work that the Council is doing, and focus on the areas of most value.

Mark Knight introduced the audience and foundation for the document.

The intended audience will have a good understanding of interoperability, familiarity with the GWAC Interoperability Context-Setting Framework, and knowledge of energy markets and their concepts. People with this level of background should be reasonably able to understand the proposed ideas, be able to critically review them as proposals, and participate in reworking or refining the model so that it becomes a shared creation.

## Scope

### Ch. 1. Introduction (what)

- TE Definition
- TE/TEF Purpose
- TEF Objectives

### Ch. 2. Context Setting (why)

- Customer perspective
- Industry perspective

- Policy perspective
- Ch. 3. Framework (how)
  - Policy & Market Design
  - Business Models & Value Realization
  - TE Architecture
  - Cyber-Physical Infrastructure
- Ch. 4. Cross Cutting Considerations (how)
  - E2E Customer Integration
  - E2E System Engineering
- Ch. 5. TE Roadmap (when)
  - Future Scenarios
  - TE Roadmap
  - Case Studies
  - Decision maker Checklist
- Ch. 7. Misc
  - Governance
  - Acknowledgements
  - References

Ron Melton and Mark Knight asked the Council to review the outline scope of the Transactive Energy Framework Document and be prepared to discuss further on day two of the meeting

## Adjourn

Mark Knight adjourned the meeting for the day at 5:15 p.m.

## Day 2 Meeting Minutes May 22, 2013

### Proprietary Information Notice

Meeting resumed at 8:35 am. Ron Melton read the proprietary information disclosure policy according to the bylaws to the members and guests.

### Welcome and Recap of Day 2 Objectives

***Mark Knight, GWAC Administrator, Ron Melton, GWAC Administrator***

Workshop participants recapped the results from the previous day's discussions. Mark Knight recommended that the Council create a storyboard to define and drive the section writing points. Paul De Martini suggested that we consider the stakeholders and perhaps create a small group from each of the various stakeholder groups that can provide the Council a usability perspective.

Discussion continued on the timeline.

5/22	Agree on Table of Contents (Based in Interoperability Framework at GWAC Atlanta Workshop)
6/07	Small team to complete introduction including targeted audience and key definitions
6/15	Identify non-GWAV contributors and expert reviewers
6/30	**DOE Review and Approve Transactive Energy Framework Scope
8/01	Review and Approval on Intermediate Draft
8/15	**DOE Review and Approval on Intermediate Draft
9/30	Summarize Transactive Energy Framework for GridWeek
10/15	Review and Approve Final Draft
10/29	Present components at GridWeek
10/30	**DOE Review and Approve Final Draft
11/15	Final Version Released

Agreement was reached to define the core essence of what the framework is about. Ron Melton anticipates this to be a 20-25 page document that will be the heart and soul of the framework document, The Council defines extensions of the core and then seeks feedback on the core and extension and this is what shapes the product.

Each section of the framework is going to require a team lead to manage and coordinate the work, contributors to provide the thought leadership and to complete writing assignments and reviewers to provide feedback.

Chris Irwin suggested that Transactive Energy Framework has the opportunity to dole out homework assignments to the rest of the world. If this is a true framework then it should inspire others to go out and do work and making their own ideas and to use the GWAC Framework as a coordinating document. GWAC would then be the center or action of continues thought rather than continually having to originate.

The Council decided to create a scope or core of the framework to be used as a jumping off point for further work, this scope would be socialized at GridWeek and at the GWAC early winter meeting. The goal of the framework is to build and stimulate a community that is leading the evolution of the power system in a useful way.

Lead and writing assignments are as listed in the below chart.

Chapter	Leader	Contributors
Ch.0. (Recap of GWAC Stack)	Bill Cox	
Ch. 1. Introduction (what) – <ul style="list-style-type: none"> <li>• TE Definition</li> <li>• TE/TEF Purpose</li> <li>• TEF Objectives</li> </ul>	Ron Melton	Bill Cox
Ch. 2. Context Setting (why) <ul style="list-style-type: none"> <li>• Customer perspective</li> <li>• Industry perspective</li> <li>• Policy perspective</li> </ul>	Mark Knight	Industry perspective – Jeff Gooding (utility perspective) to Contribute Policy perspective – Ward Camp, Tom Sloan, Ken Nichol

<p>Ch. 3. Framework (how) – -</p> <ul style="list-style-type: none"> <li>• Policy &amp; Market Design</li> <li>• Business Models &amp; Value Realization</li> <li>• TE Architecture</li> <li>• Cyber-Physical Infrastructure</li> </ul>	<p>Jeff Gooding</p>	<p>Policy &amp; Market Design- Jeff Gooding Business Models &amp; Value Realization – Paul De Martini TE Architecture – Jeff Taft , Ron Ambrosio Cyber-Physical Infrastructure – Erich Gunther</p>
<p>Ch. 4. Cross Cutting Considerations (how)</p> <ul style="list-style-type: none"> <li>• E2E Customer Integration</li> <li>• E2E System Engineering</li> </ul>		
<p>Ch. 5. TE Roadmap (when)</p> <ul style="list-style-type: none"> <li>• Future Scenarios</li> <li>• TE Roadmap</li> <li>• Case Studies</li> <li>• Decision maker Checklist</li> </ul>		
<p>Ch. 7. Misc</p> <ul style="list-style-type: none"> <li>• Governance</li> <li>• Acknowledgements</li> <li>• References</li> </ul>		
<p>Appendices (TBD)</p>		

Tracy Markie volunteered to contribute to subjects involving buildings.

## Transactive Energy Conference Planning

**Ron Melton, GWAC Administrator, Mark Knight, GWAC Chairman, James Mater, GWAC Member**

In preparation for the upcoming Transactive Energy Conference, the members reviewed and presented their information to the group for feedback and refinement.

## Action Items

**Ron Melton, GWAC Administrator**

- GWAC Event and Meeting Planning
  - Erich Gunther, Mark Knight and Ron Melton to coordinate GWAC face-to-face meeting with GridWeek2013 planning committee
  - Paul De Martini to look into coordinating a GWAC face-to-face meeting in southern California at the Resnick Research Center. Paul to report back to Council in 3 days.
  - Sherry Kowalski to add all meeting dates on calendar.
- Ron Melton and Mark Knight to continue work on the formal agreement between SGIP and GWAC.

- Actions from Joe Hagerman's recommendations:
  - Create FAQ section on GWAC website
  - Identify transactive case studies
  - Council to participate in DOE workshops
  - Ron Melton and Andrew Nicholls to coordinate on possible EERE family of reports authors
  - Look into possible Voltron briefing for GWAC
- James Mater to forward Media Planet contact information to Ron Melton for review and comment.
- GWAC deliverable to create a 25 page final document on Transactive Energy to be socialized at GridWeek 2013 October 28-29.
  - Mark Knight is responsible for incorporating the outline scope changes
    - Add section 0
    - Add storyboard for future press release

## **Adjourn**

Erich Gunther moved to adjourn the meeting/workshop, Jeff Gooding seconded the motion and the meeting/workshop adjourned the meeting at 3:50 p.m.