

Meeting Minutes October 31, 2012

Members

Ron Ambrosio, IBM T.J. Watson Research Center (R)
Ward Camp, Landis + Gyr
Paul De Martini, Newport Consulting Group
Erich Gunther, EnerNex Corporation
Alex Levinson, Lockheed Martin (R)
Tracy Markie, Engenuity, Small Box Energy
Bob Saint, NRECA
Ken Wacks, consultant to Sensus Metering Systems Inc.
Mark Knight, CGI (R)
Robert Burke, ISO New England

Associates

James Mater, QualityLogic
Doug Houseman, EnerNex

Support – Pacific Northwest National Laboratory (PNNL)

Ron Melton, PNNL & GWAC Administrator

Sherry Kowalski, PNNL

Speakers and Guests

Ed Cazalet', TeMix
Donny Helm, Oncor
Steven Low, Caltech
Anto Budiardjo, Clasma Events
Leonard Tillman,

Members – not present

Rik Drummond, Drummond Group
Tony Giroti, Bridge Energy Group, Inc.
Tom Sloan, Kansas State Legislator

Members Emeritus

Proprietary Information Notice

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

Welcome and Administrative Business

Erich Gunther

Erich Gunther called the meeting to order at 8:02 am. Erich reviewed the agenda, discussed the changes in format, and asked for any additions.

Minutes from the August 28-29 face-to-face meeting that was held in Seattle were presented to council via e-mail. Corrections were received from Mark Knight. Ken Wacks motioned to accept

the minutes as presented, Tracy Markie seconded the motion and the minutes were approved as presented.

Minutes from the web meeting that was held on September 23, 2012, were presented to the council via e-mail. Corrections were received from Mark Knight. Paul De Martini motioned to accept the minutes with corrections, Tracy Markie seconded the motion and the minutes were approved as with corrections.

Ron Melton reviewed the calendar for the GWAC meetings and the upcoming outreach dates:

- **November 14, 2012:** GWAC web meeting
- **December 3-6, 2012:** Grid-Interop, Irving, TX
- **January 23, 2013:** GWAC web meeting
- **February 5-6, 2013:** GWAC face-to-face meeting, Atlanta, GA
- **March 20, 2013:** GWAC web meeting
- **April 24, 2013:** GWAC web meeting
- **May 21-23, 2013:** GWAC face-to-face meeting in Portland, OR
- **May 23-24, 2013:** Pacific Northwest Transactive Energy Workshop
- **June 24, 2013:** GWAC web meeting

Ron Melton reviewed the open action items from the previous meeting:

- Ron Melton and Chris Irwin to have an offline transactive energy prospecting discussion.
- James Mater will assist with the logistics' of the GWAC May face-to-face meeting by approaching Portland General Electric to see if they would be willing to host the venue.

GridWise Architecture Council Call for Candidates

Ron Melton, PNNL & GWAC Administrator

Ron Melton reviewed the call for candidate's process and the proposed schedule with the Council.

- Poll members for expiring terms. GWAC By-Laws call for a minimum of 20% turnover
 - Robert Burke – Moving to Emeritus
 - Ward Camp –requested to continue
 - Toni Giroti - unknown
 - Track Markie – requested to continue
 - Bob Saint - provisional
 - Rik Drummond (resignation)
- Open call for candidate's on November 1, 2012
- Application Period closes December 15' 2012
- Nomination selection period is from 1/2/2013 to 1/18/2013 where the committee reviews applications and selects a "slate." The selection committee consists of the GWAC Administrator, a DOE person, a GWAC member not up for renewal, and one outsider. This year's committee will consist of:
 - Chris Irwin, DOE
 - Gerald FitzPatrick, NIST

- Erich Gunther, GWAC
- Ron Ambrosio, GWAC
- Ron Melton, GWAC Administrator
- Slate submitted for confirmation at GWAC web meeting on 1/23/2013

A poster announcement and materials will be available at Grid-Interop to promote the call for candidates. The Council is seeking new members with testing/interoperability testing back ground.

Grid-Interop 2012 Planning

Ron Melton, PNNL & GWAC Administrator, Todd Halter, PNNL, Paul De Martini, GWAC Member

Todd Halter and Ron Melton lead a discussion on roles and responsibilities to develop the Grid-Interop Foundation Session and the various workshops and boot camps.

Draft presentations are due on November 14, 2012 to be reviewed by the Council at the web meeting.

GWAC will conduct a meeting focusing on grid resiliencies on Monday, December 3 from 5:45-7:00 pm. Erich Gunther will coordinate speakers and create an abstract and agenda for meeting.

Lunch Speaker

Donny Helm, Oncor

Donny Helm from Oncor Electricity Delivery presented on the “The Challenges of Establishing a Common AMS View in Texas.” The presentation has been saved on the GridWise® Architecture Council SharePoint site.

Workshop Introduction and Objectives

Ron Melton, PNNL & GWAC Administrator

Erich Gunter welcomed the speakers and guests to the workshop which will focus on the state of transactive energy. Throughout the year, the Council’s workshop will focus on various topics around transactive energy. Two future workshops have been scheduled and are listed below:

- February 5-6 at the General Electric Smart Grid center of Excellence in Atlanta, Georgia
- May 21-22 at the World Trade Center in Portland, Oregon

Summary of PNNL Transactive Energy Activities

Ron Melton, PNNL & GWAC Administrator

The starting point of Transactive Energy began in May 2011 where the first GWAC Transactive Energy workshop was held at OATI in California. The work at this workshop led to the development of a vision, white paper, and sessions at the 2012 IEEE ISGT meeting. The second GWAC Transactive Energy Workshop was held in March of 2012 at IBM T.J. Watson Labs where the discussion continued and a working group was created to develop a Transactive Energy Road Map.

Transactive energy definition is as follows: Transactive energy approaches use economic or market based constructs to manage the generation, consumption or flow of electric power within an electric power system while considering grid reliability constraints.

Presentation summary: The Pacific Northwest Smart Grid Demonstration is one of 16 regional projects funded by the American Recovery and Reinvestment Act of 2009. The project is led by Battelle in Richland, WA, and includes participation by University of Washington, 10 utilities across the five state region of Washington, Oregon, Idaho, Montana and Wyoming, and five technology providers including IBM Research, IBM Netezza, Alstom Grid, 3TIER and Quality Logic. The five main objectives of the project are to invest in regional smart grid infrastructure, quantify costs and benefits of smart grid technology, develop a wide area communications protocol, smart grid standards and to facilitate the integration of wind and other renewable energy resources through a smart grid application called transactive control. The Project Director, Dr. Ron Melton (UW – BSEE 1977), will present an overview of the project with emphasis on transactive control of assets throughout the electric power system.

TeMix Update

Ed Cazalet, TeMix

Presentation summary: This presentation defines Transactive Energy as a business process for energy transactions. A long-term vision for Transactive Energy is described as Party-to-Party or Peer-to-Peer transactive processes.

Recently approved general standards for Transactive Energy are described. These standards also specify a simplified profile called Transactive Energy Market Information Exchange (TeMix). The profile supports several market clearing approaches with an emphasis on simple micro-transactions and asynchronous, and decentralized control of devices in response to sequences of forward micro tenders (buy and sell offers for an energy quantity for a time interval). The presentation describes how these techniques can be applied to the end-to-end operation of national and international grids with millions of markets, billions of customers, and trillions of devices.

The presentation also proposes how to transition from current retail tariffs based on requirements tariffs to transactive tariffs and rates that also satisfy current cost of service recovery and social objectives. Additionally, an example of how to interface transactive energy with current centralized transmission operator markets and distribution operators is discussed.

Ultra Large Scale Power System Control Architecture

Jeff Taft – Cisco

Presentation summary: Changes in functional requirements for power grids have led to the need for a new ultra-large scale control framework for the entire power delivery chain. Traditional grid controls are increasingly inadequate for modern grids, as are traditional control design methods. We propose new architecture for grid control that addresses the problems of federation, disaggregation, constraint fusion, as well as the traditional problems of control system stability, robustness, and response for advanced grid operations. This framework also provides the context for integration of innovative energy services without the danger of destabilizing grid operations at large scale deployment or penetration.

We believe it is appropriate and necessary that architecture for advanced power systems to be based on an ultra-large scale control framework and that such an architecture be developed and promulgated to the industry before investments in patch-fix approaches of new functionality become locked in via large scale investment.

Control of Massive Networks of DERs

Steven Low, Caltech

Presentation summary:

In this presentation, I will describe the high-level motivation for our power system research and then provide a sampling of research results related to transitive energy. We envision a future network where hundreds of millions of active endpoints which, unlike the passive endpoints today that only consume, can also generate, sense, communicate, compute and actuate. They will create both a severe risk and a tremendous opportunity: an interconnected system of billions of DERs introducing rapid, large, and random fluctuations in power supply and demand, voltage and frequency, and our increased capability to coordinate and optimize their operation.

We explore a control architecture where intelligence is embedded everywhere and where each DER make local decisions based on local information, in a such a way that the global network behavior is understandable, stable, and efficient.

Transactive Energy Roadmap Summary

Ed Cazalet', TeMix

Presentation summary: This presentation describes a roadmap for the evolution of Transactive Energy for the United States. At the March 28-29, 2012 Transactive Energy Workshop of the GridWise Architecture Council, the participants agreed to form a small workgroup chaired by Ed Cazalet with a plan to have weekly web meetings to develop and refine the roadmap.

Additionally, many other members of the Transactive Energy Workshop participated from time to time and provided comments. The purpose of this presentation is to expose the roadmap to the larger GridWise Architectural Council membership and solicit discussion and feedback for further work on the roadmap.

This roadmap envisions an evolutionary process from today's grid to a mature Transactive Energy grid. Different regions and elements of the grid within each region evolve at different paces; hence we set overlapping ranges of dates for each stage in the roadmap. The roadmap is a living document to be updated as necessary.

The roadmap summarizes an overall vision for Transactive Energy. The roadmap is organized into tracks; the retail, distribution, wholesale spot, and transmission service tracks describe the end-to-end grid services. Supporting functions such as adequacy and reliability, ancillary services, standards, time intervals, scheduling, settlement, transaction clearing algorithms and device and system management algorithms are addressed. Roadmap tracks for grid participants such as distributed generation, grid generation, renewables, customers, plug-in electric vehicles, storage, micromarkets and microgrids, and intermediaries such as power marketers are described.

Summary and Day 2 Objectives

Ron Melton, PNNL & GWAC Administrator

Ron Melton thanked the special speakers and participants that made GWAC's workshop a success. Ron asked that the meeting participant consider the day's presentations overnight and be prepared to contribute to next day's discussions as the workshop continues.

Adjourn

Erich Gunther adjourned the meeting for the day at 5:30 p.m.