GridWise® Architecture Council Workshop 2nd Transactive Energy Workshop

March 28-29, 2012

IBM T.J. Watson Research Center
Yorktown Heights, NY

The GridWise® Architecture Council (GWAC) will host its second workshop on Transactive Energy at IBM's T.J. Watson Research Center on March 28 – 29, 2012. This workshop will expand on the activities and results of a previous workshop held at OATI in May 2011. The objective of the previous workshop was to bring together a small number of people engaged in research and development of transactive energy techniques to share their approaches, discuss the nature of these approaches, identify opportunities for collaboration, and identify research and development needs. Each participant described their work through presentation to the group. Proceedings of the workshop have been published by the GWAC through Pacific Northwest National Laboratory (PNNL) on www.gridwiseac.org.

The 2012 Transactive Energy Workshop (TEW) is intended to engage a broader group including researchers and others in the electric power industry with an interest in the topic. The first day of the workshop will consist of presentations from last year's participants providing an update on their ongoing work and presentations from new participants describing their work related to this topic. The second day will consist of working sessions to finalize a transactive energy white paper, discuss tutorial material on transactive energy to be presented at upcoming meetings, and to coordinate transactive energy panel sessions and tracks at meetings including Grid-Interop 2012 and the 2013 IEEE Innovative Smart Grid Technologies conference.

Expectations of Participants:

- Respond with an intent to attend to Ron Melton by **Friday, March 9th**
- Prepare an extended abstract (up to two pages) for publication in the workshop proceedings – **Due to Ron Melton by COB – Tuesday, March 13th**
- From those that submit abstracts around 12 will be selected for 30 minute presentations
- Attendance and participation is desired by all, even if not selected for a presentation

For further information contact:

Dr. Ron Melton

Pacific Northwest National Laboratory
P.O. Box 999, MSIN K1-85
Richland, WA 99352
ron.melton@pnnl.gov
509-372-6777

Background information if provided on the next page

What is Transactive Energy?

The term "transactive energy" is used here to refer to **techniques for managing the generation, consumption or flow of electric power within an electric power system through the use of economic or market based constructs while considering grid reliability constraints**. The term "transactive" comes from considering that decisions are made based on a value. These decisions may be analogous to or literally economic transactions. An example of an application of a transactive energy technique is the double auction market used to control responsive demand side assets in the GridWise Olympic Peninsula Project[1]. Another would be the TeMix work of Ed Cazalet[2]. Transactive energy techniques may be localized to managing a specific part of the power system, for example, residential demand response. They may also be proposed for managing activity within the electric power system from end-to-end (generation to consumption) such as the transactive control technique being developed for the Pacific Northwest Smart Grid Demonstration project[3,4]. An extreme example would be a literal implementation of "prices-to-devices" in which appliances respond to a real-time price signal.

The current situation is that dynamic pricing is widely used in the wholesale power markets. Balancing authorities and others operations such as hydro desks routinely trade on the spot market to buy or sell power for very near term needs. In addition dynamic pricing tariffs are being tried in a number of retail markets, for example, the PowerCentsDC dynamic pricing pilot[5].

In addition to these practical applications research is taking place on more sophisticated techniques such as the previously cited work on transactive control. The community of people performing this research has not had a focused opportunity to discuss their work – thus this workshop.

2011 Workshop Participants

Ron Melton, Pacific Northwest National Laboratory	Ali Ipakchi, OATI
Rob Pratt, Pacific Northwest National Laboratory	Farokh Rahimi, OATI
Todd Halter, Pacific Northwest National Laboratory	Anna Scaglione, UC Davis
Chris Irwin, US Department of Energy	Mahnoosh Alizadeh, UC Davis
Terry Oliver, Bonneville Power Administration	Robert Burke, New England ISO

[1] Hammerstrom, D.J., et al, "Pacific Northwest GridWise™ Testbed Demonstration Projets: Part I. Olympic Peninsula Project", PNNL-17167, October 2007, Pacific Northwest National Laboratory, Richland WA

[2] Cazalet, E.G., "TeMIX: A Foundation for Transactive Energy in a Smart Grid World", presented at Grid-Interop 2010, Chicago, IL http://www.pointview.com/data/files/2/1062/1878.pdf

[3] Hammerstrom, DJ, et al, "Standardization of a Hierarchical Transactive Control System", in the Proceedings of Grid-Interop 2009, November 2009, Denver, CO, pp 35 – 41. http://www.gridwiseac.org/pdfs/forum_papers09/don-business.pdf

[4] http://www.pnwsmartgrid.org

[5] http://www.powercentsdc.org

Ron Ambrosio, IBM T.J. Watson Research Center Ed Cazalet, TeMIX, Inc.