

# Smart Grid Demonstration Advisory Update



An EPRI Progress Report

April 23, 2009

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The EPRI Smart Grid Demonstration Initiative is a five year collaborative research effort focused on design, implementation, and assessment of field demonstrations to address prevalent challenges with **integrating distributed energy resources** in grid and market operations to create a "Virtual Power Plant."

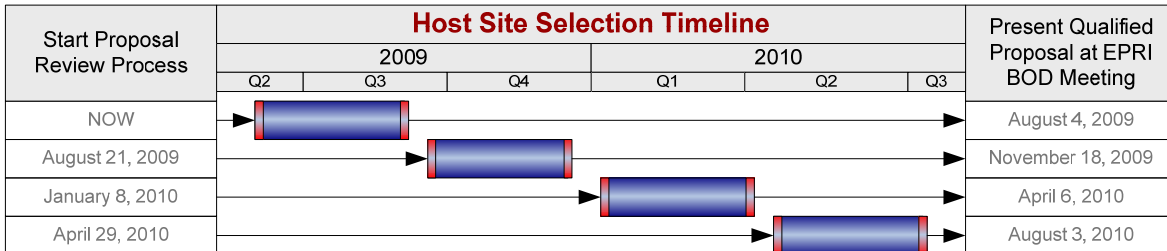
The newsletter provides periodic updates on the project as well as updates on relevant industry news and events. If you have comments about the newsletter, please contact Matt Wakefield at 865-218-8087, [mwakefield@epri.com](mailto:mwakefield@epri.com).

**PROJECT UPDATE**

**EPRI's Smart Grid Host-Site Selection Process – New projects under evaluation**

**EPRI Technical Team Review for Projects under Consideration for August, 2009**

All members of the Smart Grid Demonstration Collaborative are eligible to be a host site. If you have a project you would like to be considered as a host-site, please contact Matt Wakefield ASAP as the process takes approximately three (3) months.



Four more host site review cycles are left and all host-sites project selections will be made August 2010, so plan accordingly to ensure we can meet your goals if you have a qualified project.

**Visit the EPRI Smart Grid Resource Center & Use Case Repository for Public Updates**

[www.smartgrid.epri.com](http://www.smartgrid.epri.com)

The EPRI Smart Grid Resource Center is a public smart grid collaborative resource, The scope of this resource will be expanded over the next year and we plan to coordinate with the DOE Smart Grid Clearinghouse effort to avoid duplication of efforts.

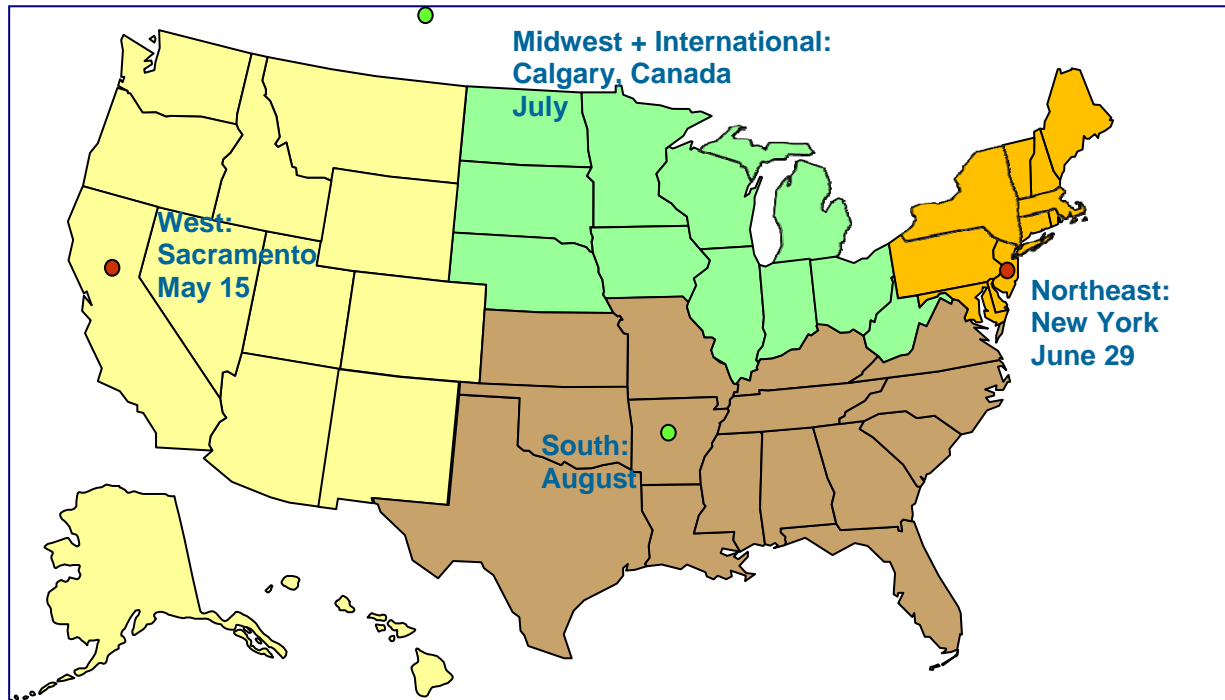


**Task 1: Analytics work in progress**

**Subtask 1.1 – Development of Regional Profiles**

EPRI Project Manager is Dr. Angela Chuang

EPRI is hosting four regional workshops as part of the smart grid demonstration initiative to develop regional profiles and lessons learned. The workshops are designed to collect information in a well-structured fashion to be able to relate disparate activities with one another under common frameworks. The workshops will focus on developing a collective perspective on 1) regional drivers and challenges for distributed resource integration, 2) activities to integrate distributed resources in grid and market systems, and 3) existing and planned smart grid demonstrations. Resulting summaries will include identification of relevant demonstration activities and regional demonstration needs.



**Subtask 1.5 – Develop Framework for Economic Assessment**

EPRI Project Manager is Dr. Bernie Neenan.

Preliminary research is being jointly developed between EPRI, DOE & Oak Ridge National Laboratory to establish mutually exclusive and exhaustive categorization of the benefits that might be attributable to virtually any smart grid investment. We have established a project team comprised of subject matter experts from several disciplines. We expect to have recommendations available by this summer to inform and shape development of protocols that will be employed for smart grid projects.

**Subtask 1.6 – Develop Scope and Mapping of Demonstration Projects**

EPRI Project Manager is Matt Wakefield

The initial report, Smart Grid Distributed Energy Resources (DER) Project Assessment, Product ID 1018945, is in the process of being published. This initial report provides a good background about what a smart grid is, potential benefits from a smart grid, Standardization efforts and an assessment tool of smart grid DER Technologies. The Smart Grid Self Assessment tool will help you evaluate the value of your existing smart grid projects and assess the impacts of various system improvements. In addition, we have identified a number of smart grid attributes that are under consideration for the public tracking of national and international smart grid projects.

This report, like many of the deliverables in task 1 & 2 will be built upon as we develop new learning's throughout the 5 year initiative.

**Task 2: Critical Integration Technologies**

**Subtask 2.1 – Develop Architecture Reference Guide for Distributed Resource Integration.**

In Progress, EPRI Project Manager is Matt Wakefield.

Currently compiling examples of case studies that highlight the impact of emerging requirements exceeded the boundary of capabilities of deployed infrastructure. The follow-up task will be to identify emerging requirements for Distributed Energy Resource (DER) communication and control to minimize the chances of obsolescence during asset's economic lifetime. The preliminary report is expected to be complete this fall, but an update will be provided at the Smart Grid Advisory meeting on June 23<sup>rd</sup> & 24<sup>th</sup>.

### **Subtask 2.4 – Develop Aggregation Methods and Tools**

In Progress, EPRI Project Manager is Dr. Angela Chuang

Among other things, this task intends to investigate gaps in market protocols, methods, and tools for aggregating resources that otherwise do not individually qualify for participation in regional electricity markets due to MW size limitations.

### **Subtask 2.5 – Develop DER Controller Requirements**

In Progress, EPRI Project Managers are Matt Wakefield and Gale Horst

A forward looking evaluation of requirements for Distributed Energy Resource Control is in progress. Can you characterize resource generically (i.e. capacity, availability, etc.) such that from a resource planning perspective, it doesn't matter what the resource physically is whether it's storage, distributed generation, intermittent renewables or a demand response resource. This first white paper will be evaluated with coordination and evaluation of the evaluation of an Open Source OpenADR Server and Client platform for testing. A project update will be provided at the Smart Grid Advisory meeting.

### **Subtask 2.6 – Critical Integration Technologies**

Several Technologies and Field Trials are being considered. Below are two projects that we will provide updates on at the smart grid advisory meeting. Several other critical technologies are being considered for evaluation and as plans mature, updates will be provided. Any Smart Grid Collaborator that has a critical integration technology that is being evaluated can utilize EPRI for targeted research. This does not need to be part of a host-site project and enables targeted research that not only benefits the individual utility, but the collaborative as well.

- **TVA/Bristol Water Heater Control:** Leveraging Fiber-To-The-Home (FTTH), ZigBee: Analytical study of daily water heater control for permanent peak shifting. This study will help to understand how advanced communication and monitoring capabilities can be leveraged for smart grid functions.
- **PV Integration:** Specification for local communication interface to small-scale solar systems for utility applications. This effort will focus on developing a communication specification for interfacing grid-tie inverters with utilities to further interoperability. This effort should support any smart grid collaborator that is considering interfacing with photovoltaic grid-tie inverters.

## **Task 3: Demonstrate Technologies in Actual Applications**

### **Host Site Projects**

- **AEP** – Project officially selected, next steps will be working on project plan
- **Con Edison** – Documenting existing work and aligning resources for additional 2009 work
- **FirstEnergy** – Documenting existing work and aligning resources for additional 2009 work
- **PNM Resources** – IntelliGrid use case workshops underway and aligning resources for additional 2009 work

An update of each project will be provided at the Smart Grid Advisory meeting. The goal of each update at the meeting will be to provide information and learning's that can be used in your utility.

## **Task 4: Technology Transfer**

### **Subtasks 4.2 – Industry Coordination**

### **Subtasks 4.3 – Standards Development**

### **Subtasks 4.4 – Use Case Repository**

### **Subtasks 4.5 – Technology Library**

An update on the technology transfer tasks will occur at the Smart Grid Advisory Meeting.

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## **KEY EPRI SMART GRID DATES**

## **Regional Workshops (See PROJECT UPDATE on Task 1.1 for more information)**

### **See PROJECT UPDATE in Task 1.1 for more information**

The workshops are planned as follows:

- West region – Sacramento, CA – May 15<sup>th</sup>
- Northeast region – New York, June 29<sup>th</sup>
- Midwest and International regions – Calgary, Canada, end of July
- South region - August

To register, please email your name, title, company and contact information to Ashley Eldredge ([aeldredge@epri.com](mailto:aeldredge@epri.com)) and not which regional workshop you would like to attend. Please register at least two weeks in advance.

## **April 28-29 NIST Interim Smart Grid Roadmap Workshop**

The agenda for the April 28-29 NIST Workshop is now available. All the pertinent information for the Interim Roadmap including workshop purpose, detailed agenda, registration, lodging, and transportation to the Hyatt Regency facility in Reston VA is on the website at the link below. Please take a moment to go to the link below and register for the workshop. If you have not signed up yet, please do so right away to guarantee your seat. <http://guest.cvent.com/i.aspx?5S,M3,4d348728-60af-44ae-be74-9c279eb2c002> . Click on NIST Workshop Details for agenda.

The 6 main goals of the workshop are:

1. Review of the draft Interim Roadmap document with recommendations for edits, changes, and additions

2. Consensus on the definition of the Smart Grid and its attributes
3. Consensus building on the smart grid architecture including the domains, the interfaces, and the applications to be supported
4. Consensus on the process by which standards are qualified for inclusion in the Smart Grid
5. Establishment of a qualified candidate list of standards that are applicable in each domain of the Smart Grid
6. Consensus building on the next steps to fill the gaps in the qualifying standards to establish interoperability in the Smart Grid

### Webcast: Distributed Energy Resources Aggregation Methods and Tools

*This is a kick-off webcast providing background on the differences among the various markets, the processes involved distributed energy resources to participate in markets, and factors affecting their participation.*

The intended audience is for all member utilities to gain an understanding of the path forward, key milestones, and collaborative opportunities.

**When:** Date TBD, May/June, 2009. 1-1.5 hours

**Webcast:** Invitations to Utility Collaborators will be sent shortly

### June 2009 EPRI Smart Grid Advisory Team Meeting, hosted by FirstEnergy, Red Bank NJ

*This will be the next face-to-face meeting for sharing information, collaborating, providing a project update and addressing issues for Members of the EPRI Smart Grid Initiative.*

This meeting will primarily be a "Push" of information on the status of various smart grid activities and to obtain feedback on activities to date and needs for near term research. The intended audience is for all EPRI smart grid demonstration member utilities, peer review team and external smart grid project managers (i.e DOE Projects).

**When/Where:** Tuesday, June 23<sup>rd</sup>, 2009

2pm – 5pm, FE / JCP&L Operations Center Tour and System Demonstration

6pm – EPRI Hosted Dinner

Wednesday, June 24<sup>th</sup>, 2009

8:30am – 5:30pm. Advisory Meeting, Deliverables Update. Details TBD

**Webcast & Audio:** Invitations to Utility Collaborators & Peer Review Team will be sent shortly

### EPRI Power Delivery & Utilization Area Advisory Council Meeting

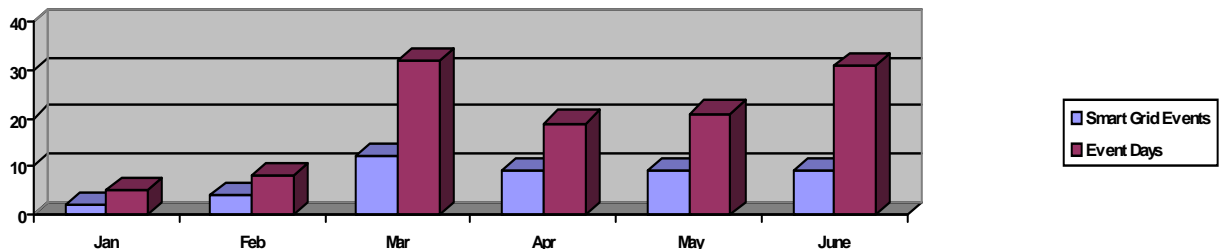
**When/Where:** August 31- September 2, 2009, Chicago, IL

**Link:** <http://quest.cvent.com/EVENTS/info/summary.aspx?e=75c3f45c-7ad0-4bdc-8eb4-69536544b401>

## KEY INDUSTRY DATES

### Industry Smart Grid Related Events are Listed on EPRI's Smart Grid Resource Center

[www.smartgrid.epri.com/calendar.html](http://www.smartgrid.epri.com/calendar.html)



**Chart 1: Trend of Smart Grid Meetings/Events**

(Can you guess when the announcement came there would be Smart Grid Stimulus funding available?)

**Want to add an Event?** Email Matt Wakefield ([mwakefield@epri.com](mailto:mwakefield@epri.com)), Name of event, Date, location and web site link to add an event.

## INDUSTRY NEWS

### Smart Grid Industry News

Please share your smart grid story and we will post it in this newsletter

#### PG&E Will Purchase 200MW of Electricity from Space

[www.mysolarpower.org](http://www.mysolarpower.org), April 14, 2009

<http://www.mysolarpower.org/news/pge-will-purchase-electricity-from-space/>

## **Electric Power Research Institute Select JCP&L for Smart Grid Demonstration**

Jersey Central Power & Light, March 23, 2009

<http://www.firstenergycorp.com/NewsReleases/2009-03-23%20EPRI%20Selects%20JCP%26L%20For%20Smart%20Grid.pdf>

## **U.S. Energy Infrastructure Investment: Large-Scale Integrated Smart Grid Solutions with High Penetration of Renewable Resources, Dispersed Generation, and Customer Participation**

Power Systems Engineering Research Center (PSERC) White Paper. March 2009. Some of the major contributors include Floyd Galvan (Entergy), Lisa Beard (TVA) and Navin Bhatt (AEP) all members of EPRI's smart grid collaboration. Floyd Galvan will give an overview of this paper at the smart grid advisory meeting.

[http://www.pserc.org/ecow/get/publicatio/2009public/pserc\\_smart\\_grid\\_white\\_paper\\_march\\_2009\\_adobe7.pdf](http://www.pserc.org/ecow/get/publicatio/2009public/pserc_smart_grid_white_paper_march_2009_adobe7.pdf)

## **Standards News**

### **OASIS (Organization for the Advancement of Structured Information Standards) – Draft Charter for Energy Interoperation Technical Committee**

Mary McRae, oasis-open.org, April 13, 2009

<http://lists.oasis-open.org/archives/oasis-charter-discuss/200904/msg00000.html>

### **EPRI Selected to Facilitate Development of Smart Grid Roadmap**

Electric Power Research Institute, April 8, 2009

[http://my.epri.com/portal/server.pt/gateway/PTARGS\\_0\\_222759\\_317\\_205\\_776\\_43/http%3B/uspalecp604%3B7087/publishedcontent/publish/epri\\_selected\\_to\\_facilitate\\_development\\_of\\_smart\\_grid\\_roadmap\\_da\\_639320.html](http://my.epri.com/portal/server.pt/gateway/PTARGS_0_222759_317_205_776_43/http%3B/uspalecp604%3B7087/publishedcontent/publish/epri_selected_to_facilitate_development_of_smart_grid_roadmap_da_639320.html)

### **National Broadband Plan Includes Wireless, TV ‘White Space’**

TV Technology, April 10, 2009

<http://www.tvtechnology.com/article/78186>

## **Technology Trends**

### **OpenLynx: Open Source Software for BAS and the Smart Grid**

AutomatedBuildings.com January, 2009

<http://www.automatedbuildings.com/news/jan09/articles/openlynx/081229032033openlynx.htm>



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