

# INFORMATION, COMMUNICATION & CYBER SECURITY NEWSLETTER

Dear ICCS Advisors and Stakeholders,

Here are three items to kick-off the September Information, Communication and Cyber Security (ICCS) newsletter.

1. EPRI PDU Advisory Meeting – Don't forget to register!
2. ICCS Roadmap Update & Draft attached for review; and
3. Japan Integrated Grid Seminar Summary.

First, remember to register for the [October Advisory](#) meeting in Baltimore, if you haven't already – it's just a month away.

Second, I want to thank all of you who have been contributing to our updated ICCS Roadmap during our normal advisory interactions, survey responses and one-on-one engagements.

Attached is a draft of the roadmap for your review. We are still doing some formatting and editing but most of the content is complete. The final roadmap will be completed and discussed during our advisory meetings in October. If you have any comments on the roadmap, please contact Don Von Dollen for the ICT Program (P161) or Galen Rasche for the Cyber Security Program (P183).

Finally, I want to provide a brief summary of EPRI's Japan Seminar on Integrated Grid Development that took place in Tokyo, Japan, August 20<sup>th</sup> and 21<sup>st</sup>. We had a very engaging seminar in Japan with nearly 50 attendees discussing the evolving landscape of the grid. In the photo, from left to right are Brian Seal, EPRI, Dr. Hideo Ishii, Waseda University, and Galen Rasche, EPRI, during our final panel session.

In Japan, solar PV is increasing, electricity demand is decreasing, and the regulatory environment is changing - introducing competition. (*Raise your hand if this sounds familiar to your utility's situation.*) One example of R&D occurring among the Japanese utilities and at Waseda University is the ability to securely connect to and manage PV so it can be curtailed during situations when there is too much distributed generation being produced. Due to rapid PV growth, new-rules allow some PV to be curtailed up to 360 hours per year with no compensation. The advances in smart inverter standards that have been led by EPRI may benefit Japan as they are facing the very real challenges of an Integrated Grid. For more information on the seminar, all the [presentations are available online](#).

September 2015

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[ICT Program \(161\)](#)

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One last item (OK, I guess I have four items vs. three...), Don't forget to subscribe to the new [EPRI Journal](#) --- now online. The journal features in-depth reporting and perspectives on electricity sector R&D. This is a fantastic resource to stay abreast of issues across the industry.



Sincerely,

A handwritten signature in blue ink that reads 'Matthew P. Wakefield'.

Matt Wakefield

Director, Information, Communication and Cyber Security Research



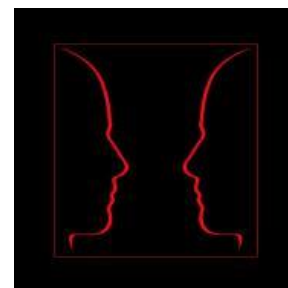
## ICCS Team Media Contributions and Collaborations

### **Determining the Impacts of Volt/VAR Optimization: A Tale of Two Approaches**

Jared Green, Jeff Roark and a SMUD engineer contributed a commentary about determining the impacts of volt/VAR optimization to **Electric Light & Power** magazine. Volt/VAR optimization (VVO) is a process of optimally managing voltage levels and reactive power to achieve more efficient grid operation by reducing system losses, peak demand or energy consumption or a combination of the three. [Read Article](#)

### **Research institute's project merges, manages customer truth**

John Simmins contributed a commentary to **Intelligent Utility** about the increasing use of social media to provide utility customers updates during power outages. EPRI initiated a project to get outage information aligned and uniformly updated in an effort to avoid conflicting information carried on social media about the status of restoration efforts. [Read Article](#)



### **New Collaboration Effort Guides Direction of Grid 3.0**

A large number of federal and industry groups have joined together to spearhead a national stakeholder engagement effort around Grid 3.0, the resilient, flexible, and highly-interactive grid of the future. The group aims to develop a roadmap of the critical activities needed at a national level in order to achieve a fully integrated, fully interoperable grid as well as the most efficient ways to perform the research and development needed to get there. [Read Article](#)

## **From Research to Action | Imagine a World Where Master Data is Created Once and Used Many Times**

*EPRI Network Model Manager Approach Enables New Reality for Managing T&D Network Models*  
by Pat Brown

As utilities have deployed more and more network analysis applications such as the state estimation and contingency analysis functions of energy management systems, the steady state and transient stability functions of planning application suites, the short circuit calculations of protection software and the congestion analysis functions of market systems, silos have developed; each application frequently has its independent users, its independent model maintenance group, and its individual modeling processes and assumptions. [Read Article](#)

### **Assessing the costs and benefits of distributed energy to the grid of the future**

EPRI is perfecting a method to evaluate the impact of DERs on all stakeholders. **Utility Dive** published a detailed article on [EPRI's Integrated Grid initiative](#) that was based on a presentation that was delivered at the Grid Edge 2015 conference by Washington Relations Director Barbara Tyran. The question about distributed energy resources (DERs) is no longer whether the system can handle them, but what their costs and benefits to the system are, the article noted. With increasing DER penetration, customers are creating an unprecedented two-way power flow, generating and selling electricity into the system while the flow of base load electricity from central stations continues. [Read Article](#)

### **EPRI - CEA-2045 Field Pilot water Heater Production**



This is the first production line run of resistive electric and heat pump units.

The CEA-2045 port adapter is the small white box at the bottom of the tank. The installation instruction manual is in the document package attached to the heater along with the heater installation instructions etc.

Although the CEA-2045 port adapter is NOT an official production product, most of the steps taken in producing a production unit have been taken and the fit and finish of the port adapter is production quality. The units have been shipped out for field and reliability testing.

## [Recent ICT / IntelliGrid \(161\) and Related Demonstration Deliverables](#)

### **New Supplemental Available: Assessing Augmented Reality**

Ever wonder how augmented reality (AR) could help your workforce improve efficiency and safety? Participants in this supplemental program will understand the in's and out's and the potential of augmented reality, and be among the first in the utility industry to engage with this new

Title	Date
<p><b><u>Advanced Metering Systems Online Database (AMI Status DB) Version 1.0 (2015)</u></b></p> <p>This software is being developed to enable EPRI to capture and track the industry status regarding smart meter/AMI deployments. The data that will be collected through this software will be kept in a database that will be the source of a wide range of reports for our members and the public in this regard. This software is being developed to enable EPRI to capture and track the industry status regarding smart meter/AMI deployments. The data that will be collected through this software will be kept in a database that will be the source of a wide range of reports for our members and the public in this regard.</p>	27-Aug-2015
<p><b><u>Program on Technology Innovation: EPRI Grid Transformation Phase II: Seamless Geospatial Power Systems Model</u></b></p> <p>This report explores the evolution of information technology (IT) over the last five years, the nature and state of the market for existing applications, alternative information architectures, and the need for a unified schema that can be used to build more integrated utility applications. Finally, the report shows several examples of how to use the new technologies and a unified schema to solve “old problems” in new ways and make recommendations for future research.</p>	20-Aug-2015
<p><b><u>Information and Communication Technology Program: Looking Ahead - 2016</u></b></p> <p>Information and communications technologies are fundamental in creating a modern, interconnected grid from the central plant and distribution system to utility and customer-owned distributed generation. Increased monitoring, communications, computing, and other information technologies enable the modern grid while increasing awareness and capabilities. This document outlines the proposed projects for the 2016 Information and Communication Technology Program.</p>	21-Jul-2015
<p><b><u>Common Information Model (CIM) 2014 Update</u></b></p> <p>The Common Information Model (CIM) is a set of open standards for representing power system components, processes, and documents. This report is a summary of EPRI’s participation in the development of the CIM for the year 2014. The report covers the activities of the CIM user group and the CIM standard development teams and includes a synopsis of several EPRI reports that detail EPRI work on CIM. The emphasis is on the impact of CIM developments on the industry and is meant to appeal to all levels of interest in CIM. The report is indexed so that the reader can browse for a topic of interest, read a synopsis, and go into a deeper review of the topic by following the links provided to full reports.</p>	30-Jul-2015

technology. Read description of the project here: **[Assessing Augmented Reality for the Electricity Industry](#)**

## Meeting Materials Available

[ICT Informational Webcast - Data Class Requirements: Synchrophasor Communication Infrastructure](#)

[EPRI: Assessing Augmented Reality in the Electricity Industry Supplemental Launch Webcast](#)

[ICT Interoperability Webcast - IEEE 802.15.4 / Wi-Sun](#)

[ICT Informational Webcast - Field Area Network Demonstration](#)

## Upcoming Webcasts

**(Details are available in the [Member Center](#) under the ICT Cockpits)**

Title	Date
<b><a href="#">EPRI: Smart Grid Enterprise Architect Interest Group Webcast</a></b>	24-Sep-2015
	22-Oct-2015
	19-Nov-2015

Cyber Security and Privacy Program (183)



## Recent Cyber Security (183) and Related Demonstration Deliverables

Title	Date
<b><a href="#">Cyber Security and Privacy Program: Looking Ahead - 2016</a></b> Cyber security has become a critical priority for electric utilities. The grid is evolving and is growing more dependent on information technology and telecommunications infrastructure, increasing the risk of cyber security breaches. These events may be malicious attacks or not, but the impact is the same: reliability may be compromised. This document outlines the proposed projects for the 2016 Cyber Security Program.	21-Jul-2015

## Meeting Materials Available

[Cyber Security 2016 Portfolio Rollout Webcast](#)

## Upcoming Webcasts

**(Details are available in the [Member Center](#) under the ICT Cockpits)**

Title	Date
<b><a href="#">EPRI: Threat Management Task Force Webcast</a></b> The next meeting of the Threat Management Task Force will be held on September 17 at 2:00PM – 3:00PM EDT. The meeting agenda will include a review of the threat scenarios for the Integrated Security Operations Center	17-Sep-2015

research, and a presentation by Aunshul Rege, PhD, titled “Applying a Criminological Framework to Understand Adaptive Adversarial Decision-Making Processes in Critical Infrastructure Cyberattacks”.

## Distribution and Transmission Modernization on Data Analytics



### Recent DMD and TMD Data Analytics Deliverables

Title	Date
<p><b><u>Overcoming Barriers to Data Interoperability: Silos, Semantics, and Schemas</u></b></p> <p>Effective data interoperability is a key foundation of a utility’s data analytics capability. Effective use of analytics tools requires up-to-date, consistent data of known validity that may be drawn from disparate databases and other storage systems. For decades the standard solution to overcoming data interoperability barriers for reporting and analysis has been the use of a <i>data warehouse</i>. This report describes an alternative to creating a physical data warehouse: a <i>Logical Data Warehouse</i> (LDW). Describing a utility’s data using a shared, universal model, such as that provided by the Common Information Model (CIM), may allow data from disparate, non-interoperable storage locations to be combined and analyzed at a lower cost and with greater flexibility. A hybrid solution that combines both physical and logical warehouses represents a balanced approach for most utilities.</p>	27-Jul-2015

## Smart Grid Demonstration



### Recent Smart Grid Demonstration Initiative Deliverables

Title	Date
<p><b><u>Robust Consumer Behavior Study Clarifies Important Aspects of Residential Demand Response</u></b></p> <p>The Public Utilities Commission encouraged FirstEnergy to work with staff and the U.S. Department of Energy (DOE) to develop a consumer behavior study. Working closely with the Public Utilities Commission of Ohio, the DOE, the Lawrence Berkeley National Laboratory, and EPRI, FirstEnergy designed, implemented, and analyzed the results of a consumer behavior study.</p>	28-Aug-2015
<p><b><u>Guidebook for Cost/Benefit Analysis of Smart Grid Demonstration Projects: Revision 3</u></b></p> <p>This report presents a step-by-step process for estimating the costs and benefits</p>	20-Aug-2015

associated with smart grid demonstration projects. The entire guidebook is meant to function as a standalone user's manual for the analysis process, from the initial step of describing the project to the final step of communicating the results to all stakeholders. This version of the guidebook presents detailed instructions for describing the project objectives, the research plan, and the technologies deployed; associating the technologies with enabled functions; and mapping these functions to impacts. The report discusses the translation of impacts to cost and benefit categories for a cost/benefit analysis. The report builds on the Electric Power Research Institute (EPRI) report *Methodological Approach for Estimating the Benefits and Costs of Smart Grid Demonstration Projects* (1020342).

Upcoming Events	Dates
<u>EPRI Power Delivery and Utilization Advisory Meetings, Baltimore, MD</u>	Oct 5-8, 2015
<b><u>DMD/TMD Data Analytics for Transmission &amp; Distribution Fall Advisory Meeting</u></b> , EPRI offices in Charlotte, NC	Oct, 26-27, 2015
<b><u>EPRI IEC 61850 Hands-on Workshop</u></b> The IEC 61850 Hands-On Training Workshop will allow participants to try out protection and control devices, and testing and maintenance tools from multiple vendors to demonstrate the standard-based interoperable approaches for equipment isolation, protection function and scheme testing, and condition based maintenance that are being investigated in EPRI's "Application Guides, Software Tools and Migration Strategies for the Implementation of the IEC 61850 Standard – Level 2" project.	Nov. 10, 2015
<b><u>EPRI IEC 61850 Utility Forum</u></b> EPRI will be hosting its fourth Utility Forum on the IEC 61850 standard on November 12 and 13 at the EPRI office in Charlotte, NC. The objective of the Utility Forum is to bring together representatives from utilities that are implementing the IEC 61850 standard or that are interested in implementing the standard to share experiences, lessons learned, concerns and best practices.	Nov. 12, 2015
Save the Date: <b>FAN Demo Advisors Meeting will in San Diego, hosted by SDG&amp;E.</b>	Nov. 18-19, 2015
Save the Date: <b>EPRI Power Delivery and Utilization Advisory Meetings, Austin, TX</b>	Feb. 22-25, 2016
Save the Date: <b>EPRI European ICCS Engagement Summit, Dublin, Ireland</b>	April 19-20, 2016
Save the Date: <b>EPRI Power Delivery and Utilization Advisory Meetings, Hollywood, FL</b>	Sept. 19-22, 2016

## Together...Shaping the Future of Electricity

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