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Smart Grid: Intelligent Transmission & Distribution

March 8-9, 2010

Miami, FL

Increased Electric Grid Stability: Recognizing the Opportunity Through Improved Transmission, Distribution and Communication

While smart grid strategies have been in development for nearly twenty years, it is really only recently that the technology has truly caught up with the promise of increased efficiency, reliability and security. With federal funds being released to utility companies throughout the nation for the use of upgrading their transmission and distribution facilities to better technologies, companies are finally becoming serious about designing and implementing improved grid components.

For many utility companies, there is a base of understanding related to the benefits and value of new technologies, but a lack of knowledge related to where to start in designing and implementing their own "smart grids." This conference will provide an opportunity for utility companies to come together to discover and understand how to begin implementing a more stable grid, from understanding the components required and enhancing communication systems, to recognizing realistic time frames for implementation and deployment of advanced technologies across the grid.

Through in-depth case studies from utility companies that have implemented advanced technologies, or that are in the process of implementing smart grid components, companies will truly understand the requirements from both an internal resource and financial perspective. Solution providers will also be on-hand to answer questions related to the many components required to successfully launch a smart grid initiative, ranging from demand and asset management, transmission upgrades, and better communication networks. These enabling technology providers will provide case-study examples of how technologies can work together to provide more secure, accurate, and reliable service.

DISTINGUISHED PRESENTERS INCLUDE:

Andres Carvallo
Chief Information Officer
Austin Energy

Lisa M. Barton
VP, Strategy & Business Development
American Electric Power

Martha C. Dodge
Senior Director of Smart Grid & Special Projects
PPL Electric Utilities

Rafael Ochoa
Director, Smart Grid & T&D Operations
The Structure Group

James D. Gilsinn
Intelligent Systems Division, Manufacturing Engineering Laboratory
National Institute of Standards & Technology (NIST)

Kurt E. Yeager
Executive Director
Galvin Electricity Initiative

Haukur Asgeirsson
Manager Power System Technologies
Detroit Edison

Kevin G. Wood
Tariff Programs and Services
Southern California Edison

David L. Mohre
Executive Director, Energy & Power
NRECA

Naim Logic
Senior Electrical Engineer
Salt River Project

Kay Pashos
Vice President Regulatory Affairs, Deputy General Counsel
Alliant Energy

James Momoh
Director Center for Energy Systems & Control
Howard University

Mladen Kezunovic
Director Power Systems Control Lab
Texas A&M University

Kelly Virtue, *Program Manager for Xcel Energy's Smart Grid City*
Five Point Partners

Trish Freshwater
Public Affairs Coordinator
SCANA Corp.

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Monday, March 8th: Conference Sessions

8:00 Registration & Coffee

9:00 QI Productions Opening Remarks

9:10 Keynote Session: Smart Grid: Overcoming the Hype and Initiating System-Wide Progress

“Smart Grid” is the buzzword of the industry today and billed as the solution for America’s energy crisis, but what is actually being done to execute innovative technologies which enhance electricity delivery in the United States? Recent announcements regarding meter deployments have garnered attention, but the architecture needed to support information exchange and energy administration have not been sufficiently addressed. In this keynote session, Andres Carvallo discusses projects underway which look to resolve concerns regarding policy issues, communication networks, system security and effective asset management.

Andres Carvallo
Chief Information Officer
Austin Energy

10:00 From Strategy to Reality: A Holistic Approach to Smart Grid Technology Deployment

This presentation will describe a vision of an “Integrated” Smart Grid program combining in-home technology coupled with dynamic price response programs allowing customers to make energy choices. Advanced Distribution Automation (DA) equipment helps increase system reliability and reduce outages foot print, and an advanced SCADA & Distribution Management Systems enhance the overall operational efficiency and enable energy management programs. In addition, “self-healing” functions of the distribution network are provided through the deployment of advanced software, automated switching devices and an integrated voltage & var control (IVVC.)

Rafael Ochoa
Director, Smart Grid & T&D Operations
The Structure Group

10:50 Coffee & Networking Break

11:10 Incorporating High-Voltage Transmission Lines to Expedite the Integration of Renewable Power

Although the United States has a vast capacity for generating power from renewable sources, the best of these assets are often located in remote regions of the country, far from major centers of electricity demand, with or no access to the extra-high-voltage transmission lines that are required in order to transmit this power efficiently. Furthermore, the grid has suffered from systematic underinvestment in recent decades, increasing congestion bottlenecks which hurt the reliability of the grid. A successful case study is presented in which new high-voltage transmission lines were built while successfully addressing regulatory and right of way concerns.

Lisa M. Barton
Vice President-Transmission Strategy & Business Development
American Electric Power

12:00 Using a Phasor Measurement Network to Enhance Communication and Prevent Cascading Failures

While there is talk of building a new physical infrastructure to support additional transmission capacity, the reality is that adding new lines to the system will be expensive and may be difficult because of right of way and land use restrictions. One alternative being explored is more effectively utilizing existing lines by installing advanced measurement technology and associated communication infrastructure. An example of these advanced high speed sensors is the Phasor Measurement Unit (PMU) that if installed throughout the network can be used to monitor the power system giving more precise measurements of transmission flows throughout the grid. Utilizing the time reference enabled by the GPS system allow for very precise time measurements, and in some cases it may be possible for this “smarter” grid to respond automatically to isolate and respond to system issues.

Dr. Naim Logic, Senior Electrical Engineer
Salt River Project

12:50 Luncheon for All Speakers, Sponsors & Attendees

2:00 Addressing Cyber Security Concerns in Smart Grid Systems

While advanced data networks are an essential component of a modern grid, it also opens the system to a new set of cyber security risks. Employing the following techniques will strengthen the overall security of the network:

- Evaluate the purpose of all devices connected to the network & remove what is non-essential
- Install security upgrade patches, both standard and customized
- Establish a 24 hour intrusion detection system and corresponding incident response procedures
- Document network architecture & define levels of critical importance for highest security
- Establish system backups and disaster recovery plans

James D. Gilsinn
Intelligent Systems Division, Manufacturing Engineering Laboratory
National Institute of Standards & Technology (NIST)

2:50 Understanding Interoperability Standards and Procedures for Distributed Generation

The recent standards approved by the Department of Energy provide a road-map for moving forward on large scale plans which define interconnectivity between utility systems and distributed generation sites along the grid. Controlled introduction of renewable resources on-site is a hallmark of the smart grid initiative and key to facilitating efficient demand management. Successful application of these standards will ensure that only quality products have been added to the system and will aid in reducing T&D congestion.

Haukur Asgeirsson
Manager Power System Technologies
Detroit Edison

3:40 Coffee & Networking Break

4:00 Employing Islanded Techniques in Distributed Generation to Improve Overall System Reliability

As distributed generation gains traction across the US, it is important to take a systematic approach to deployment, as indiscriminant application of individual distributed generators can cause as many problems as it may solve. A “microgrid” approach allows for local control of distributed generation, reducing the need for central dispatch. During disturbances, this defined subset of generation and corresponding loads can be separated from the system to isolate the problem. Intentional islanding of sets of energy supply and demand has the potential to provide higher local reliability and increased stability to the power system as a whole.

James Momoh
Director, Center for Energy Systems and Control (CESaC)
Howard University

4:50 Getting Consumers on Board the Efficiency Train

Often when consumers think of smart meters, the next thought is increased cost. Utilities must work to demonstrate the cost saving available to the consumer through energy conservation, and design an easy to use interface which is key to increasing adoption. Reaching out to the public to communicate the necessity of improvements is critical, as well as establishing an open dialog to address concerns regarding rates, privacy and future expansion.

Trish Freshwater
Public Affairs Coordinator
SCANA Corp.

5:40 Day One Conference Conclusion

Tuesday, March 9th: Conference Sessions

8:00 Registration & Coffee

8:30 Chairperson's Opening Remarks

8:40 Keynote Session: The Future Looks Bright, and Smart!

The movement to a reliable grid that incorporates renewable resources not only reduces dependence on foreign oil, it opens up new possibilities for the ways in which electricity can be used to improve quality of life. The power of ingenuity combined with rapidly evolving technology can transform the way in which we think about energy and generate cascading innovations across several industries, with the possibility of revolutionizing transportation and manufacturing sectors just to name a few!

Kurt E. Yeager

Executive Director

Galvin Electricity Initiative

9:30 Successful Utilization of Enhanced SCADA Systems

The purpose of SCADA is to improve efficiency by allowing remote access to sites to investigate problems. However, justifying the system's initial cost can be a critical hurdle to implementation. This session details a successful case study wherein key benefits were achieved such as:

- Improved safety of the system to due better information control
- Increased productivity of utility personnel
- Superior energy savings due to asset optimization
- Easier regulatory compliance achieved through advanced controls

David L. Mohre

Executive Director

Energy & Power Division, NRECA

10:20 Coffee & Networking Break

10:40 Policy Changes Needed to Realize the Full Benefits of a Smart Grid for America

Achieving a full scale smart grid on a national level will require changes in federal regulatory policy and adoption of new incentives. The underlying policy changes need to accomplish this monumental task must include substantial reform of the regulatory structure applied to technical progress, such as planning and siting of a new transmission corridor, modernizing distribution networks and enhanced deployment of communication devices. Furthermore, business concerns related to information sharing, job creation and consumer privacy rights should also be addressed in addition to overarching concerns related to global climate policy.

Kay Pashos

VP Regulatory Affairs, Deputy General Counsel

Alliant Energy

11:30 Demonstrating a Successful Business Case: The Development and Execution of Smart Grid City

The plan for a smart grid implementation which clearly illustrates how a utility can reduce cost and increase system reliability is likely to receive the most support from customers and shareholders. Utilities that are ready to explore new technologies can benefit greatly by partnering with industry to execute detailed plans that have strong technical merit and address unmet needs. This case study showcases the benefits gained by the utility through the successful implementation of a smart grid.

- Reduction in amount of fuel need to meet peak demand
- Integration of renewable resources
- Real time two-way communication throughout the grid
- Improved customer relations through more accurate billing

Kelly Virtue

Program Manager for Xcel Energy's Smart Grid City

Five Point Partners

12:20 Luncheon for All Speakers, Sponsors & Attendees

1:20 Recognizing Benefits Gained for Utilities through Demand Response

In addition to reducing overall electricity costs for consumers, demand response is an essential tool in improving the reliability of a power grid infrastructure by receiving advanced notifications for areas most susceptible to black-outs and shifting supply to support critical operations. Furthermore, demand response can provide cost benefits to utilities and customers by reducing the amount of energy consumed during periods of peak demand. The ability to curtail loads at peak times can result in significant energy market price reductions per megawatt-hour, and reduce costs linked to CO2 emissions, as in most case the oldest and least efficient sources of power are often used to meet spiking consumer demand.

Kevin G. Wood

Tariff Programs and Services

Southern California Edison

2:10 A Smart Grid Solution for the Transmission Grid: The Role of Substation Automation and Interoperability Standards

The introduction of intelligent electronic devices (IEDs) at substations has made additional data available to help minimize system restoration time, reduce equipment maintenance costs, and improve system reliability. However, the introduction of this "data explosion" can sometimes be overwhelming. Comprehensive system solutions that integrates operational, non-operational and awareness data can help electric utilities fully utilize vast bodies of data now generated in substations. Modeling data with the assistance of IEC 61850 and IEC 61970 standards allows development of new applications that can turn this wealth of information into business intelligence. Organizing this intelligence and interfacing it with enterprise-level applications can increase operating efficiency and yield financial benefits.

Mladen Kezunovic

Dir. Power Sys Control & Protection Lab

Texas A&M University

3:00 Coffee & Networking Break

3:20 Improving Outage Management through Enabling Technologies

In the past, utilities could avoid using outage management applications due to grid over-capacity. Today, excess capacity is a fading memory, based on increased demand and capital constraints caused by cities and counties outgrowing their electrical systems, while simultaneously requiring repairs to other areas of critical infrastructure. New outage management systems enabled by smart grid devices and communication has dramatically shortened the time between outage report and service restoration by processing information from customers, crews, and devices to locate and respond quickly to everything from routine transformer outages to emergency storm situations. By routing field personnel directly to the site of an inoperable line and by tracking and directing repairs, outage management systems have helped utilities meet and exceed customers' and regulators' expectations for service reliability.

Martha C. Dodge

Senior Director of Smart Grid & Special Projects

PPL Electric Utilities

4:10 Closing Remarks & Conference Conclusion