

January 17-19, 2011 • Hilton Anaheim • Anaheim, California

Program



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Sunday, January 16

Time

Pre-Conference Activity – Tutorials

Tutorials Sponsored By Plain Talk

PES PLAIN TALK courses about the Smart Grid for Power Professionals are designed for both technical and non-technical staff in the electric power industry who are looking to increase their insight into one of the hottest technical areas in power today. The courses provide the fundamentals of smart grid along with practical tools that can be used in the workplace.

8:00 – 12:00 p.m.

Room: Huntington A/B/C

Smart Grid 101 - The Basics of Smart Grid

Lead Instructor: Erich Gunther

Smart Grid 101 introduces the basics of Smart Grid, based on the NIST Smart Grid Framework. The course covers all aspects of smart grid, from "why smart grid now" to the key technologies that make up the smart grid. The course introduces the work of Open SmartGrid, Gridwise Architecture Council, NIST, DOE's Modern Grid Project, and other key efforts from around the world. The course will:

Help you develop your business case.

Increase your understanding of the key standards that will underpin the smart grid in the US.

Introduce the major smart grid organizations and how to get involved.

Provide an understanding of the major technologies that compose a typical smart grid.

The attendee will leave with a better understanding of the current state of the art in regulation and technology provided in a candid and unbiased fashion by some of the top practitioners in the industry.

1:00 – 5:00 p.m.

Room: Huntington A/B/C

Smart Grid 201 - A Deeper View of Smart Grid

Lead Instructor: Doug Houseman

Smart Grid 201 takes a deeper view of smart grid, focusing on three specific areas of the smart grid landscape:

The Standards that have been proposed by various government organizations for regulating the smart grid

The Overall Conceptual architecture of the smart grid developed by NIST

The status of the demonstration projects funded by various governments (US, German, Canadian, Australian, etc and the lessons we have learned to date.

The attendee will leave with a more in-depth understanding of current issues related to smart grid as well as the benefits and concerns related to this important technology.

6:00 p.m.

Room: Pacific Ballroom
A/B

Welcoming Reception

Monday, January 17

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Time	Activity — <i>Theme of the Day: Vision and Global Issues</i>
8:00 – 9:00 a.m. Room: California Ballroom C	Opening Session Opening Keynote: <i>Smart Grid Innovation-A Vision of the Future</i> Laura Ipsen, VP and GM for Smart Grid, Cisco Systems
9:00 – 10:00 a.m. Room: California Ballroom C	Opening Plenary Roundtable Conversation—Global Issues in Grid Modernization IEEE PES President Al Rotz will moderate a discussion among international leaders on grid modernization on global issues associated with smart grid technology, standards, and deployment. The distinguished panel of speakers will represent government manufacturer, standardization and utility points of view. George Arnold (NIST) Larry Cochrane Moshe Kam (IEEE President) Richard Schomberg (IEC)
10:00 – 10:30 a.m. Room: California Promenade	<i>Break</i>
10:30 – 12:00 p.m. Room: California Ballroom C	True Innovation (Panel Session) <i>10:30 – 12:00 p.m.</i> Chair: Doug Houseman, EnerNex <i>Presentations:</i> 10SG0086, Power System and Communication Network C0-Simulation for Smart Grid Applications 10SG0121, Analysis and Control of PV Inverters Operating in VAR Mode at Night 10SG0129, Centralized and Decentralized Control for Demand Response 10SG0132, Impedance Based fault Location for Weakly Meshed Distribution Networks
Room: California Ballroom B	Building Controls (Paper Session) <i>10:30 – 12:00 p.m.</i> Chair: Wanda Reder, S&C Electric 10SG0028, Intelligent Multi-agent Control for Integrated Building and Micro-grid Systems 10SG0106, Predicting User Comfort Level using Machine Learning for Smart Grid Environments
Room: California Ballroom A	Innovations in Wind Energy (Paper Session) <i>10:30 – 12:00 p.m.</i> Chair: Lina Bertling, Chalmers University 10SG0011, Probabilistic Load Flow for Distribution Systems with Wind Production using Unscented Transform Method 10SG0017, Saturation-Bandwidth Tradeoffs in Grid Frequency Regulation for Wind Generation with Energy Storage 10SG0058, Emergency Control of DFIG-Based Wind Turbines to Meet New European Grid Code Requirements 10SG0100, A Novel Direct Active Power Control Method for DFIG Wind Turbine Applications

12:00 – 1:30 p.m.
Room:
Pacific Ballroom C/D

Lunch

1:30 – 3:00 p.m.
Room:
California Ballroom C

Next Generation Distribution System Management (Panel Session)

1:30 – 3:00 p.m.

In order to successfully implement DR and demand-side management (DSM) applications, as well as integrate with PEV and other DER, effective distributed resources management functions should be addressed together as an integrated enterprise application.

Considering all types of "resources" at the distribution system level as a whole, the DR and DSM applications are "contractual relationships" between utilities and customers, and can be seen as "virtual energy resources" that can be used to balance demand and supply and to hedge operation risks to enhance the power system security. The DER and PEVs are "physical assets" that supply (or consume) the actual electrical power. Management and integration of all these energy resources together are major challenges in the future smart grid scenarios. The next generation distribution management system and grid operators have to be able to manage these new resources and interact with new players, while certain financial settlement rules should also be addressed. Effective communication that transfers control signals and measurement values are essential.

In this panel session, we will discuss the trends and requirements for next generation distribution system management that should cover the traditional DMS functions as well as new challenges from DR, DER, and PEV integrations.

Chair - Edwin Liu, Quanta Technology, VP

Panelists:

1. DMS Strategy at SCE
Mike Montoya, Southern California Edison, Director Grid Advancement
2. Distributed Resource Management with the Smart Grid; A Municipal Utility Perspective
Bruce Hamer, Burbank Water and Power, Program Manager of Smart Grid
3. The Role of Integrated Distribution Management Systems in Supporting Demand Management and DERs
Ethan Boardman, Alstom GRID, Director of Business Development
4. Challenges and Technology Solutions for Integrating and Managing DERs
Ali Vojdani, UISOL, CEO
5. Distribution Management System of the Future
Sakis Meliopoulos, Georgia Tech, Professor

Room:
California Ballroom B

Electric Vehicle Impacts and Issues (Paper Session)

1:30 – 3:00 p.m.

Chair: Abas Goodarzi, US Hybrid

10SG0020, Optimal Charging Strategies of Electric Vehicles in the UK Power Market

10SG0054, Local and Global Optimization of Exportable Vehicle Power based Smart Microgrid

10SG0067, The Impact of Unexpected Power Demand from Electric Vehicles on Future Load Profiles: Case Study on Thailand

10SG0098, Optimal Control of the Plug-In Electric Vehicles for V2G Frequency Regulation using Quadratic Programming

10SG0125, Towards Improving Renewable Resource Utilization with Plug-in Electric Vehicles

Room:
California Ballroom A

MicroGrids (Paper Session)

1:30 – 3:00 p.m.

Chair : Steve Pullins, Horizon Energy Group

10SG0044, Applications of Microgrids in Distribution System Service Restoration

10SG0052, Voltage Control Scheme Using Fuzzy Logic for Residential Area Networks with PV Generators in Saudi Arabia

10SG0062, Optimal Energy Management of Microgrid Systems in Taiwan

10SG0105, Dynamic Operation and Control of a Multi-DG Unit Standalone Microgrid

10SG0112, Demand Response for Smart Microgrid: Initial Results

3:00 – 3:30 p.m.

Room: California Promenade

Break

3:30 – 5:00 p.m.

Room: California Ballroom C

End of Day Plenary Panel—Visionary Aspects

Tom Ayers—President and Chief Executive Officer of Tropos Networks - will offer a keynote and moderate a discussion on the vision of a smart grid technology enabled world. The panelists will represent manufacturing, research, and utility points of view.

Panelists:

Moderator and Keynote-Tome Ayers

Mark McGranaghan (EPRI)

Cheri Warren (National Grid)

Stephen J. Callahan (IBM)

5:00 – 7:00 p.m.

Room: Pacific Ballroom A/B

Reception and Poster Session (Poster Session)

Host: Mohammad Shahidepour, Illinois Institute of Technology

10SG0013 Advanced ROCOF Protection Of Synchronous Generator

10SG0102 Distribution Transformer Losses and Performance in Smart Grids with Residential Plug-In Electric Vehicles

10SG0026 Eliminating Battery Back-up Power with the Use of Compressed Air

10SG0033 The Impact of Integrating Distributed Generations on the Losses in the Smart Grid

10SG0065 Is micro-CHP Price Controllable in a Pirce Signal Controlled Virtual Power Plant

10SG0066 Robust Scheduling of Residential Distributed Energy Resources Using a Novel Energy Service Decision-Support Tool

10SG0073 A Novel Structure for Smart Grid Oriented to Low Carbon Energy

10SG0087 Prediction of Voltage Sag in The Transmission System of Vietnam, A Case Study

10SG0095 Consumer-Centric Smart Grid

10SG0096 A Survey of PEV Impacts on Electric Utilities

10SG0103 Realizing Smart Grid Benefits Requires Energy Optimization Algorithms at Residential Level

10SG0104 An Adaptive Photovoltaic-Inverter Topology

10SG0107 Classification of Power System Disturbances Based On Wide-Area Frequency Measurements

10SG0109 Global Energy Model

10SG0113 A MatLab Based Software for Measurement of Transmission Line Fields

10SG0124 Web-Based Online Real Time Reliability Information System for Composite Power Systems Including Wind Turbine Generators

10SG0128 Decision-Guided Self-Architecting Framework for Integrated Distribution and Energy Management

10SG0136 Fault Location in Underground Power Networks: a Case Study

10SG0133 Generic Three-Phase Power Flow Methods Using Symmetrical Components for Symmetrical and Unsymmetrical Power System Networks

10SG0135 Three-Phase Transformer Modeling Using Symmetrical Components

10SG0108 Distributed Non-Intrusive Load Monitoring

10SG0030 Robust State-Estimation Procedure using a Least Trimmed Squares Pre-processor

10SG0050 Hierarchical Robust State Estimation in Power System using Phasor Measurement Units.

10SG0061 Integrated System Architecture and Technology Roadmap toward WAMPAC

10SG0123 Locating Phasor Measurements and Detecting Cutset Angles in Power Systems

10SG0131 High Performance State Estimation for Smart Grid Distribution Network Operation

Tuesday, January 18

Time	Activity — <i>Theme of the Day: Practitioners</i>
<p>8:00 – 8:30 a.m. Room: California Ballroom C</p>	<p>Opening Session, Welcome Speeches, Keynote Speaker Provisional Keynote Title: <i>Integrating New Technologies-Making it Work</i></p>
<p>8:30 – 10:00 a.m. Room: California Ballroom C</p>	<p>Morning Plenary Roundtable Don Von Dollen, Director of EPRI's Intelligrid program and past ISGT conference chairman will lead a roundtable discussion on the challenges of implementing smart grid technology in the near term.</p> <p><i>Panelists:</i></p> <p style="padding-left: 40px;">Gary Rackliffe (ABB) Dr. William Lawrence (Lockheed Martin) Doug Houseman (EnerNex) Jeff Gooding (SCE) Matthew Green (PPL)</p>
<p>10:00 – 10:30 a.m. Room: California Promenade</p>	<p><i>Break</i></p>
<p>10:30 – 12:00 p.m. Room: California Ballroom C</p>	<p>Advanced Simulation (Panel Session) <i>10:30 – 12:00 p.m.</i> Chair : Chris Knudsen, PG&E</p> <p style="padding-left: 40px;">10SG0032, Mechanism and Application of Smart Control Model 10SG0080, Grid Impact Indicators for Active Building Simulation 10SG0085, Intelligent and Parallel State Space Pruning for Power System Reliability Analysis Using MPI on A Multicore Platform 10SG0088, Prosumer-Based Smart Grid Architecture Enables a Flat, Sustainable Electricity Industry 10SG0134, Modeling of Automatic Local Controllers in Three Phase Load Flow Calculation</p>
<p>Room: California Ballroom A</p>	<p>Grid Device Integration (61850) (Paper Session) <i>10:30 – 12:00 p.m.</i> Chair: Noel Schulz, Kansas State University</p> <p style="padding-left: 40px;">10SG0024, Security Hub Architecture Support for IEC61850 Information Exchange Protocols 10SG0025, IEC 61850 Prototype Design 10SG0027, GOOSE based Protection Scheme Implementation & Testing in Laboratory 10SG0069, Study on the CIM based data integration platform 10SG0070, The Development of a Smart Distribution Grid Testbed for Integrated Information Management Systems</p>
<p>Room: California Ballroom B</p>	<p>Advanced Command and Control (Paper Session) <i>10:30 – 12:00 p.m.</i> Chair: Farrokh Rahimi, Open Access Technology International</p> <p style="padding-left: 40px;">10SG0053, Smart Dispatch for Large Grid Operations with Integrated Renewable Resources 10SG0082, Knowledge based support for Multiagent Control and Automation 10SG0084, Exploring Convergence for SCADA Networks 10SG0122, Integration of Demand Response and Renewable Resources for Power Generation Management</p>
<p>12:00 – 1:30 p.m. Room: Pacific Ballroom A/B/C</p>	<p><i>Lunch (Speaker)</i></p>

1:30 – 3:00 p.m.
Room:
California Ballroom C

Distribution System Improvements (Panel Session)

1:30 – 3:00 p.m.

Chair: G. Larry Clark, Alabama Power Company

Panel Description: The emerging Smart Grid innovations are essentially the automation of engineering technologies into real-time solutions for the planning, design and operation of the electric distribution system. The innovations begin with real-time knowledge of the state and quality of energy delivery through the deployment of telemetry techniques throughout the distribution system. Analysis applications are employed to optimize the real-time operation of the distribution facilities and increase its asset utilization. Robust communications with adequate bandwidth provides the infrastructure for the recovery of real-time telemetry to support the Smart Grid innovations.

Panelists:

G. Larry Clark, Alabama Power Company
Ethan Boardman, Alstom GRID
Dan Nordell, Xcel Energy
Mani Venkata, University of Washington
Paul Mydra, EPRI

Room:
California Ballroom A

Field Network Communications (Paper Session)

1:30 – 3:00 p.m.

Chair: Steve Blume, Applied Professional Training

10SG0021, Overvoltage Protection of Data Concentrators used in Smart Grid Applications

10SG0022, Resilient Wireless Data Communication for Critical Infrastructure

Matt Gillmore, CMS Energy

Mark Thompson, Aclara

Room:
California Ballroom B

Power Quality (Panel Session)

1:30 – 3:00 p.m.

Chair: Mark McGranaghan, EPRI

10SG0057, Harmonic Losses and Stresses of Nonlinear Three-Phase Distribution Transformers Serving Plug-In Electric Vehicle Charging Stations

10SG0016, Comparison of Two Compensation Control Strategies for Shunt Active Power Filter in Three-Phase Four-Wire System

10SG0060, Extended Kalman Filter Based Grid Synchronization in the Presence of Voltage Unbalance for Smart Grid

10SG0072, Sensitivity Analysis of the Kalman Filter and Its Applications in Power Systems

10SG0130, Assuring Voltage Stability in the Smart Grid

3:00 – 3:30 p.m.
Room: California Promenade

Break

3:30 – 5:00 p.m.
Room:
California Ballroom C

Afternoon Plenary Panel: Implementation: The Next Ten Years

Mark McGranaghan, Director of Smart Grid and Distribution Research at EPRI will moderate a panel on where we go from here with smart grid implementation.

Paul De Martini, Strategy CTO for Smart Grid, Cisco Systems

Steve Pullins (DOE Modern Grid Initiative)

John McDonald (GE)

Bob Saint (NRECA)

5:00 – 6:00 p.m.

Networking Time

6:00 – 8:30 p.m. Dinner Event
Room: Pacific Ballroom
A/B/C

Wednesday, January 19

Time	Activity — <i>Theme of the Day: Regulatory Considerations</i>
<p>8:00 – 9:00 a.m. Room: California Ballroom C</p>	<p>Opening Session—Welcome Speeches, Keynote Speaker—Dian M. Grueneich, Former Commissioner CPUC <i>The Role of Government and Regulation in Grid Modernization</i></p>
<p>9:00 – 10:00 a.m. Room: California Ballroom C</p>	<p>Morning Plenary Roundtable-Regulatory Challenges for a Smart Grid Paul Centolella, a Commissioner for the Public Utilities Commission of Ohio and NIST Smart Grid Interoperability Panel Governing Board Member will moderate a roundtable discussion among representative from several stakeholder groups on regulatory challenges facing smart grid implementation—and smart grid applications that depend on regulatory action to be viable.</p> <p><i>Panelists:</i></p> <p>Paul Centolella (Ohio PUC) Dian Grueneich (Former California PUC Commissioner) Tab Gangopadhyay, P.Eng. (Canada National Energy Board) Chris Hickman (DOE Regulatory Assistance Project) Joe Kleha (PPL Regulatory) Ann McKibbin (Consumer Advocate)</p>
<p>10:00 – 10:30 a.m. Room: California Promenade</p>	<p><i>Break</i></p>
<p>10:30 – 12:00 p.m. Room: California Ballroom C</p>	<p>Smart Grid Cyber Security (Paper Session) <i>10:30 – 12:00 p.m.</i> Chair : Alireza Khaligh, Illinois Institute of Technology</p> <p>10SG0076, Virtual Energy Demand Data: Estimating Energy Load and Protecting Consumers' Privacy 10SG0093, A Testbed for Analyzing Security of SCADA Control Systems (TASSCS)</p> <p>Perry Pedersen (NRC) Justin Searle (InGardians) Tom Dion (DHS)</p>
<p>Room: California Ballroom A</p>	<p>Smart Grid Economics (Paper Session) <i>10:30 – 12:00 p.m.</i> Chair : Jay Giri, Alstom</p> <p>10SG0038, Incorporating Fairness within Demand Response Programs in Smart Grid 10SG0049, Economic Model Predictive Control for Building Energy Systems 10SG0091, Coordinating Regulation and Demand Response in Electric Power Grids using Multirate Model Predictive Control 10SG0117, Smart Grid: An Electricity Market Perspective 10SG0118, A Decision-Guided Advisor to Maximize ROI in Local Generation & Utility Contracts</p>
<p>Room: California Ballroom B</p>	<p>Tutorial: Microgrids – Designing Their Role in Smart Grid (Tutorial Sponsored by Plain Talk) <i>10:30 – 12:00 p.m. • Part 1 of 2 (Part 2 1:00-2:30)</i> <i>Lead Instructor: Steve Pullins</i></p> <p>The Microgrid tutorial is based on real implementation of microgrids and the roles they will play in the evolution of smart grid. The course will cover:</p>



The case for microgrids

Design and implementation considerations

Microgrid marketplace

Where does the microgrid revolution lead?

The attendee will leave with an understanding of the key aspects pertaining to designing and implementing a microgrid.

12:00 – 1:00 p.m.
Room:
California Ballroom D

Lunch

1:00 – 2:30 p.m.
Room:
California Ballroom C

Technology Enabled Physical Security (Panel Session)

1:00 p.m.-2:30 p.m.
Chair: Chris Kelly, National Grid

Panelists:

- Kevin Brown, EnerNex
- Pan Kamal, Alert Enterprise
- Chris Kelly, National Grid
- Steve Chasko, Landys&Gyr

Room:
California Ballroom A

A Global View of Demand Response (Paper Session)

1:00 p.m.-2:30 p.m.
Chair: Joseph Yan, Southern Cal Edison

- 10SG0064, Development of Reliability based Demand Response Program in Korea
- 10SG0068, Smart (In-home) Power Scheduling for Demand Response on the Smart Grid
- 10SG0077, Multi-Objective Demand Response Allocation in Restructured Energy Market
- 10SG0081, Case Studies of Smart Grid Demand Response Programs in North America

Room:
California Ballroom B

Tutorial: Microgrids – Designing Their Role in Smart Grid

1:00 p.m.-2:30 p.m. • Part 2 of 2
(Continued from morning session)

2:30 – 4:00 p.m.
Room:
California Ballroom C

Closing Panel/Moderated Roundtable

Closing Keynote — Paul Centolella

Closing Remarks

- Dr. Mohammad Shahidehpour, Chair, 2012 ISGT
- Al Rotz, President, IEEE Power & Energy Society

