

# i-PCGRID Workshop 2018

Innovations in Protection & Control for Greater Reliability Infrastructure Development

## Strategies for Energy Trends & Industry Sustainability

New Generation of Energy, Technology, Security, and Reliable Power Delivery

2.4 Continuing Education Units (CEU) available this year

To register, please contact Deanie Sanders, Mississippi State Univ. - Phone: (662) 325-2314

## Program

March 28– 30, 2018

245 Market Street, Auditorium, San Francisco, California, USA

You are cordially invited to attend the Annual Workshop in Innovations in Protection and Control for Greater Reliability Infrastructure Development (i-PCGRID) hosted by Pacific Gas and Electric Co. (PG&E) and organized by PG&E, Mississippi State University and Quanta Technology.

The importance of a modern electricity grid for sustainable delivery of reliable, communicative, and high-quality electricity has energized the organizing committee to continue with its tradition of fostering knowledge, sharing of best practices, and information exchange through workshops. As the electrical power and energy industry is in a crucial transition phase as initiatives we take today will affect how the grid is operated for years to come, this gathering of the minds initiative works to develop a shared vision for a modern, efficient grid. The i-PCGRID 2018 Workshop will emphasize both practical lessons learned from managing grid system and equipment assets and innovative and future looking technologies and solutions to continue building a more resilient and efficient grid.

**Core Program** discussions focus on **Key Success Factors for Modernizing the Electrical Grid** to provide reliable, safe, and cost-effective delivery of electrical energy around the world. **IN-DEPTH** featured topics dive into energy trends and industry sustainability, global grid resiliency and modernization efforts and the required performance levels. Part of this year's program is focused on technical and regulatory opportunities and challenges. To effectively enable and utilize these resources and maintain reliability, T&D planning and operations must transform. Learn from those already dealing with large scale interconnection of renewable resources and storage and impact on balancing demand and supply chain, or the need for new policies in grid of things to address investments in support of the new energy trends. Worldwide sustainability roadmaps and efforts, to improve the performance of electric utility systems and address the energy needs of society, offer many lessons learned and winning strategies.

**Supplemental** Security and Communication; Microgrids and Smart invertors, Electric Vehicles, Advanced Monitoring, Protection and Control and Automation, Adaptive Protection Systems, Architectures for Grid Modernization, Advanced Test Facilities, Integrated Planning and Operation, Importance of Standards. It will showcase endeavors and findings by practitioners navigating the Frontiers of the Grid, Balancing Operational Readiness, Energy Mix Strategies, and Implementing Advances in Technology.

**On-line Registration:** <https://ipcgrid.ece.msstate.edu>

To register by phone, please contact Deanie Sanders: [deanie@ece.msstate.edu](mailto:deanie@ece.msstate.edu)

### Electrical and Computer Engineering

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### Overnight Shipping address:

216 Simrall Hall  
406 Hardy Road  
Mississippi State, MS 39762

On-site registration is available during the Event. Partial registration is not available.

For questions, please contact us:

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# i-PCGRID Workshop 2018

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Day 1 - Wednesday, March 28, 2018		
Time	Item	Presenter / Session Coordinator
7:15 AM	<b>Registration &amp; Refreshments</b> Safety and Emergency Response	Jonathan Sykes – PG&E
8:00 AM	Introduction and Welcome	Sykes, Novosel, Fu
<b>*8:05 AM</b>	<b>PG&amp;E's Energy Landscape</b>	<b>Gregg Lemler – PG&amp;E</b>
<b>*8:30 AM</b>	<b>New Technologies for Protection and Control</b>	<b>Ed Schweitzer – SEL</b>
<b>*9:00 AM</b>	<b>Grid Modernization Initiatives</b>	<b>Larry Bekkedahl – Portland General Electric</b>
<b>*9:25 AM</b>	<b>The Road Ahead for Protection and Reliability</b>	<b>Mark Carpenter – Oncor</b>
9:50 AM	Power System Resilience and Reliability	Robert Cummings – NERC
<b>10:10 AM</b>	<b>Break</b> <span style="float: right;"><i>Session Coordinators:</i></span>	<i>Cheryl Gessner &amp; Sandra Ellis – PG&amp;E</i>
10:30 AM	US National Academy Report on Resilience	Jeff Dagle – Pacific Northwest Nat'l Lab
10:50 AM	Frequency Response and Black-start Tuning of Hydro Governors	Steve Yang & Dmitry Kosterev - BPA
11:10 AM	Integrated Smart Grid Performance Testing	Gerald FitzPatrick – NIST
11:30 PM	IEEE 1547 Standard Update and Smart Inverter Deployment	Chase Sun – PG&E
11:50 PM	W-STEM	Olivia Trinko
<b>12:00 PM</b>	<b>Lunch</b> <span style="float: right;"><i>Session Coordinators:</i></span>	<i>Ani Sadikovic – QT, Lokoko Kitenza-PG&amp;E</i>
1:00 PM	HELICS – Co-simulation Framework for Smart Grid	Philip Top – Lawrence Livermore Nat'l Lab
1:20 PM	<b>Panel Session: Protection and Control Challenges and Solutions</b> <b>Moderator: Scott Hayes</b>	Karl Iliev – SDG&E Jeff Shiles – SCE Steve Kunsman – ABB David Hart – Quanta Technology
<b>3:00 PM</b>	<b>Break</b> <span style="float: right;"><i>Session Coordinator:</i></span>	<i>Reza Nasri – QT, Shirin Tabatabai – PG&amp;E</i>
3:15 PM	Value Proposition for Synchrophasor Investment	Gordon Matthews – BPA
3:35 PM	Impact of Renewables on Protection	Mike Jensen – PG&E
3:55 PM	Power Line Carrier Holes and Field Trial Tests	Tony Bell – AMETEK
4:15 PM	Improved Real/Reactive Power Controls of Converter-based DER in Microgrids	Masoud Karimi – MSU
4:35 PM	Distribution Statcom Applications	David Oteman – American Super Conductor
<b>4:55 PM</b>	<b>Day 1 Closeout – Adjourn</b>	<i>Jonathan Sykes, Yong Fu</i>

\* Keynote Speaker

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Day 2 - Thursday, March 29, 2018		
Time	Item	Presenter
7:15 AM	<b>Registration &amp; Refreshments</b>	
7:55 AM	Introduction & Greetings	Jonathan Sykes – PG&E
*8:00 AM	<b>Smart Meter Data Utilization in Operations</b>	<b>Pat Hogan – PG&amp;E</b>
*8:25 AM	<b>The Transformation Towards A More Reliable and Resilient Grid</b>	<b>Bill Chiu – SCE</b>
*8:50 AM	<b>Grid Modernization Initiatives at ComEd</b>	<b>Shay Bahramirad – ComEd</b>
*9:15 AM	<b>Driving Grid Transformation - U.S. DOE Advanced Grid Research and Development</b>	<b>Michael Pesin – Department of Energy</b>
9:40 AM	Industry Trends and Innovation	Damir Novosel – QT, Jonathan Sykes – PG&E
10:00 AM	<b>Break</b> <span style="float: right;"><i>Session Coordinators:</i></span>	<i>Greg Langan &amp; Alan Stanek – PG&amp;E</i>
10:15 AM	<b>Panel Session: DER Valuation and DSO Model</b> <b>Moderator: Ralph Masiello – Quanta</b>	Tom Bialek – SDG&E Mihir Desu – Strategen Lorenzo Kristov Shay Bahramirad – ComEd
11:45 AM	RTDS Testing and Modeling	Om Nayak – RTDS
12:05 Noon	<b>Lunch</b> <span style="float: right;"><i>Session Coordinators:</i></span>	<i>Dessai Rustom-PG&amp;E, Hai Le-PG&amp;E</i>
1:05 PM	Error Correction and Hidden Failure Detection in Centralized Substation Protection	Sakis Meliopoulos – GT
1:25 PM	Storage Applications at PG&E	David Gabbard/Michael Medeiros – PG&E
1:45 PM	Storage Applications at Entergy	Cat Wong – Entergy
2:05 PM	Synchrophasor Control Applications	Pavel Etingov – PNNL and Marianna Vaiman – V&R Energy
2:30 PM	Modern EMS Solutions	Anil Jampala/Manu Parashar – GE Software Sol.
2:50 PM	Energy Efficiency, Key Issue for Low-Carbon Emission	Ruomei Li – China Society of Electrical Engineering
3:10 PM	<b>Break</b> <span style="float: right;"><i>Session Coordinators:</i></span>	<i>Sun Young-Lai and Frankie Au-Yeung – PG&amp;E</i>
3:25 PM	Earth Quake Forecasting	Dan Coughlin – QuakeFinder, Greg Molnar – PG&E
3:45 PM	The Universal Solution For Grid IoT Integration	Simon Rodriguez – Subnet Solutions
4:05 PM	Detection of Unauthorized Electricity Consumption using Machine Learning	Bo Tang – MSU
4:25 PM	Changes in Load Composition and Its Impact on Power System Reliability	Dmitry Kosterev – BPA
4:40 PM	Distortion and Harmonics	Tom Nelson – NIST
5:00 PM	<b>Day 2 Closeout – Adjourn</b>	<i>Damir Novosel, Yong Fu</i>

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Day 3 - Friday, March 30, 2018		
Time	Item	Presenter
<b>7:30 AM</b>	<b>Registration and Refreshments</b>	
7:55 AM	Introduction & Greetings	Yong Fu – MSU
8:00 AM	Cascading Fault in AC/DC Hybrid Power Grid	Xinzhou Dong – Tsinghua University, Beijing China
<b>*8:25 AM</b>	<b>Grid Reliability and Resilience &amp; IEEE Initiatives</b>	<b>Jonathan Sykes- PG&amp;E, Damir Novosel – QT</b>
<b>*8:50 AM</b>	<b>Grid Modernization at SDG&amp;E</b>	<b>Ali Yari – SDG&amp;E</b>
9:15 AM	Controlled Islanding using PMU Measurements	Narayanan Rajgopal –Tata Consultancy Services
9:40 AM	Integration of Electrical Vehicles	Ryan Quint – NERC
<b>10:00 AM</b>	<b>Break</b> <span style="float: right;"><i>Session Coordinator:</i></span>	<i>Suzette Smith – PG&amp;E, Lokoko Kitenza – PG&amp;E</i>
10:15 AM	<b>Panel Session: IEC 61850 Solutions</b> <b>Moderator: Alexander Apostolov – Omicron</b>	Ralph Mackiewicz – SISCO Mark Adamiak – GE Galina Antonova – ABB
11:25 AM	Time Domain Protection: From Theory to Field Application	Venkat Mynam – SEL
11:45 AM	Out-of-Step Protection Coordination	Sam Hirsi – BPA
<b>12:05 PM</b>	<b>Lunch</b> <span style="float: right;"><i>Session Coordinator:</i></span>	<i>Shirin Tabatabai – PG&amp;E, Sherrick Slattery-PG&amp;E</i>
1:00 PM	<b>Panel Session: EPIC program update</b> <b>Moderator: Wendy Al-Mukdad - CPUC</b>	Julie Cerio – PG&E Frank Goodman – SDG&E Aaron Renfro – SCE
2:10 PM	Grid Automation Migration Challenges in Managing IT and OT	Prasanth Gopalakrishnan – Kalkitech
2:30 PM	Frequency Response of Major NA Interconnections due to High Penetrations of Photovoltaic Generation	Yong Liu, University of Tennessee
<b>2:50 PM</b>	<b>Break</b> <span style="float: right;"><i>Session Coordinator:</i></span>	<i>Carmen Contreras – PG&amp;E</i>
3:00 PM	System Stability Management	Ali Daneshpooy and Rahul Anilkumar – QT
3:20 PM	Transmission Solution for an Uncertain Future – a Case Study	Chifong Thomas – Smart Wires Inc.
3:40 PM	Cyber Physical Co-simulation Platform for Distributed Energy Resources in Smart Grids	Jonathan Coignard – LBNL and Franz Stadtmueller – PG&E
4:00 PM	Using Finite Element Analysis and Computation Fluid Dynamics to Assess and Extend the Lifespan of In-Service Equipment.	Brendan Dooher - PG&E
4:15 PM	<b>Wrap-up / Topics for Future Events - Adjourn</b>	<i>Jonathan Sykes, Damir Novosel, Yong Fu</i>