

**NASPI Work Group Meeting  
Albuquerque, NM  
April 24-26, 2018**

**Albuquerque Marriott  
2101 Louisiana Boulevard NE  
Albuquerque, New Mexico, 87110  
(505) 881-6800**

The North American Synchrophasor Initiative (NASPI) held in Albuquerque, New Mexico, April 24-26, 2018 will feature technical sessions and presentations on new synchrophasor-based applications for planning or operational purposes, as well as uses that enhance the reliability and resilience of the power system. We also plan to share and discuss new research in the synchrophasor technology deployment and advanced analytics. Robert W Cummings, the Senior Director of Engineering and Reliability Initiatives for the North American Electric Reliability Corporation is the keynote speaker.

On April 24<sup>th</sup> from 8:30AM – 12:00PM NASPI will host an optional technical workshop. [NASPI Technical Workshop](#) - *Emerging Network and Communications Technologies*.

### Final Agenda

Tuesday, April 24, 2018 - Grand Ballroom A-E	
8:00 - 9:00 am	<b>NASPI Registration and coffee</b> - Ballroom Foyer
8:30 – 12:00 pm	<i>NASPI Technical Workshop - Emerging Network and Communications Technologies</i>
12:00 – 1:00 pm	<b>Lunch</b> - Ballroom F-J
1:00 – 1:10 pm	<b>Welcome, Introductions, and Logistics Review</b> – Jeff Dagle (PNNL)
1:10 - 1:20 pm	<b>NASPI Project Manager Update</b> – Alison Silverstein
1:20 – 1:45 pm	<b>Keynote Speaker:</b> Robert W Cummings, Senior Director of Engineering and Reliability Initiatives, North American Electric Reliability Corporation
1:45 – 2:15 pm	<b>NASPI Awards</b> - Alison Silverstein
2:15 – 2:25 pm	Department Of Energy (DOE) update - Phil Overholt
2:25 – 2:35 pm	Electric Power Research Institute (EPRI) update - Mahendra Patel
2:35 – 2:45 pm	North American Electric Reliability Corporation (NERC) / Synchronized Measurement Subcommittee (SMS) update – Timothy Fritch
2:45 – 2:55 pm	Institute of Electrical and Electronics Engineers (IEEE) update - Allen Goldstein
2:55 – 3:05 pm	Peak Reliability update - Hongming Zhang
3:05 – 3:20 pm	<b>Break</b> - Ballroom Foyer
3:20 – 4:35 pm	<b>Session 1: Large-Scale Implementation</b> <ul style="list-style-type: none"> <li>• Case Study: Benefits and Lessons - using synchrophasor measurements for Wide Area Situational Awareness (WASA): Dan Brancaccio, BRIDGE; Tariq Rahman, SDG&amp;E</li> <li>• The Role of a High-Performance Sandbox in Your Synchrophasor Analytics Pipeline: Kevin D. Jones, Dominion Energy; Sean Murphy, PingThings, Inc.</li> <li>• A Simplified Data Architecture for Synchrophasor Data: Matthew Rhodes, Salt River Project; Jerry Schuman &amp; Sean Murphy, PingThings, Inc.</li> </ul>
4:35 – 5:00 pm	<b>NASPI updates and adjournment</b>

<b>Wednesday, April 25, 2018 - Grand Ballroom A-E</b>					
8:00 – 9:00 am	<b>Registration and coffee</b> - Ballroom Foyer				
9:00 – 10:40 am	<b>Session 2: Miscellaneous Topics</b> <ul style="list-style-type: none"> <li>• Substation Secondary Asset Health Monitoring Based on Synchrophasor Technology -- DE-OE0000850 Project Update: Neeraj Nayak, Heng Chen, Lin Zhang, Xinyang Zhou, Tingyang Zhang, &amp; Joshua Chynoweth, Electric Power Group; Yanfeng Gong &amp; Qiushi Wang, American Electric Power</li> <li>• PMU Emulator for Power System Electromechanical Dynamics Simulators: Evangelos Farantatos &amp; Mahendra Patel, EPRI; Anurag Srivastava &amp; Param Banerjee, Washington State University</li> <li>• Time Synchronization Interval Attack: Impact and Detection: Jiecheng Zhao, Yilu Liu, University of Tennessee; Yilu Liu, Peter Fuhr, &amp; Marissa E. Morales Rodriguez, Oak Ridge National Laboratory</li> <li>• Vulnerability of Synchrophasor-based WAMPAC Applications' to Time Synchronization Spoofing: Luigi Vanfretti, Rensselaer Polytechnic Institute; M. Shoaib Almas, Royal Institute of Technology KTH</li> </ul>				
10:40 – 10:55 am	<b>Break</b> - Ballroom Foyer				
10:55 – 12:10 pm	<b>Session 3: Stability Applications</b> <ul style="list-style-type: none"> <li>• Special Reliability Assessment on Oscillatory Modes in North American Interconnections: Mani V. Venkatasubramanian, Ryan Quint, &amp; John Skeath, NERC</li> <li>• Recent Progress on Forced Oscillation Detection and Source Locating Findings at Peak Reliability: Jiawei 'Alex' Ning &amp; Hongming Zhang, Peak Reliability</li> <li>• PMU Measurement-Model Based Voltage Security Monitoring Application: Keith Mitchell, MISO; Saugata Biswas, Tushar, Anil Jampala, Manu Parashar, GE Power; Chaitanya Baone, GE Global Research Center</li> </ul>				
12:10 – 1:10 pm	<b>Lunch</b> - Ballroom F-J				
1:10 – 2:25 pm	<b>Session 4: Miscellaneous Topics</b> <ul style="list-style-type: none"> <li>• Wide-Area Synchrophasor based Transient Instability Prediction and Control: Dinesh Rangana Gurusinge, RTDS Technologies Inc; Neethu Raju &amp; Athula D. Rajapakse, University of Manitoba</li> <li>• Enhancing the System Resiliency using PMU based RAS Scheme: Tushar, Vignesh V, P. Banerjee, A. Srivastava, Washington State University</li> <li>• System Operator Synchrophasor Training: Bill O'Brien, PJM Interconnection</li> </ul>				
2:25– 2:40 pm	<b>Break</b> - Ballroom Foyer				
2:40 – 6:00 pm	<b>Task Team Breakouts</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Control Room Solutions Task Team</td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>• CRSTT business</li> <li>• 3-level Measurement Data Validation System: Alexey Danilin, Pavel Kovalenko, &amp; Viktor Litvinov, GRT Corporation</li> <li>• Real Time Applications Using Linear State Estimation Technology: Neeraj Nayak, Ken Martin, Lin Zhang, Iknoor Singh, Vikram Chiluka, &amp; Kevin Chen, Electric Power Group; Tony Faris &amp; Thong Trinh, BPA; Atena Darvishi &amp; Alan Ettlinger, NYPA</li> <li>• Training System Operators in Synchronized Phasor Measurement Technology by simulating major WECC system events: Bharat Bhargava, Advanced Power System Technologies; Armando Salazar, Southern California Edison Co</li> </ul> </td> </tr> <tr> <td style="text-align: center;">Data &amp; Network Management Task Team</td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>• DNMTT business</li> <li>• Real-time Cyber-Physical Co-simulation of Synchrophasor-based Systems Coupled with Communication Network Emulation: Vahid Jalili-Marandi &amp; Thomas Kirk, OPAL –RT; Jason Protacio, SCALABLE Network Technologies</li> </ul> </td> </tr> </table>	Control Room Solutions Task Team	<ul style="list-style-type: none"> <li>• CRSTT business</li> <li>• 3-level Measurement Data Validation System: Alexey Danilin, Pavel Kovalenko, &amp; Viktor Litvinov, GRT Corporation</li> <li>• Real Time Applications Using Linear State Estimation Technology: Neeraj Nayak, Ken Martin, Lin Zhang, Iknoor Singh, Vikram Chiluka, &amp; Kevin Chen, Electric Power Group; Tony Faris &amp; Thong Trinh, BPA; Atena Darvishi &amp; Alan Ettlinger, NYPA</li> <li>• Training System Operators in Synchronized Phasor Measurement Technology by simulating major WECC system events: Bharat Bhargava, Advanced Power System Technologies; Armando Salazar, Southern California Edison Co</li> </ul>	Data & Network Management Task Team	<ul style="list-style-type: none"> <li>• DNMTT business</li> <li>• Real-time Cyber-Physical Co-simulation of Synchrophasor-based Systems Coupled with Communication Network Emulation: Vahid Jalili-Marandi &amp; Thomas Kirk, OPAL –RT; Jason Protacio, SCALABLE Network Technologies</li> </ul>
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	<p>Distribution Task Team</p> <ul style="list-style-type: none"> <li>• DisTT business</li> <li>• Metrological characterization of a calibrator for static and dynamic characterization of Distribution Network PMUS: Guglielmo Frigo, Asja Derviskadić, &amp; Mario Paolone, Swiss Federal Institute of Technology (EPFL) – Distributed Electrical System Laboratory (DESL)</li> <li>• Monitoring of Active Distribution Networks using Synchrophasor Applications benefiting Joint T&amp;D Operations: Luigi Vanfretti, Rensselaer Polytechnic Institute</li> <li>• The Kaiser Richmond Microgrid: scheduling and control of renewable power with phasor feedback: Raymond De Callafon, University of California San Diego; David Bliss, Charge Bliss</li> <li>• Intelligent PMU: Alexey Danilin, Pavel Kovalenko, &amp; Viktor Litvinov, GRT Corporation</li> </ul>
	<p>Engineering Analysis Task Team</p> <ul style="list-style-type: none"> <li>• EATT business</li> <li>• Machine Learning Techniques for Oscillation Baseline in the Western Interconnection: Jim Follum, Jason Hou, Pavel Etingov, Frank Tuffner, &amp; Heng Wang, Pacific Northwest National Laboratory; Dmitry Kosterev &amp; Gordon Matthews, Bonneville Power Administration</li> <li>• Big Data Framework for Synchrophasor Data Analysis: Pavel Etingov, Jason Hou, Huiying Ren, Heng Wang, &amp; Dimitri Zarzhitsky, Pacific Northwest National Laboratory</li> <li>• Surveying Time Series Data Platforms: A Technology Overview with Benchmarks: Sean Murphy, PingThings, Inc.; Kevin D. Jones, Dominion Energy; Michael Andersen, UC Berkeley</li> <li>• Applicability of Synchrophasor Data for Fault Analysis: Nuwan Perera, ERLPhase Power Technologies Ltd.</li> <li>• New Approaches to Protection and Control Enabled with GPS-Synchronized Merging Units: Sakis Meliopoulos, Georgia Institute of Technology</li> </ul>
	<p>Performance, Requirements, Standards &amp; Verification Task Team</p> <ul style="list-style-type: none"> <li>• PRSVTT business</li> <li>• Generator Control System Performance Monitoring using PMU Measurements: Christoph Lackner &amp; Dr. Joe H Chow, Rensselaer Polytechnic Institute; Dr. Felipe Wilches-Bernal, Sandia National Laboratories</li> </ul>
6:00 – 8:00 pm	<b>NASPI Reception to include posters - Ballroom F-J</b>

<b>Thursday, April 26, 2018 – Grand Ballroom A-E</b>	
8:00 – 9:00 am	<b>Registration and coffee - Ballroom Foyer</b>
9:00 – 10:00 am	<p><b>Task Team Report-outs</b></p> <ul style="list-style-type: none"> <li>• CRSTT      • DisTT      • PRSVTT</li> <li>• DNMTT      • EATT</li> </ul>
10:00 – 10:50 am	<p><b>Session 5: Data Analytics</b></p> <ul style="list-style-type: none"> <li>• Event Detection and the Importance of Feature Selection: Brett Amidan &amp; Jim Follum, Pacific Northwest National Laboratory; Tianzhixi Yin, University of Wyoming</li> <li>• Advanced Machine Learning for Synchro-Phasor Technology: Michael (Misha) Chertkov, Los Alamos National Laboratory</li> </ul>
10:50 – 11:05 am	<b>Break - Ballroom Foyer</b>
11:05 – 12:20 pm	<p><b>Session 6: Model Validation</b></p> <ul style="list-style-type: none"> <li>• Automated Power Plant Model Verification (APPMV) at ISO New England: Meng Wu, ASU; Weihong Huang, UTK; Qiang (Frankie) Zhang &amp; Xiaochuan Luo, ISO-NE</li> <li>• Input Estimation for Power Plant Model Validation: Josh Wold, Dan Trudnowski, &amp; Matt Donnelly, Montana Tech</li> </ul>

	<ul style="list-style-type: none"> <li>SDG&amp;E Experience in Real-time Measurements of Transmission Line Impedances: Tariq Rahman &amp; Hassan Ghoudjehbaklou, SDG&amp;E; Vahid Salehi, Quanta Technology</li> </ul>
12:20 - 1:20 pm	<b>Lunch</b> - Ballroom F-J
1:20 – 2:35 pm	<b>Session 7: Control Applications</b> <ul style="list-style-type: none"> <li>The Pacific DC Intertie Wide Area Damping Controller Utilizing Real-Time PMU Feedback: Brian J. Pierre, Felipe Wilches-Bernal, David A. Schoenwald, Ryan T. Elliott, Raymond H. Byrne, &amp; Jason C. Neely, Sandia National Laboratories; Daniel J. Trudnowski, Montana Tech University</li> <li>Real Power Modulation of a Wind Turbine Using Wide-Area PMU Feedback: Ian Gravagne, Baylor University; Ross Guttromson, Sandia National Laboratories</li> <li>Under-Frequency Load Shedding based on PMU Frequency and ROCOF Measurement: Asja Derviškić, Zuo Yihui, Guglielmo Frigo, &amp; Mario Paolone, Swiss Federal Institute of Technology (EPFL) – Distributed Electrical System Laboratory (DESL)</li> </ul>
2:35 – 2:50 pm	<b>Closing comments and adjournment</b>

NASPI would like to say “**THANK YOU**” to the following partners for their support

