



**NASPI OSCILLATION DETECTION  
AND VOLTAGE STABILITY TOOLS  
TECHICAL WORKSHOP**

**October 22, 2014  
8:00 am to 12:30 pm**

**Royal Sonesta Hotel  
2222 West Loop South  
Houston Texas 77027**

Synchrophasor technology is the most significant electric grid monitoring and control center data improvement tool introduced over the past decade. High-speed synchrophasor data can enhance the quality, speed and effectiveness of control room situational awareness and operational responses to potential grid security problems.

While SCADA systems sample and report grid conditions every four to six seconds, phasor measurement units (PMUs) sample grid conditions at thirty samples per second or higher -- one hundred times faster than SCADA. These high-speed, time-synchronized data allow detection and analysis of grid oscillations and voltage stability that were not detectable before widespread PMU deployment. Both local and interconnection-wide oscillations have the potential to harm grid assets and could set off wide-scale blackouts. Similarly, local voltage instability can cause local power quality issues and could cascade into major grid disruptions.

A number of software applications have been developed to monitor synchrophasor data in real time and identify and diagnose oscillations and/or voltage problems to improve wide-area situational awareness. This NASPI technical workshop will look at the current capabilities of several commercial-grade oscillation detection tools and at several voltage stability tools, with the goal of assessing the diagnostic capabilities and information delivery capabilities of each tool. Active grid operators will be invited to review the tools and provide feedback on each.

As with NASPI's 2012 [visualization tools workshop](#), this workshop will feature several vendors in the voltage stability tool comparison, and several others for the oscillation detection tool comparison. We have given each set of vendors identical PMU datasets for two different oscillatory and two voltage stability events. For each event, each participating vendor will prepare a video clip outlining its tool's analytical approach, showing how the tool displays the event data, and explaining what the tool concludes happened in the event. First in the oscillation detection session and then in the voltage

stability session, we will show the vendor's videos for each event so the audience members can compare between the tools' visual displays, information delivery, analytical conclusions and recommendations for grid management (if any).

We will be inviting grid operators to participate in the workshop as reviewers, asking them to score each tool video and provide feedback and commentary about the effectiveness, pros and cons of each tool. The event presentations will deepen the audience's appreciation for the phenomena and potential impacts of grid oscillations and voltage instability. The operators' feedback will help the vendors improve the quality and usability of their oscillation detection and voltage detection tools. Operator guidance will also help applications developers, grid engineers and others better understand how to design and deliver actionable information for control room use.

### **WORKSHOP AGENDA**

8:00 to 8:20 am	Workshop welcome, introduction Feedback guidance for audience and operators
8:20 to 10:15 am	Oscillation detection tools Oscillation case 1 -- ringdown event -- Event overview and analysis videos from Alstom, EPG, OSIsoft, Schweitzer, University of Tennessee-Knoxville  Oscillation case 2 -- forced power system oscillations -- Event overview and analysis videos from ABB, Alstom, EPG, Schweitzer, Space-Time Insight, Washington State University  Discussion
10:15 to 10:30 am	Break
10:30 to 12:00 pm	Voltage stability tools Voltage case 1 -- Variable generation ramp -- Event overview and analysis videos from Alstom, EPG, RPI, V&R Energy  Voltage case 2 -- Load center voltage event -- Event overview and analysis videos from ABB, Alstom, V&R Energy  Discussion
12:00 - 12:30 pm	Closing discussion, including observations from human factors experts