

MISO launches high-tech grid monitoring devices

The Midwest Independent System Operator has launched a three-year program to install more than 150 high-tech monitoring devices that will monitor the state of the electricity grid 30 times each second, increasing the efficiency and reliability of power delivery. Midwest ISO is the first regional transmission organisation to move forward and execute an agreement with the US Department of Energy to implement synchrophasors, also known as phasor measurement units, to more accurately measure voltage and current within the US Eastern Interconnection. "This is a major step forward toward developing a smart grid system in the mid-west," says Midwest ISO President and CEO John Bear. "Synchrophasors will bring a new level of measurement to the grid, similar to what the MRI has done for diagnostic medicine. We will be able to view vital measurements at strategic points along the interconnected transmission network at a level that was previously impossible to reach." The project will potentially provide several commercial benefits for Midwest ISO members. The measurements could increase available transmission for Midwest ISO members and improve system-wide reliability and stability. This could ease the integration of highly-variable sources of energy, such as wind, onto the grid. "We build in a buffer zone to ensure that variations in energy delivery do not impact the stability of the system and overload our transmission wires," says Bear. "Now, we'll be able to decrease the size of that buffer zone, and use more of the available transmission to deliver more power more efficiently. And, we will be able to do this without increasing risk or decreasing reliability." Synchrophasor measurements are collected 30 times every second, as opposed to the current once every four seconds, and the data is GPS timestamped. This allows the data to be 'synchronised' and used to create enhanced grid visualisation, operational awareness, stability monitoring, state estimation and after-the-fact analysis. The planned roll-out and installation of PMUs within Midwest ISO's membership area will occur during the next three years. The first phase of the project involves transmission owners placing 15 - 20 PMUs at strategic substations throughout the Midwest ISO footprint. After the pilot period, transmission operators will install the remaining PMUs between August 2011 and March 2013. The entire project is scheduled to be in place by 31 March 2013. The Midwest ISO is responsible for the reliable operation of and equal access to power lines in 13 US states and the Canadian province of Manitoba.

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