Fact Sheet - April 2019 DOE Award Selections:

Research and Development of the Use of Big Data, Artificial Intelligence, and Machine Learning Technology to Leverage the Power of Grid Sensors

On April 17, 2019, the Department of Energy (DOE) announced the award of nearly $7 million to explore the use of big data, artificial intelligence (AI), and machine learning technology and tools to derive more value from the vast amounts of sensor data already being gathered and used to monitor the health of the grid and support system operations. These projects are expected to inform and shape the future development and application of faster grid analytics and modeling, better grid asset management, and sub-second automatic control actions that will help system operators avoid grid outages, improve operations, and reduce costs.

Performer: Texas A&M Engineering Experiment Station
Partners: OSIsoft LLC; Quanta Technology, LLC; Temple University
Title: Big Data Synchrophasor Monitoring and Analytics for Resiliency Tracking (BDSMART)
Federal Funds: $1,000,000
Cost Share: $696,560
Total Project Value: $1,696,560
Summary: The project will utilize Big Data Analytics (BDA) to automate monitoring of synchrophasor recordings. This will improve assessing events that may affect power system resilience. The proposed BDA will be used to automatically extract knowledge leading to event analysis, classification and prediction, all used at different stages of the grid resilience assessment: operations, operations planning, and planning. The project's techniques are based on their past work performed at the Texas A&M Engineering Experiment Station (TEES) on automated classification of faults, location of faults and instability detection using neural network and machine learning classifiers and predictors, and the latest innovations in BDA techniques developed by Temple University. The team will engage Quanta Technology experts experienced in the utility interaction to interpret the PMU data files to be utilized in the process. They will facilitate industry feedback leading to the development of metrics for evaluation of the proposed solution. Additionally, the project proposes a novel solution for predicting future events based on historical PMU data by extracting the sets of precursors and analyzing the development of PMU observed disturbances over time.