



PSERC WEBINAR

Developing and Validating a Next-Generation Cyber-Physical Energy Management System from Situational Awareness to Risk Mitigation

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Increasing cyber-physical threats along with NERC, FERC, and other drivers in the power industry have heightened the importance of verifiable cyber-physical risk analysis, from a technical as well as a practical perspective. This talk will present research focused on developing solutions (framework, algorithms, tools) toward helping utilities identify and improve capabilities for grid defense: cyber-physical situational awareness and control under adversarial presence. We present our Cyber-Physical Resilient Energy Systems (CYPRES) work funded by the US Department of Energy Cyber Security for Energy Delivery Systems (DOE-CEDS) program. The vision of CYPRES is a cyber-physical energy management system that allows the energy system to be modeled and managed together with its data, communications, and security. We present our approach which is based on physics-aware security-oriented industry-focused anomaly analytics. We discuss insights and lessons learned in developing and applying cyber-physical mathematical modeling, rigorously developed cyber-physical grid models, and our Resilient Energy Systems (RESLab) testbed for providing targeted recommendations for improving security.

AUGUST 31, 2022

[LINK TO WEBINAR](#)

1:00-2:00 P.M. EDT

(10:00-11:00 P.M. PDT)

Dr. Kate Davis is an Assistant Professor in the Department of Electrical and Computer Engineering at Texas A&M University. Dr. Davis's work has pioneered significant enhancements to power system cyber-physical security by advancing cyber-physical modeling and analysis capabilities. Prior to joining Texas A&M in 2017, Dr. Davis was a Software Engineer and Senior Consultant for PowerWorld Corporation and with University of Illinois's Information Trust Institute as a Research Scientist. Her expertise includes large scale modeling, analysis, and simulations of cyber-physical power system critical infrastructure, where she has particular interest in security-oriented control system analysis techniques. She also works to facilitate transition to practice of state-of-the-art cyber-physical situational awareness capabilities for power utilities. She was recognized as IEEE Senior Member (2018), received the Texas A&M Engineering Experiment Station Engineering Genesis Award (2019), and became a Texas A&M Engineering Experiment Station (TEES) Young Faculty Fellow (2021). She leads the Resilient Energy Systems Lab (RESLab), the cyber-physical emulation testbed created by her group, fully functional since 2020.

