



# PSERC WEBINAR

## The Digital Substation: Resilient and Cyber Secure Protection and Control

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The Digital Substation has become feasible because of recent technological advances in protection, control and optimization. Research efforts are focused on integrating these technologies into a seamless and cyber secure infrastructure for protection, control and operation. This infrastructure is the basis for accommodating and providing robust solutions to new problems arising from the integration of renewables, increased uncertainty and steeper ramp rates. The system must be self-healing against failures, hidden or visible, and secure and self-healing against malicious cyber-attacks at every level.

We focus on the protection and control infrastructure at the substation level where we build upon the dynamic state estimation based protection (EBP) and a centralized substation protection integrated with distributed dynamic state estimation for making the system self-healing against failures at the substation level. We show that the technology exists today to identify hidden failures as well as cyber-attacks and most importantly to self-heal and continue reliable operation until technicians repair the failures and/or hacked devices. The proposed technology forms the basis for the next generation of Energy Management Systems.

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**2:00-3:00 P.M. EDT**

(11:00-12:00 P.M. PDT)

**Sakis (A. P.) Meliopoulos** obtained a Diploma in Electrical and Mechanical Engineering from the National Technical University in Athens, Greece in 1972 and a Master in EE (1974) and a Ph.D. degree (1976) from the Georgia Institute of Technology in Atlanta, Georgia. After receiving a PhD degree in 1976, he joined the faculty of the Georgia Institute of Technology as a professor. Dr. Meliopoulos has modernized many power system courses at Georgia Tech, introduced new courses, initiated the power system certificate program for practicing engineers, he co-developed the Master of Science Cybersecurity, Energy Systems degree, and most importantly he has introduced visualization and animation methodologies that dramatically increase the teaching efficiency of complex power system concepts. Dr. Meliopoulos is a Fellow of the IEEE. He holds three patents, he has published three books, a chapter in the Standard Handbook for Electrical Engineers and over 400 technical papers.

