

ACPEE 2020

Title:

Enabling Renewable Resource Control in Power Systems with High Renewable Penetration

Speaker:

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Abstract:

This talk will discuss the need of additional control when power systems are operating with over 50% of converter-based renewable generation. Traditional synchronous generator controls are set to handle transient, voltage, damping, and frequency stability issues arising from contingencies. With the anticipated retirement of many steam units and replacement by increased penetration of renewable resources, the total system inertia and synchronizing torque will be decreased, affecting power system stability properties and increasing the likelihood of cascading blackouts.

The focus of this talk is to discuss approaches to enable more responsive control of renewable resources to not only recover, but also improve the system stability properties such that system reliability can be maintained under high renewable penetration. One of the added benefits is that with improved control of renewable resources, additional power transfer may be achieved without building new transmission system infrastructure.

Biography:

Joe Chow received his BS degrees in EE and Math from the University of Minnesota, and his MS and PhD degrees from the University of Illinois, Urbana-Champaign. He joined the General Electric power system business in Schenectady in 1978 and Rensselaer Polytechnic Institute in 1987. He is currently Institute Professor of Electrical, Computer, and Systems Engineering and the RPI Campus Director of the NSF/DOE CURENT ERC. His research interests include power system dynamics and control, synchrophasor measurement, and control of renewable resources.

He has published over 250 journal and conference papers and several textbooks and monographs on control and power systems. He is a fellow of IEEE and a past recipient of the Donald Eckman Award from the American Automatic Control Council, the Control Systems Technology Award from the IEEE Control Systems Society, and the Charles Concordia Power System Engineering Award from the IEEE Power and Energy Society. He is a member of the US National Academy of Engineering.