PSERC Power Systems Engineering Research Center

2023 PSERC Summer Tutorial

Extended Contingencies Against Coordinated Attacks

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This online tutorial aims to promote cyber awareness among utility owners who have been working closely with NERC CIP's high/medium/low impact categorization. As stated in the May 2023 NERC roadmap, coordinated attacks are deemed critical impacts to the grid. Therefore, transmission planning is recommended as a means to enhance asset owners' understanding of system expansion, flow patterns, and potential disruption caused by cyberattacks. This 1.5-hour tutorial is a continuation of the educational initiative in power engineering and will utilize academic tools to illustrate proof of concept and the management of combinatorial simulations discussed in various published papers. The session's primary focus will center around the summation of S-k or R-k contingencies, as well as associated metrics to quantify the hypothesized impacts of coordinated attacks against substation computers or digital relays, aligning with NERC's cyber-informed transmission planning roadmap. This will enable asset owners to understand the proposed methodologies in-depth and allocate budgetary resources more effectively to safeguard their cyber infrastructure.

JULY 26, 2023 | **12:00 – 1:30 P.M. CT**

REGISTRATION

(10:00 - 12:30 P.M. PT)

Chee-Wooi Ten is a Professor of Electrical Engineering at Michigan Tech, and his primary research focus is on investigating rare events using system risk models and data science. His research is particularly interested in understanding the interactions between power grids and transportation systems to promote the efforts of decarbonization and electrification. Currently, he is working on developing cyber-informed security engineering strategies for bulk power systems and validating the hypothesized attack impacts through both steady-state and dynamic analyses. In this field, he aims to increase awareness of emerging threats and stress the importance of anticipating potential grid disturbances and attacks, especially when the stochastic nature of increased distributed generation and load patterns makes it challenging to predict, and identifying grid bottlenecks becomes difficult.