



PSERC WEBINAR

Reliability Considerations in Cyber-Power Dependent Systems

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Recent advances to information and communication technologies has been a driving force behind the modernization to the power system. Interconnected sensors, automated switches and efficient communication infrastructure is expected to offer enhanced situational awareness and control. For example synchrophasor measurement units with higher accuracy and sampling rate enable enhanced decision tools. In the communication network information loss due to cyber-equipment unavailability and cyber threats are unavoidable.

This talk focuses on the interdependent cyber-power reliability modeling under cyber unavailability and cyber threats. The effect of the cyber system on power system performance will be addressed using reliability measures such as energy not served, IEEE Std. 1366 based reliability measures and total cost of operations. To effectively compute the power system reliability in presence of complex communication infrastructure, worst case reliability computation approach will be discussed. Finally, the effect of cyber system on power system operations would be discussed using operations and planning examples especially at the distribution level.

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Visvakumar Aravinthan received his Ph.D. in Electrical Engineering from Wichita State University in 2010. Currently he is an associate professor at Wichita State University. He is serving as the chair of the electric vehicle working group within IEEE-PES renewable technologies subcommittee and the chair of the Task Force on Reliability Consideration in Emerging Cyber-Physical Energy Systems within IEEE-PES Reliability, Risk and Probability Applications Subcommittee. His research interests include power distribution reliability analysis, cyber-power interdependency based applications for distribution and transmission, and distribution system automation and control.