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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