

A Systematic Approach for Analyzing Multiple Cyber-Physical Attacks on the Smart Grid

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Abstract : In this paper, we evaluate the resilience of the smart grid system in the presence of multiple cyber-physical attacks on its distinct functional components. We discuss attack-defense scenarios and their effect on smart grid resilience. Through contingency simulations in the Network and PowerWorld Simulator, we analyze multiple cyber-physical attacks that propagate from the cyber domain to power systems and discuss how such attacks destabilize the underlying power grid. The analysis of such simulations helps system administrators develop more resilient systems and improves the response of the system in the presence of cyber-physical attacks.

Keywords : smart grid, gas pipeline, cyber- physical attack, security, resilience

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