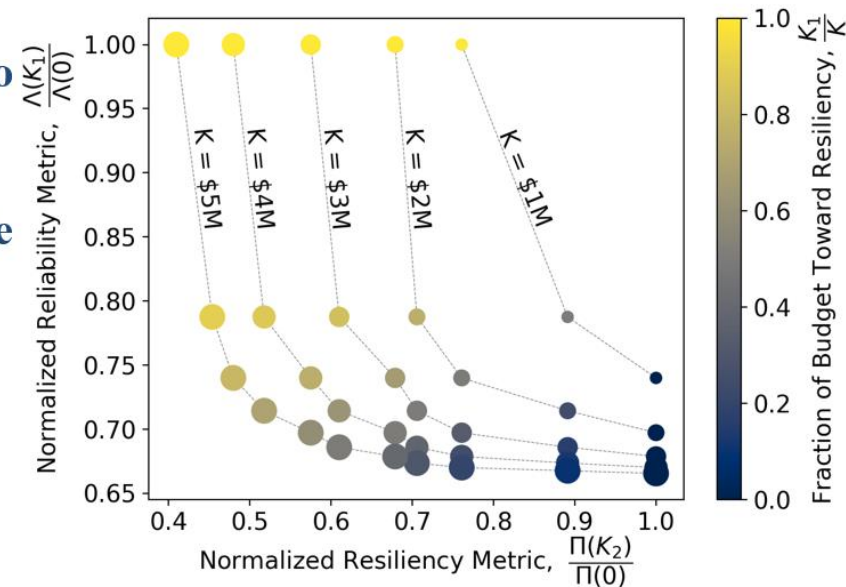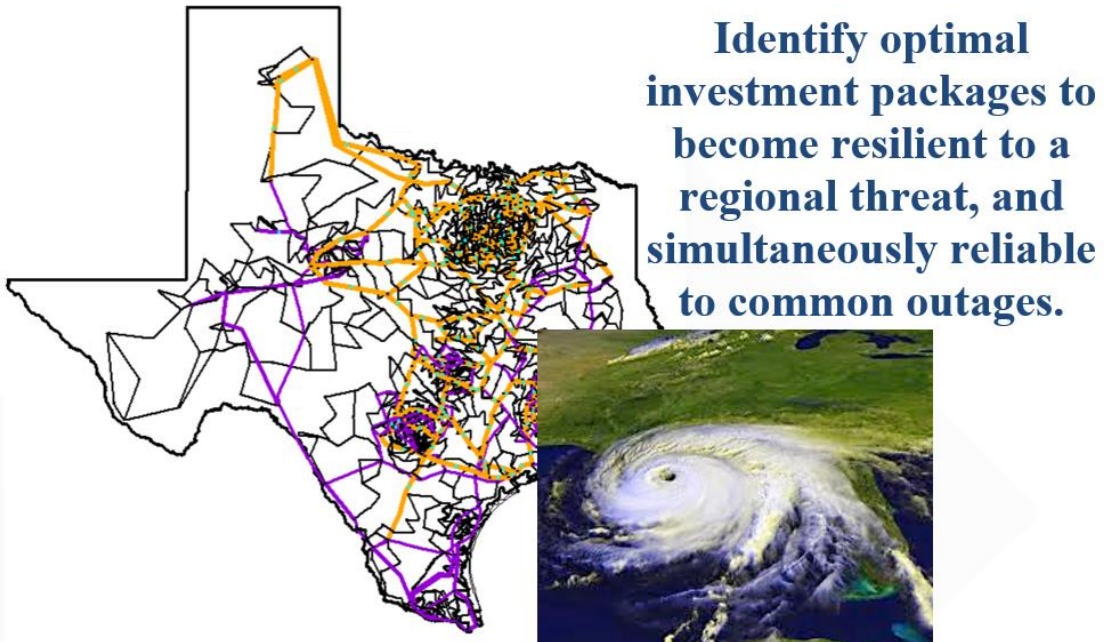# Co-optimizing Electric Grid Resilience and Reliability

Overview

Co-optimizing electric grid reliability and resilience aims to find electrical system infrastructure improvements to simultaneously enhance both grid reliability and resiliency. The optimization formulations characterize tradeoffs between resiliency and reliability, for given infrastructure investment decisions, and can aid utilities in formulating rate recovery cases to fund investments by quantifying both reliability and resilience impacts of proposed investments.

Applications

The optimization formulations have been applied on U.S. utility data to improve reliability metrics (SAIDI and SAIFI). The models have been applied on U.S. utility systems in the Midwest to become resilient to winter storms. The models have been applied on numerous IEEE grid test systems to improve reliability to small-scale outages and resilience to earthquakes, hurricanes, winter storms, physical attack, and wildfire.

Contacts

For more information on this capability, contact Dr. Brian J. Pierre, bjpierr@sandia.gov.