ELECTRIC POWER ENGINEERS

CASE STUDY

EPE's Automated Analysis for Steady State Power System Security at Austin Energy

EPE ensured steady state stability for Austin Energy using automated Python tools. By analyzing ERCOT base case models, the project focused on pinpointing critical points in the Power Voltage (PV) curve, preventing potential voltage collapse. The study addressed steady-state voltage stability, especially in power imports from Houston.

CHALLENGE

The project faced challenges related to the complexity of power system security analysis and the need to automate the identification and ranking of critical contingencies.

Evaluating steady-state voltage stability and modeling various contingencies required a sophisticated approach to ensure accuracy and reliability in the results.

SOLUTION

EPE's solution involved the development of automated Python tools to streamline the steady state power system security analysis. By leveraging ERCOT base case models and PV analysis, the team identified critical points and potential voltage collapse scenarios.

The Python tools were then extended to model Stability P1-P7 and Extreme Event contingencies, adhering to NERC standards. The automated tools facilitated the efficient selection and ranking of the worst contingencies in both AEN and ERCOT reporting formats.

RESULTS

The project delivered comprehensive reports and analyses, providing Austin Energy with valuable insights into steady state voltage stability and the identification of critical contingencies. The automated Python tools enhanced the efficiency and accuracy of the analysis, enabling the selection of the most impactful contingencies. The results facilitated informed decision-making and strategic planning for power transmission and distribution within the AEN zone, ensuring enhanced system reliability and security.