CASE STUDY

GREASEWOOD SOLAR PROJECT

BACKGROUND

Exus Management Partners (Exus) is a renewables asset management and development firm. Exus engaged EPE to conduct a forensic analysis for the Greasewood Solar project located in West Texas, after a single line to ground fault event occurred and caused the project to partially trip offline. Such faults can disrupt operations, reduce energy delivery, and compromise project reliability.

CHALLENGE

The Greasewood Solar project's partial tripping event during a single line to ground fault posed a significant operational and financial challenge for Exus. The event highlighted potential vulnerabilities in the project's ability to handle fault conditions, particularly with its inverter-based resources (IBRs) interacting with the grid.

SOLUTION

To overcome these challenges, EPE conducted a forensic analysis to address the single line to ground fault event that caused the project to partially trip offline. EPE obtained the event data from the ISO as well as the project owner to replicate the event in PSCAD to determine the root cause for the tripping and make any recommendations for mediation against future similar events. EPE had both the PSSE and PSCAD model for the project. EPE received the raw data files (.*xml) from the inverter and Power Plant Controller (PPC) to update the respective models to recreate the event. The event was not able to be replicated in PSSE and thus EPE proceeded with performing the study in PSCAD. An equivalent model of the project was not able to replicate the tripping event.

EPE updated the project model with the as-found inverter and PPC settings and implemented the system event files in PSCAD. Considering the equivalent model did not provide the results needed to understand the tripping, EPE proceeded in modeling the project as a partial equivalent model where the longest feeder for the project was modeled in detail and the remaining project was equivalized.

EPE was able to recreate the event and determined the voltage ride through injection control during the event was set too aggressively and thus causing the project to trip offline during the event. EPE provided recommendations for controller gains to be updated to the project owner to implement at the site and confirmed the commissioning of the new controller gains. A detailed report of the findings was shared with the owner as well as the ISO.

CLIENT

exus Management Partners

TYPE

Independent Power Producer (IPP)

SECTOR

Solar

ISO

ERCOT

LINE OF BUSINESS

System Studies

SERVICES PROVIDED

- Forensic Analysis
- Transient Stability Study

LOCATION

Texas

COMPLETED DATES

2022

REFERENCE

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EPE ELECTRIC POWER ENGINEERS

Delivering Energy Intelligence