

8.2.2.3 Grid Analysis

This subsection provides an analysis in accordance with RG 1.206.

An interconnection study (Reference 8.2-3) was performed by the transmission companies for steady state short circuit and stability analysis. These steady state analyses are performed for single and double circuit contingency on the 345 kV transmission system surrounding STP. The details as stated in Subsection 8.2.1.2.1 describing the offsite power system are met in accordance with North American Electric Reliability Corporation, ERCOT, TCC, and CenterPoint Energy planning criteria. These studies further demonstrate that the loss of any double-circuit 345 kV transmission line, the loss of any two 345 kV transmission circuits, or the loss of all circuits on any single independent right-of-way do not endanger the supply of offsite power required for starting, operation, and safe shutdown of STP 3 & 4.

A short circuit analysis has been performed as part of the interconnection study. The calculated maximum short circuit level at the STP 3 & 4 switchyard is less than the equipment short circuit criteria rating.

Stability studies were undertaken to evaluate the dynamic stability performance of both the proposed expansion and the existing STP power plants during transmission disturbances. Three phase fault initiated tripping events involving existing STP 1 & 2 switchyard, STP 3 & 4 switchyard and the Hillje 345 kV switchyard transmission outlets were simulated. These cases included all the possible double circuit tower outage combinations, as well as selected pairs of independent line outages. All 345 kV transmission lines cleared the faults within 4 cycle duration. The simulation results indicate stable operation of the existing STP 1 & 2 and STP 3 & 4 for all second level transmission line contingency conditions. The stability of the grid is fully maintained when considering the loss of the largest generation source, STP 3 & 4, based on the interconnection study (Reference 8.2-3).

Based on this interconnection study (Reference 8.2-3), the preferred sources of power are maintained across the associated power grid and will remain available to maintain the anticipated operational containment integrity and other vital functions in the event of a postulated accident(s).

ERCOT uses a real time contingency analysis to determine the condition of the grid for a multitude of single contingencies. For STP 3 & 4, ERCOT will run single contingencies for loss of largest generation and critical transmission lines like the analysis performed for STP 1 & 2 via the requirements of ERCOT's Protocols, Operating Guides and Procedures (Reference 8.2-6). During periods of instability or when analyzed switchyard voltages are lower than the allowed limit, the transmission operator will notify STP 3 & 4.

8.2.2.3.1 Grid Availability

ERCOT is composed of bulk power systems. The organization of ERCOT includes an engineering subcommittee which conducts joint studies by testing the adequacy of the bulk power system. The studies performed jointly by the members of the ERCOT