

DISCUSSION OF [REDACTED] (“Customer”) GENERATION SYSTEM IMPACT STUDY RESULTS FOR THE PROPOSED INCREASE IN OUTPUT TO THE GENERATING FACILITY AT OCONEE NUCLEAR STATION. TOTAL SUMMER PEAK OUTPUT IS EXPECTED TO INCREASE BY 45 MW TO 2634 MW.

REPORT DATE: April 13, 2010

Following are the results of the Generation System Impact Study for the addition of 45 MW of generating capacity in Oconee County, SC. The site is located at Oconee Nuclear Station and has an estimated Commercial Operation Date of October 1, 2011 for Unit 1, December 1, 2011 for Unit 2 and June 1, 2012 for Unit 3. The study evaluated the requested Network Resource Interconnection Service (NRIS).

**A. Study Assumptions and Methodology**

The power flow cases used in the study were developed from the Duke internal year 2012 summer peak case. The results of Duke's annual screening were used as a baseline to identify the impact of the new generation. All cases were modified to include 45 MW of additional generation at Oconee Nuclear Station. To determine the thermal impact on Duke's transmission system, the existing generation was increased by 15 MW per unit.

The NRIS thermal study uses the results of Duke Power Delivery's annual internal screening as a baseline to determine the impact of the new generation. The annual internal screening identifies violations of the Duke Energy Transmission System Planning Guidelines and this information is used to develop the transmission asset expansion plan. The annual screening provides branch loading for postulated transmission line or transformer contingencies under various generation dispatches. The thermal study results following the inclusion of the new generation were obtained by the same methods, and are therefore comparable to the annual screening. The results are compared to identify significant impacts to the Duke Energy transmission system.

Stability studies were not performed because the change to the system is minimal. The existing stability studies which exist for this station have been deemed sufficiently accurate to still be considered valid.

Fault studies were not performed because the additional generation will not affect the fault duty. The impedance of the machine has not changed, and thus there is no impact to the fault duty of the system.

Reactive Capability is evaluated by modeling a facility's generators and step-up transformers (GSUs) at various taps and system voltage conditions. The reactive capability of the facility can be affected by many factors including generator capability limits, excitation limits, and bus voltage limits. The evaluation determines whether sufficient reactive support will be available at the Connection Point.

**B. Thermal Study Results**

No network upgrades were identified as being attributable to the studied generating facility.

**C. Fault Duty Study Results**

No fault duty study was performed because the generation addition does not provide a material change to the fault duty at any station.

**D. Stability Study Results**

No stability study was performed because the generation addition does not provide a material change to the overall stability of the system. Previous stability studies are still applicable and do not indicate any stability concerns.

**E. Reactive Capability Study Results**

With the proposed generating facility, the level of reactive support supplied by the addition to the unit has been determined to be acceptable at this time. Evaluation of MVAR flow and voltages in the vicinity of Oconee Nuclear Station indicates adequate reactive support exists in the region.

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