

Total Transfer Capability and Transmission Reliability Margin Methodology for the Florida/Southern Transmission Interface for the Operating Horizon

Background

This document describes the methodology used to determine the total transfer capability (“TTC”) for the Florida/Southern (“FL/SO”) inter-regional transmission interface in the operating horizon. Transfer capability is the measure of the ability of the interconnected electric systems to move or transfer power in a reliable manner from one area to another over all transmission lines (or paths) between those areas under specified system conditions. The transmission interface between the FRCC Region and the Southeastern Sub region of SERC (Southern) is a multiple owner transmission interface that is coordinated through a reliability coordination arrangement between Southern and the FRCC as well as the transmission interface allocation arrangements among Florida Power and Light Company, Florida Power Corporation, JEA (formerly known as Jacksonville Electric Authority), and City of Tallahassee. On the Southern side, a joint ownership arrangement exists among the following owners; City of Dalton, Georgia Transmission Company, Municipal Electric Authority of Georgia, and Southern Company. In order to ensure coordination in the TTC values for this interface a procedure has been established between the Southern owners and the FRCC owners to share topology models, economic dispatch information and all data relevant to meeting the MOD-028 requirements.

Application of FL/SO TTC by FRCC Interface Owners

The TTC for the FL/SO transmission interface is calculated as a simultaneous transfer to/from all the interface owners based on their respective allocations. This jointly determined TTC value is then allocated among the various owners according to their percentage ownership. For the FL/SO interface owners these individual allocations serve as the contractual limit for each Transmission Provider when posting individual ATC paths involving this interface.

TTC Methodology

Monthly Calculation

A rolling thirteen months of individual monthly TTC values are determined jointly by the Florida/Southern interface owners using the Area Interchange Methodology described in MOD-028. . All thirteen monthly TTC values are re-calculated and revised each month using updated load flow models shared through an FTP site. These shared models ensure that critical data i.e. topology, load forecasts, economic dispatch and transmission and generation outages are common to both parties. First Contingency Incremental Transfer Capability (FCITC) calculations are performed using a jointly established contingency and monitored element lists. All applicable SOL and IROL limits are observed and either a 5% OTDF for Florida facilities or a 3% OTDF for Southern facilities is applied to be consistent with intra-regional ATC calculations. In addition to the standard thermal and voltage limit violation checks, a Power/Voltage sensitivity analysis (P/V) is performed for those contingencies that have been identified as potential voltage stability issues. The

TTC value is established as the sum of the FCITC and the existing firm commitment that were modeled. For planned outages that may not have been included in the original monthly studies the specific monthly model affected by the outage is modified and the TTCs recalculated. This planned outage would then be included in the next series of monthly studies if applicable.

Daily Calculation

At least once within the seven calendar days before they become effective the daily TTC will be re-calculated using the latest available information on loads and generation and transmission facility status. The same contingency and monitoring files used for the monthly TTC calculations are used to establish the daily TTCs. The study models used for the daily TTC value calculations are adjusted to reflect the forecasted loads and scheduled outages for the study period. The Area Interchange Methodology is used for these daily TTC calculations. In addition to the standard thermal and voltage limit violation checks, a Power/Voltage sensitivity analysis (P/V) is performed for those contingencies that have been identified as potential voltage stability issues.

P/V Sensitivity Study

The Transfers from the SERC Region into the FRCC Region may be limited by voltage stability concerns. The TTC values for daily and monthly transfers into the FRCC Region are studied with a P/V sensitivity technique for those contingencies that have been identified as having voltage security concerns. The most constraining contingency with respect to voltage stability is identified through a review of the P/V sensitivity results. The IROL and SOL limit for the FL/SO interface is set at maximum transfer for which BES post contingency voltages are above 90% of nominal for this most constraining contingency. A voltage security factor is applied to this IROL/SOL value to determine a TTC value with an adequate security margin. The TTC value for the FL/SO interface is set at the lower of the P/V sensitivity derived limit or the standard thermal and voltage limit violation limits.

Unexpected Outage of Transmission Facility

An unexpected outage of a 500 kV or higher transmission Facility or a transformer with a low-side voltage of 200 kV or higher, provided such outage is expected to last 24 hours or longer, will be evaluated under the daily process for the next seven days. The monthly models for the applicable periods of the outage will be modified to remove the outaged facilities, the TTC values recalculated, and new TTC values developed within 24 hours.

Coordination

The results of the TTC analysis of the FL/SO interface are shared with the other interface owners. Any discrepancies in calculated TTC values are resolved. The lowest calculated TTC value is used for the interface with the individual interface owner TTC values determined in accordance with their contractual allocation percentage.

TRM Methodology

The TRM value applied by the Florida owners for the FL/SO interface is based on the control performance metric L_{10} specified in Requirement 2 of the BAL-001-0 Reliability Standard. The L_{10} metric sets the allowed level of Area Control Error (ACE) for each BA. A FRCC BA's ACE translates directly to variations in the FL/SO interface flows; therefore, since all Florida BA could be drawing their L_{10} values simultaneously the TRM for the FL/SO interface is set at the sum of the L_{10} values for all of the Balancing Areas (BA) within the FRCC Region. This is an application of the Short-term System Operator Response component of uncertainty described in MOD-008 since it deals with operator actions in balancing generation. This TRM value is apportioned between Florida Power and Light, JEA and Progress Energy of Florida in accordance with their allocation arrangements.

Revision History

Date	Revision		