OASIS POSTING

ATTACHMENT D

Methodology for Completing a System Impact Study

Georgia Transmission Corporation ("GTC") shall perform System Impact Studies, when necessary, on a non-discriminatory basis that assesses whether sufficient transmission capacity is available for

- Long-Term Firm Transmission Service by an Eligible Customer, or
- Interconnecting new or expanded generating facilities of greater than two (2) MW capacity directly or indirectly to the Georgia Integrated Transmission System ("ITS").

GTC will follow planning guidelines consistent with North American Electric Reliability Corporation ("NERC"), SERC Reliability Corporation ("SERC"), and ITS, or their successors, in addition to company-specific planning criteria. These guidelines are consistent with GTC's annual submittal of FERC Form 715, Annual Transmission Planning and Evaluation Report.

This methodology defines the actual tasks that should be performed to ensure that a complete evaluation of system impact is made and the associated costs are borne by the proper entity.

1.0 Need For System Impact Study

All generation interconnection requests and Transmission Service under the GTC Transmission Service Tariff ("Tariff) Sections 17 – 19 or Sections 29 -32.

The Customer agrees to provide GTC all the data set forth in the Completed Application. If necessary, a meeting between the Customer and GTC will be held to review the Completed Application and any known issue(s) that could impact granting generation interconnection / transmission service request and/or the scope of a System Impact Study.

In the event sufficient transfer capability does not exist to accommodate a Long-Term Firm Transmission Service request, GTC will respond by offering to perform a System Impact Study.

The Customer agrees to compensate GTC in accordance to the provisions set forth in the System Impact Study Agreement.

2.0 System Impact Study Scope and Method

GTC shall use its discretion as to the scope and methods to perform the System Impact Study. When a System Impact Study is required, an assessment of the Transmission System may be conducted through one or more of the following types of studies:

- Load Flow / Power Flow
- Protection Coordination
- Dynamic and Voltage Stability
- Short Circuit
- Interface Impacts
- Reliability
- Reactive Requirements

- It is an accepted industry standard that transmission planning models are only for a period of ten (10) years into the future. Therefore, GTC defines under Schedule 8-A 2.0(a), Rate Schedules for Point-To-Point Transmission Service, Description of Service: A Transmission Service transaction of a minimum duration of one (1) year and a maximum duration of ten (10) years.

- The cost for the development of the base case models will be borne by GTC. The cost for the development of the models and the analyses described in Section 2.1 through Section 2.7 below will be the responsibility of the Customer.

- GTC may coordinate study assumptions and results with other Transmission Planners and affected Transmission and Distribution Systems.

2.1 Feasibility Study Analysis Requests for Transmission Service (Customer Option)

An assessment of potential thermal constraints caused by the Long-Term Firm Transmission Service request.

- Using most current base case models, identify system constraints using MUST software.
- Summer Peak cases will be utilized.
- Service Queue is not utilized.
- Analysis performed on *"service begin"* and *"service end"* year. Evaluation should be done for the year succeeding the "*service end"* date as a Feasibility Analysis to determine potential system impact, if the customer decides to rollover the subject service. If the service end date is past the current 10-year planning horizon, the service end year evaluation will be conducted with the base case for the last year of current base case series.
- Normal and contingency analysis should be performed.

- Results included in Report of Findings.

2.2 Power Flow Analysis

- Analysis of System Impact – Thermal and voltage.
- Adhere to NERC/SERC standard: TPL 001-004.
- Most current base case models are utilized.
- Base case models used in analysis should include, but not limited to, request in-service year, service end year, and intermediate years as determined by study scope.
- Sensitivity analysis should be performed as determined by study scope.
- System should be evaluated prior to the inclusion of the Long-Term Firm Transmission Service request (Base Model)
- System should be evaluated one year after requested "service end" date.
- If "service end" date is beyond current base case series, perform evaluation on last year case of the current series
- Perform non-contingency and contingency.
- Perform unit-out analysis
- Perform bus ampacity analysis.

2.3 Stability Analysis

- Assessment of system responses to 3-phase normally cleared faults and 3 phase faults with breaker failure.
- Critical Clearing Times (CCT) are determined.
- Critical Clearing Times: The longest time that fault conditions may persist before system stability is lost.
- Adhere to applicable planning procedures and TPL 001-003

2.4 Short Circuit Analysis

- Short circuit analysis determines the magnitudes of currents that flow for faults placed at various buses throughout the power system. These currents are used to determine interrupting ratings of fuses and circuit breakers, as well as to set trip points for protective relays.

2.5 Protective Coordination Analysis

- A coordination study is performed to ensure that protective equipment e.g., fuses, relays, reclosers in the system will trip selectively. Selective tripping means that only the nearest upstream protective device to the short circuit operates to clear the fault. This ensures that a minimum part of the power system is isolated during a fault.

2.6 Transfer Capability

- The measure of the ability of 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 units of transfer capability are in terms of electric power, generally expressed in megawatts (MW). The transfer capability from "Area A" to "Area B" is not generally equal to the transfer capability from "Area B" to "Area A."

2.7 Reactive Requirements

- Analysis shall adhere to ITS Operating Procedures

For Network Resource Interconnection Service requests:

- All items listed in the preceding bullets of this section;
- Voltage margin and voltage collapse;
- Nuclear plant off-site power requirements;
- Power flow as required by regulatory authority.

For Generation Interconnection requests:

- All applicable items listed in the preceding bullets of this section;
- Breaker duty analysis;
- Substation grounding review, as necessary;
- Voltage drop and flicker studies;
- Effect of the Interconnection Service request on load serving systems including system protection and set point coordination studies;
- Generator reactive support requirements.

3.0 Schedule For Completion

Upon receipt of an executed System Impact Study Agreement, GTC will use due diligence to complete the required System Impact Study within a ninety-day (90) period or as stated in the System Impact Study Agreement. In the event that GTC is unable to complete the required System Impact Study within such time, it shall so notify the Eligible Customer and provide an estimated completion date along with an explanation of the reasons why additional time is required to complete the required studies.

Log of Revisions:	
Revision Date	Description
1. April 1, 1997	Original Attachment D: **Methodology for Completing a System Impact Study**
2. January 1, 2009	Moved the methodology of Attachment D from the Tariff to an OASIS document. Modified the Attachment D format to reflect industry practices. Updated the methodology for GTC's 2008 Study methods.
3. March 1, 2014	Update to include procedures for generation interconnections