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Bulk System Planning

BP-034

GTC FACILITY INTERCONNECTION REQUIREMENTS

NERC Reliability Standard(s): FAC-001-2, FAC-002-2

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A. INTRODUCTION

A.1. Family of Companies

Georgia Transmission Corporation (*GTC*) and Georgia System Operations Corporation (*GSOC*) were formed out of Oglethorpe Power Corporation (*OPC*), created in 1974 to be the primary supplier of electricity to 38 of the 41 Electric Membership Corporations (*EMCs*) throughout Georgia. In 1997 Oglethorpe Power Corporation implemented a comprehensive restructuring by moving from the traditional vertically integrated organization to become 3 separate generation, transmission and system operation entities. OPC provides the generation and asset management function. GTC owns and maintains the EMC's share of the Integrated Transmission System (*ITS*) and provides transmission services. GSOC provides system operation support. GSOC economically operates the generation and transmission assets of OPC and GTC, respectively while adhering to reliability standards of the North American Electric Reliability Corporation (*NERC*) and the SERC Reliability Corporation (*SERC*).

A.2. Integrated Transmission System (ITS)

To deliver the most cost-effective power to Georgia electric consumers, the state's major electric utilities participate in a unique statewide network called the ITS, which was formed in 1975. Participants in the ITS include GTC, Georgia Power Company (*GPC*), MEAG Power (*MEAG*) and Dalton Utilities (*DU*). The ITS participants share usage of their combined power transmission lines and substations that are included in the ITS. The ITS is jointly planned by all four companies and is operated as one system. This arrangement benefits customers by eliminating the costly duplication of transmission Facilities. GTC is also part of the Southern Balancing Authority.

A.3. Base Case Development

ITS studies are performed consistent with NERC Reliability Standard TPL-001-4 on transmission system models ("base cases") which are updated annually based on the most current 10 year forecast for load, generation, transmission expansion and firm transmission service. Per the Planning Services Agreement, Southern Company Services – Transmission produces the base case models. GTC's participation in the base case model development follows the BP002 – Base Case Development and Maintenance Process.

The base cases include the following:

1. Existing Facilities and planned Facilities.
2. Transmission Facilities that are rated consistent with NERC Reliability Standard FAC-008
3. An expected generation dispatch.
4. Loads provided by each Load Serving Entity (“LSE”) and/or Distribution Provider (“DP”), (i.e., Alabama Power , Georgia Power, Gulf Power, Mississippi Power, TVA, PowerSouth, SMEPA, GTC, MEAG, and Dalton).
5. An external representation of the Eastern Interconnection generally obtained from the latest MMWG or SERC Long-Term Study Group (“LTSG”) coordination efforts.
6. Existing and planned reactive power resources, including generation, switched shunt capacitors/reactors, static VAr compensators, series reactors and phase shifting transformers.
7. Planned (including maintenance) outages of any bulk electric equipment (including protection systems or their components).
8. Pre-contingency operating procedures.
9. Appropriate firm transmission service.

A.4. Southeastern Regional Transmission Planning (SERTP) Process

The SERTP process provides an open and transparent transmission planning forum for transmission providers to engage with stakeholders regarding transmission plans in the region. The SERTP was originally developed to provide such an open and transparent regional transmission planning process.

The SERTP has expanded several times, both in the scope and in the size of the region, since its initial voluntary formation and now includes the following Sponsors: Southern Company (SCS), Dalton Utilities, Georgia Transmission Corporation (GTC), the Municipal Electric Authority of Georgia (MEAG), PowerSouth, Louisville Gas & Electric Company and Kentucky Utilities Company (LG&E/KU), the Ohio Valley Electric Corporation (OVEC), including its wholly owned subsidiary Indiana-Kentucky Electric Corporation, Associated Electric Cooperative Inc. (AECI), the Tennessee Valley Authority (TVA), and Duke Energy (Duke Energy Carolinas, LLC and Duke Energy Progress, LLC). As a result of this expanded size and scope, the SERTP region has become one of the largest regional transmission planning processes in the United States.

The SERTP process provides a coordinated, open and transparent planning process between GTC and its Customers and other stakeholders, including the coordination of such planning with interconnected systems within the region, to ensure that the Transmission System is planned to meet the needs of both GTC and its Customers on a comparable and not unduly discriminatory basis

Stakeholders are provided the opportunity to provide input throughout the SERTP's processes, with the procedures and timeline of the SERTP for Stakeholders to provide input on the local transmission expansion plan.

A.5. Purpose

This document addresses the processes and defines the actions and/or information necessary to connect new generation, transmission, and end-user Facilities to GTC's transmission Facilities or to materially modify existing generation, transmission, or end-user (*load serving*) Facilities currently connected to GTC's transmission Facilities. GTC's requirements established in this document are intended to ensure that new or modified Facilities connected to GTC's transmission Facilities do not have an adverse impact on the reliability of the Bulk Electric System, or on public safety and meet mandatory NERC Requirements.

A.6. Application of FIR Document

The requirements set forth in this guide apply to entities seeking to interconnect new or materially modify existing interconnections to GTC transmission Facilities.

A.7. "Materially modified Facility" Definition

A modification of a generation, transmission or end-user Facility is deemed "material" if it results in a change in impedance, rating, voltage, or power flow such that an impact on the reliability of the Bulk Electric System is reasonably expected.

B. Requirements

B.1. FAC-001-2, R1 Facility Interconnection Request and Interconnection Requirements

B.1.1

An entity seeking to connect new generation Facility to GTC's transmission system or modify an existing generation Facility that is connected to GTC's transmission system, is required to contact GTC's System Services Manager in accordance with GTC's Tariff prior to initiation of the Customer's project. Contact information can be found on GTC OASIS site at:

<https://www.oasis.oati.com/GTC/>. The entity will be required to fill out the appropriate Data

Sheet available on the GTC OASIS site so that a study can be performed to assess the impact of their proposed project on the Bulk Electric System in accordance with NERC Reliability Standard FAC-002.

B.1.2

- a. Non-ITS entities seeking to either interconnect new transmission to GTC's Facilities or make modifications to existing transmission Facilities interconnected to GTC's Facilities, will be required to fill out a "Transmission Interconnection Study Data Form " so that a study can be performed to assess the impact of their proposed project on the Bulk Electric System in accordance with NERC Reliability Standard FAC-002. Forms are available through GTC's System Services Department, contact information can be found on GTC OASIS site at: <https://www.oasis.oati.com/GTC/>.
- b. ITS entities seeking to either interconnect new transmission to GTC's Facilities or make modifications to existing transmission Facilities interconnected to GTC's Facilities, will be required to participate in joint planning and base case model development processes described in section B.3. further below.

B.1.3

- a. Non-ITS entities seeking to either interconnect new end-user Facilities to GTC's Facilities or make modifications to existing end-user Facilities connected to GTC's Facilities, will be required to fill out an "End-User Interconnection Study Request Form" so that a study can be performed to assess the impact of their proposed project on the Bulk Electric System in accordance with NERC Reliability Standard FAC-002. Forms are available through GTC's System Services Department, contact information can be found on GTC OASIS site at: <https://www.oasis.oati.com/GTC/>.
- b. ITS entities seeking to either interconnect a new end-user Facility to GTC's Facilities or make modifications to existing end-user Facilities interconnected to GTC's Facilities will be required to participate in joint planning and base case model development processes described in section B.3 further below.

B.1.4

Once the appropriate planning study(ies) have been coordinated and performed in accordance with section B.3 to determine the impact of the new or materially modified Facility, GTC requires the appropriate implementation of the coordinated study(ies) recommendations prior to interconnection or modification. Study recommendations typically include identified necessary system upgrades and protection equipment coordination

B.2. FAC-001-2, R1 Publication and Maintenance of FIR Document

The FIR document is posted on GTC's OASIS site <https://www.oasis.oati.com/GTC> and is updated as needed. When changes occur to GTC procedures and guidelines, ITS procedures and/or NERC Standards, GTC conducts an assessment to determine if an update of the FIR document is warranted. In addition, GTC departments are requested to evaluate the need to modify the FIR document on an annual basis. This process is documented in GTC's Facility connection requirement update process (BP-022)

B.3. FAC-001-2, R3.1 Procedures for Coordinated Joint Studies of New or Materially Modified Facilities and their Impacts on the Interconnected Transmission Systems

It is necessary for GTC to collect the required information as described in the aforementioned section B.1. so GTC can perform and coordinate on joint studies of new or materially modified Facilities (generation, transmission and end-user) and their impacts on the Bulk Electric System in accordance with NERC Reliability Standard FAC-002 as described in GTC's Facility Interconnection Studies process document. The following are studies performed by GTC and their corresponding study processes:

- Regional Studies (BP-009 and BP-002) (Transmission and End-User Facilities)
- Area Studies (BP-001 and BP-002) (Transmission and End-User Facilities)
- System Impact Studies (BP-010) (Generation Facilities)

Generation Facilities

System Impact Studies (SIS) are triggered in response to a new or materially modified Generation Interconnection Request (GI) or Transmission Service Request (TSR). A SIS identifies the impact of the request on the ITS through analyses such as stability, short circuit, closing angle, reactive requirement, power flow, interface, bus ampacity and ground grid. The process includes an initial affected party

meeting to discuss the study scope and a second affected party meeting to discuss the study results and solutions with the ITS members.

Facilities Studies (FS) are conducted subsequent to System Impact Studies. These studies identify in detail the required system improvements including cost and lead time but also are an opportunity to conduct further system impact analyses as necessary. GTC holds meetings with ITS members to discuss the study results.

In the event of changes to study assumptions (including previously provided Customer data) a new SIS and/or FS may be initiated based on engineering judgment.

Once the GI requestor signs an Interconnection Agreement with GTC, the generator data is submitted for inclusion into the base cases per the Base Case Development Process (BP-002).

Transmission and End-User Facilities

GTC collaborates with the other ITS members and Southern Company Services – Transmission (SCST) via ITS planning and base case model development processes. The transmission base case models used to perform the studies are jointly created and reviewed as described in the Base Case Development process (BP-002). In particular, collaboration on integrating new or materially modified end-user and transmission Facilities is achieved via this annual process.

Regional studies and Area studies are performed annually to identify thermal and voltage constraints in each of GTC's regions within the ITS for the near term (0-5 years) and long term (6-10 years). The study process includes meetings among ITS members and SCST throughout the year to verify the base case model data, discuss the system violations identified, and propose solutions. Any identified solutions are re-evaluated every year.

The prior mentioned studies (Regional Studies, Area Studies, System Impact Studies and Facilities Studies) may indicate the need for system improvements such as construction of new transmission Facilities or modification of existing transmission Facilities. If these improvements are to be implemented, GTC uses the Capital Project Approval Process (BP-004) to review the projects internally

then solicit the ITS members approval. Once projects are approved they moved to the construction phase.

B.4. FAC-001-2, R3. 2 Procedures for notification of new or materially modified Facilities to others (those responsible for the reliability of the Interconnected Transmission Systems) as soon as feasible.

The following are GTC's procedures for notification of new or materially modified generation, transmission and end-user Facilities to others (those responsible for the reliability of the interconnected transmission systems) as soon as feasible:

Generation Facilities:

Notification of new or materially modified generation Facilities to external contacts and ITS participants is performed through the following processes:

- BP-010 System Impact Study Process
- BP-005 Transmission Facilities Upgrades Process
- BP-004 Capital Project Approval Process

GTC posts all received Generation Interconnections (GIs) on its OATI webOASIS portal: <http://www.oatioasis.com/gtc/index.html>.

Changes to the rated MW output or Point of Interconnection require submitting a new GI request. Either Party (GTC or the generator owner) shall notify the other in advance of any changes in their respective Facilities, which reasonably can be expected to affect the proper coordination of protective devices of either party. Should any changes occur to the Customer interconnection Facilities, GTC must be notified and provided appropriate data to perform studies as needed.

Once a request moves to the System Impact Study phase, the BP-010 process ensures notification of ITS participants and SCST of the study scope, analyses and results of the study.

Transmission and End-User Facilities

Notification of new or materially modified transmission or end-user Facilities to external contacts and ITS participants and SCST is performed through the following processes:

- BP-002 Base Case Development Process
- BP-001 Area Study Process

- BP-009 Regional Study Process
- BP-005 Transmission Facilities Upgrades Process
- BP-004 Capital Project Approval Process
- BP-013 Substation and Transmission Asset Reporting System
- PGP IRO-010-1a Reliability Coordinator Data Specification and Collection

Notification of new or modified transmission or end-user Facilities to ITS members and SCST is performed continuously through the Base Case Development and aforementioned study processes. Upon agreement of jointly planned solutions, the project will be initiated for construction via the Capital Project Approval Process (BP-004) and communicated via processes further described in GTC's BP-013 and PGP IRO-010-1a through commissioning.

B.5. Provisions for Future Changes

Either Party shall notify the other in advance of any material changes in their respective Facilities, which can reasonably be expected to affect the proper coordination of protective devices of either party.

Should any changes occur to Customer interconnection Facility, GTC must be notified and provided appropriate data to perform studies as needed.

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**Process, Guidelines, and
Procedures**

Procedure No. BP-034

**Facility Interconnection
Requirements**

NERC Reliability Standard: FAC-001-2, FAC-002-2

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12-22-2015

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12-23-2015

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Date	Version Number	Individual Making Edits	Reason / Comments
03/24/2005	1		FCR Document reviewed and updated to align with the new SERC Supplement.
04/13/2005	2		Paragraph 1.18 (Abnormal frequency and Voltage Operation) updated to address GTC connection requirements, per SERC Audit Team request.
04/13/2007	3		FCR document reviewed and updated to align with GTC's procedure for maintenance coordination.
04/19/2007	4		Section 1.14, 1.15, 3.3 and 4.5 of the FCR document have been reviewed and updated to reflect GTC's current standard operating practice and procedures utilized in the protection of interconnected transmission facilities.
01/29/2008	5	J. W. Chiles	Review based on Internal GTC Review by Electronic Maintenance, Protection & Control, Bulk System Planning, Substation Maintenance.
03/31/2009	6	S. G. Miller	Review based on Internal GTC Review by Electronic Maintenance, Protection & Control, Bulk System Planning, Substation Maintenance.
05/07/2009	7	S. G. Miller	Review based on Internal GTC Review by Electronic Maintenance, Protection & Control, Bulk System Planning, Substation Maintenance.
3/15/2013	8	Zakia El Omari	Added section to describe compliance with R.2.1.2. Reviewed and updated sections addressing R2.1.1, R2.1.3-5, R2.1.7-8 and R2.1.14-16
11/22/2013	9	Zakia El Omari Rob Wiley	FCR updated to reflect new FAC-001-1 requirements numbering (ex. R2.1.1 changed to R3.1.1). Grammar correction

			in Purpose statement. Changed document applicability to include sub-transmission system
02/19/2014	10	Zakia El Omari Rob Wiley	Added clarification statements based on GDS Mock Audit feedback. Updated sections: Purpose, R3.1.1, R3.1.3 to R3.1.6, R3.1.9 to R3.1.11. Added section: A5: Maintenance of FCR document. Additional review based on input from GTC managers and regulatory compliance manager
12/21/2015	11	Zakia El Omari Teresa Czyz Rob Wiley	FCR updated to align with FAC-001-2 -Removed outdated requirements R3.1.3 through R3.1.16 -Added a "materially modified Facility" definition -Added "materially modified" to requirements R3.1.1 and R3.1.2 -Renamed the document "Facility Interconnection Requirements" (FIR) to match Standard description. -Added section B1 on modifications