FOR INTERNAL USE ONLY
GTC Project Number:
Queue Date:

GeorgiaTransmission

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Generation Interconnection Study Data Sheet – Synchronous Machines

Customers must provide the following information in its entirety. GTC will not proceed with an interconnection study until all data is received and confirmed to be practical. GTC uses PTI or IEEE standard models to perform power flow and stability analysis. If the information provided conforms to a PTI or IEEE model, please specify. Study results are dependent on study data provided by the customer. Notification of changes to data should be provided, in writing, as promptly as possible. Any change in the study data will have an impact on the performance of the study and the study results provided.

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A) REQUESTOR OF INTERCONNECTION STUDY

Company Name:	Company Phone Number:
Project Name:	
Project Address:	
Application Submitted By:	
Contact Name:	Date:
Phone Number:	Email:

B) DESCRIPTION OF REQUEST

1) Type of Request*(i.e. NRIS, ERIS, IPP)***:**

2) Is this request an alternate to another request made by an ITS Participant?

NOTE: The ITS Participants are Georgia Transmission Corporation, Georgia Power/Southern Company, MEAG Power, and Dalton Utilities. This information is needed to alleviate duplication of analysis of generation requests within the ITS.

YES☐ NO ☐

If yes, please indicate location and MW of other request

Location: _____ MW: _____

3) Maximum Gross Capacity:

i. _____MW at _____°F Ambient and _____% Relative Humidity
ii. Will generation be installed incrementally? YES☐ NO ☐
iii. Portion of request which is designated a network resource: _____%
iv. Portion of request for interconnection service only: _____%
v. Number of machines: _____

4) Location of Interconnection

i. County: _____
ii. Distance of customer plant from ITS point of interconnection: _____ miles
iii. Substation or Transmission Line: _____

5) Single-Line Diagram:

i. Customer must provide a dimensioned *(in miles)* single line diagram illustrating the proposed customer switchyard and the distance of the proposed point of interconnection from the nearest existing substation. *See attached Single line PDF document*
ii. When making multiple requests for interconnection, the customer is required to provide this information for each request.

6) Key Dates:

i. Expected In-Service Date: _____
ii. Expected Sync Date: _____
iii. Expected Commercial Operation Date: _____

7) Voltage level requested for interconnection: _____ kV

C) GENERATOR MACHINE DATA

1) Type of Generation and fuel(s) *(Simple Cycle, Combined Cycle, Cogeneration, etc.)* _____

2) Expected Load Factor of Generation: _____

3) Generator Base MVA: _____

4) Generator Active Power Gross Output at 60 % Relative Humidity for Change in Ambient Temperature:

i) Maximum Gross Output:
_____ MW at 40°F
_____ MW at 59°F
_____ MW at 95°F

ii) Minimum Gross Output:
_____ MW at 40°F
_____ MW at 59°F
_____ MW at 95°F

Generator Active Power Gross Output at ___°F Ambient for Change in Humidity:

iii) Maximum Gross Output:
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity

iv) Minimum Gross Output:
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity
___ MW at ___ % Relative Humidity

5) Generator Rated Terminal Power Factor:
Lagging: _____
Leading: _____

6) Generator Reactive Power Output at Rated Power Factor:

Maximum Gross Output:
_____ MVAr at 40°F
_____ MVAr at 59°F
_____ MVAr at 95°F

Minimum Gross Output:
_____ MVAr at 40°F
_____ MVAr at 59°F
_____ MVAr at 95°F

7) Generator Rated Terminal Voltage: _____kV

8) Generation Saturation Factor Data: Attach Generator(s) Saturation Curves

9) S(1.0): _____
S(1.2): _____

10) Attach Generator(s) Capability Curve(s) at Rated Terminal Voltage and Rated Power Factor(s)

11) Attach Generator(s) Performance V-Curves

12) Provide all Applicable Generator(s) Reactance in per unit on Machine MVA Base:

i. **Direct-axis synchronous *Unsaturated*:**

reactance Xd = _____

transient reactance Xd′ = _____

sub-transient reactance Xd″ = _____

armature resistance RA′ = _____

ii. **Direct-axis synchronous *Saturated*:**

reactance Xd = _____

transient reactance Xd′ = _____

sub-transient reactance Xd″ = _____

iii. **Quadrature-axis synchronous *Unsaturated*:**

reactance Xq = _____

transient reactance Xq' = _____

sub-transient reactance Xq″ = _____

iv. **Quadrature-axis synchronous *Saturated*:**

reactance Xq = _____

transient reactance Xq′ = _____

sub-transient reactance Xq″ = _____

13) Leakage reactance Xl = _____

14) Z (Impedance)

i. Negative sequence Z = _____

ii. Zero sequence Z = _____

15) Generator neutral grounding transformer type *(show on one-line diagram):*

16) Generator neutral grounding resistor – provided in item ***12*** *(show on one-line diagram):*

D) APPLICABLE TIME CONSTANTS (IN SECONDS)

1) Tdo′ = _____ *(D-axis transient open-circuit time constant)*	**2)** Tdo″ = _____ *(D-axis sub-transient open-circuit time constant)*
3) Tqo′ = _____ *(Q-axis transient open-circuit time constant)*	**4)** Tqo″ = _____ *(Q -axis sub-transient open-circuit time constant)*
5) Td′ = _____ *(D-axis transient short-circuit time constant)*	**6)** Td″ = _____ *(D-axis sub-transient short-circuit time constant)*
7) Tq′ = _____ *(Q-axis transient short-circuit time constant)*	**8)** Tq″ = _____ *(Q-axis sub-transient short-circuit time constant)*
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9) Turbine-Generator combined inertia constant *(H) (KW-sec/KVA)* : _____	**10)** Speed damping factor, D = _____
11) Provide positive, negative and zero sequence reactance in per unit: _____	**12)** Neutral grounding resistor in Ohms unit *(if applicable)*: _____ *Ohms*
13) Phase: Single: Three:	**14)** R.P.M. :
15) Frequency: _____	
16) Describe if any MUST-RUN designation is applicable:	

E) GENERATOR MODEL DATA

1) Provide Generator model type selected: *(example: Round Rotor generator model (GENROU) and Salient pole generator model (GENSAL).*

2) Provide valid model data for dynamic simulation corresponding to the models selected.

***** It is preferred that dynamic data submitted to GTC is in version 30 PSS/E data sheet format and the selected models conform to IEEE or PTI models. *****

F) EXCITATION SYSTEM DATA

1) Provide Excitation system model *(exciter and A.V.R.)* model type selected:

2) Provide Power compensator model selected *(if applicable)*:

3) Provide Power Stabilizer models selected *(if applicable)*:

4) Provide Block diagrams for each model selected in **1)** through **3)** above.

5) Provide all applicable gains, time constants, limits, and saturation constants.

6) Provide appropriate nomenclature sheet describing parameters together with tabulated parameter values.

***** It is preferred that dynamic data submitted to GTC is in version 30 PSS/E data sheet format and the selected models conform to IEEE or PTI models. *****

G) TURBINE-GOVERNOR SYSTEM DATA

1) Provide governor model type selected.

2) Provide Block diagrams for each model selected in **1)**.

3) Provide all applicable gains, time constants, and limits.

4) Provide appropriate nomenclature sheet describing parameters together with tabulated parameter values.

***** It is preferred that dynamic data submitted to GTC is in version 30 PSS/E data sheet format and the selected models conform to IEEE or PTI models. *****

H) CIRCUIT BREAKER/PROTECTION SWITCH DATA

1) Rated Voltage in kV *(maximum, R.M.S., Line-to-line, 60 Hz Operating Voltage):* _____
2) Rated Ampere *(Maximum, R.M.S., continuous, 60 Hz rated current)*: _____
3) Interrupting Rating: _____
4) Cycle rating for interruption *(Rated interrupting time):* _____
5) BIL Rating: _____
6) Interrupting and insulating media: _____
7) Tripping and closing control voltages: _____
8) Relay accuracy class: _____
9) Cycles required for interrupting: _____

I) GENERATOR STEP-UP TRANSFORMER DATA

1) Two-winding step-up (GSU) transformer Data *(if applicable):*

i. Transformer Base MVA *(for impedance)*: _____
ii. Full Load Ratings *(OA/FA/FOA)*: _____
iii. Sequence impedance *(R and X)* in per unit: Positive: _____ Negative: _____ Zero: _____
iv. Available Tap positions: _____
v. Voltage in kV: Rated High Side: _____ Rated Low side: _____
vi. X/R ratio _____
vii. Neutral grounding Resistor in Ohms *(if applicable):* _____
viii. GSU *(HV-LV)* Connection and winding *(Please show on the single line diagram)*
ix. BIL Rating: _____
x. Impedance to ground: _____
xi. Load losses in watts: _____
xii. Current Tap position: _____

2) Three-winding Generator step-up (GSU) transformer Data *(if applicable):*

i. Provide connection and winding *(Please show on the single line diagram)* _____
ii. Provide the following:

a)H-Winding Data:
Full Load MVA Rating *(i.e. OA/FA/FOA)* _____ Rated kV base: _____ Grounding Data: _____
BIL Rating: _____

b)X-Winding Data:
Full Load MVA Rating *(i.e. OA/FA/FOA)* _____ Rated kV base: _____ Grounding Data: _____
BIL Rating: _____

c)Y-Winding Data:
Full Load MVA Rating *(i.e. OA/FA/FOA)* _____ Rated kV base: _____ Grounding Data: _____
BIL Rating: _____

d)H-X Winding Data:
Transformer base for impedance: _____ MVA
Sequence impedance: _____ Positive: R: _____ per unit X: _____ per unit
Negative: R: _____ per unit X: _____ per unit
Zero: R: _____ per unit X: _____ per unit
Available Tap positions: _____ Current Tap position: _____

e)H-Y Winding Data:
Transformer base for impedance: _____ MVA
Sequence impedance: _____ Positive: R: _____ per unit X: _____ per unit
Negative: : R: _____ per unit X: _____ per unit
Zero: R: _____ per unit X: _____ per unit
Available Tap positions: _____ Current Tap position: _____

f)X-Y winding Data:
Transformer base for impedance: _____ MVA
Sequence impedance: _____ Positive: R: _____ per unit X: _____ per unit
Negative: R: _____ per unit X: _____ per unit
Zero: R: _____ per unit X: _____ per unit
Available Tap positions: _____ Current Tap position: _____

J) STATION AUXILIARY LOAD

1) For total plant (MW and MVAr): _____
2) Served through which transformer(s) – (*e.g., the 2 CT GSU's of the 2-on-1 CC*): _____
3) Amount served through each transformer (MW and MVAr): _____