

Public Service Company of Colorado

2022 All-Source Solicitation

Additional Appendix A Forms

<u>Form</u>	<u>Title</u>
<u>I1</u>	Small Generator – Distribution Interconnection
<u>I2</u>	Small Generator – Transmission Interconnection
<u>I3</u>	Large Generator – Transmission Interconnection

Form I1

Small Generator Interconnection Information – Distribution Interconnection



SMALL GENERATOR INTERCONNECTION INFORMATION

This Form should be completed by those bidders proposing to interconnect to the Company's distribution system. This is not a formal request to interconnect.

OWNER/APPLICANT INFORMATION			
Company:			
Representative:	Phone Number:	FAX Number:	
Title:	Email Address:		
Mailing Address:			
PROPOSED LOCATION OF GENERATING PLANT AND PROPOSED INTERCONNECTION			
Address:			
PROJECT DESIGN / ENGINEERING			
Company:			
Representative:	Phone:	FAX Number:	
Mailing Address:	Email Address:		
ELECTRICAL CONTRACTOR			
Company:			
Representative:	Phone:	FAX Number:	
Mailing Address	Email Address:		
ESTIMATED LOAD INFORMATION			
The following information will be used to help properly design the Xcel-Customer interconnection. This information is not intended as a commitment or contract for billing purposes.			
Minimum anticipated load (generation not operating):		kVA:	Time:
Maximum anticipated load (generation not operating):		kVA:	Time:

Existing Electric Service:

Capacity: _____ Amperes Voltage: _____ Volts
Service Character: Single Phase Three Phase

Estimated In-Service Date: _____

Site Control Documentation: Documentation of site control must be submitted with the interconnection request as required by Code of Colorado Regulations, CCR 4 723-3, Rule 3667.

Site Control: Ownership of Site Option to Purchase Site Other – Specify _____



SMALL GENERATOR INTERCONNECTION INFORMATION

Energy Producing Equipment/Inverter Summary:

Manufacturer: _____
 Model No.: _____ Version No.: _____
 Synchronous Induction Inverter Other _____
 Rating: _____ kW Rating: _____ kVA
 Generator Connection: Delta Wye Ungrounded Wye Grounded
 Generator Voltage: _____ Volts
 System Type Tested (Total System): Yes No; attach product literature
 Equipment Type Tested: Yes (i.e. Inverter, Protection System) No; attach product literature
 (Type Tested per IEEE 1547.1 or IEEE 929; i.e., Pre-certified)

(Complete all applicable items, Copy this page as required for additional generators)			
SYNCHRONOUS GENERATOR DATA			
Unit Designation:		Total number of units with listed specifications on site:	
Manufacturer:			
Type:		Date of manufacture:	
Serial Number (each):			
Phases: 1 or 3		Speed: RPM:	Frequency: Hz
Rated Output (each unit) Kilowatt:		kW Kilovolt-Ampere: kVA	
Rated Power Factor: %		Rated Voltage: V	Rated Current: A
Field Voltage: V		Field Current: A	Motoring Power: kW
Synchronous Reactance (X_d):		% on	kVA base
Transient Reactance (X'_d):		% on	kVA base
Subtransient Reactance (X''_d):		% on	kVA base
Negative Sequence Reactance (X_s):		% on	kVA base
Zero Sequence Reactance (X_o):		% on	kVA base
Neutral Grounding Resistor (if applicable):		Yes No	Resistance: Ohms
$I^2 t$ or K (heating time constant):			
Exciter data:			
Governor data:			
Additional Information:			
INDUCTION GENERATOR DATA			
Rotor Resistance (R_r):		Ohms	Stator Resistance (R_s): Ohms
Rotor Reactance (X_r):		Ohms	Stator Reactance (X_s): Ohms
Magnetizing Reactance (X_m):		Ohms	Short Circuit Reactance (X_d''): Ohms
Design Letter:		Frame Size:	
Exciting Current:		Temp Rise (deg C°):	
Rated Output: kW			
Reactive Power Required:		kVAr (no Load)	kVAr (full load)
For a wound-rotor machine, describe external equipment to be connected (resistor, rheostat, power converter, etc.) to rotor circuit, and circuit configuration. Describe ability, if any, to adjust generator reactive power output.			



SMALL GENERATOR INTERCONNECTION INFORMATION

PRIME MOVER (Complete all applicable items)				
Unit Designation:		Type:		
Manufacturer:				
Serial Number:			Date of Manufacture:	
H.P. Rated:	H.P. Max:	Inertia Constant:		lb.-ft. ²
Energy Source (hydro, steam, wind, etc.):				
Additional Information:				
Type of Interconnected operation				
Long term Parallel operation:	Yes	No		
Closed momentary transition:	Yes	No	Transition Closed Time:	seconds
Other (describe):				
TRANSFORMER (If applicable)				
Manufacturer:			kVA:	
Date of Manufacture:		Serial Number:		
High Voltage:	V	Connection: <input type="checkbox"/> delta <input type="checkbox"/> wye	Neutral solidly grounded? Yes No	
Low Voltage:	V	Connection: <input type="checkbox"/> delta <input type="checkbox"/> wye	Neutral solidly grounded? Yes No	
Transformer Impedance (Z):		% on	kVA base	
Transformer Resistance (R):		% on	kVA base	
Transformer Reactance (X):		% on	kVA base	
Neutral Grounding Resistor (if applicable)	Yes	No	Resistance:	Ohms
Additional Information:				
INVERTER DATA (If applicable)				
UL Pre-certified per UL 1741 and IEEE 929?	Yes	No	Certification Number:	
Manufacturer:		Model:		
Rated Power Factor (%):	Rated Voltage (Volts):	V	Rated Current (Amperes):	A
Inverter Type (ferroresonant, step, pulse-width modulation, etc.):				
Type of Commutation: <input type="checkbox"/> forced <input type="checkbox"/> line		Minimum Short Circuit Ratio required:		
Minimum voltage for successful commutation:				
Current Harmonic Distortion:	Maximum Individual Harmonic (%):			
	Maximum Total Harmonic Distortion (%):			
Voltage Harmonic Distortion:	Maximum Individual Harmonic (%):			
	Maximum Total Harmonic Distortion (%):			
Describe capability, if any, to adjust reactive output to provide voltage regulation:				
Additional Information:				
NOTE: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.				



SMALL GENERATOR INTERCONNECTION INFORMATION

POWER CIRCUIT BREAKER (if applicable)		
Manufacturer:	Model:	
Rated Voltage: kV	Rated Ampacity (Amperes):	A
Interrupting Rating: A	BIL Rating:	kV
Interrupting Medium (vacuum, oil, gas, etc.):	Insulating Medium (vacuum, oil, gas, etc.):	
Control Voltage (Closing): (Volts) <input type="checkbox"/> AC <input type="checkbox"/> DC		
Control Voltage (Tripping): (Volts) <input type="checkbox"/> AC <input type="checkbox"/> DC <input type="checkbox"/> Battery <input type="checkbox"/> Charged Capacitor		
Close Energy: <input type="checkbox"/> Spring <input type="checkbox"/> Motor <input type="checkbox"/> Hydraulic <input type="checkbox"/> Pneumatic <input type="checkbox"/> Other		
Trip Energy: <input type="checkbox"/> Spring <input type="checkbox"/> Motor <input type="checkbox"/> Hydraulic <input type="checkbox"/> Pneumatic <input type="checkbox"/> Other		
Bushing Current Transformers (Max. ratio):	Relay Accuracy Class:	
Multi Ratio? <input type="checkbox"/> No <input type="checkbox"/> Yes: (Available taps):		
Construction Schedule:	Start date:	Completion date:
MISCELLANEOUS (Use this area and any additional sheets for applicable notes and comments)		

ADDITIONAL REQUIREMENTS: In addition to the items listed on this form, please attach:

- 1) Detailed One Line Diagram: o Yes
- 2) Installation Test Plan: o Yes
- 3) Site plan: o Yes
- 4) Major equipment (generators, transformers, inverters, circuit breakers, protective relays, isolation disconnect, etc.) specifications: oYes
- 5) Relaying detail: o Yes Date: _____
- 6) Metering telemetry: o Yes Date: _____
- 7) Test reports attached: o Yes Date: _____
- 8) Other applicable drawings or documents necessary for the proper design of the interconnection:
Describe _____

Form I2

Small Generator Interconnection Information – Transmission Interconnection

Proposed Effective Date: 5/15/2018

Approved Effective Date: 5/15/2018

This Form should be completed by those bidders proposing to interconnect to the Company's transmission system. This is not a formal request to interconnect.

Attachment 2

**SMALL GENERATOR INTERCONNECTION REQUEST
(Application Form)**

Transmission Provider: _____

Designated Contact Person: _____

Address: _____

Telephone Number: _____

Fax: _____

E-Mail Address: _____

An Interconnection Request is considered complete when it provides all applicable and correct information required below. Per SGIP section 1.5, documentation of site control must be submitted with the Interconnection Request.

Preamble and Instructions

An Interconnection Customer who requests a Federal Energy Regulatory Commission jurisdictional interconnection must submit this Interconnection Request by hand delivery, mail, e-mail, or fax to the Transmission Provider.

Processing Fee or Deposit:

If the Interconnection Request is submitted under the Fast Track Process, the non-refundable processing fee is \$500.

If the Interconnection Request is submitted under the Study Process, whether a new submission or an Interconnection Request that did not pass the Fast Track Process, the Interconnection Customer shall submit to the Transmission Provider a deposit not to exceed \$1,000 towards the cost of the feasibility study.

Interconnection Customer Information

Legal Name of the Interconnection Customer (or, if an individual, individual's name)

Name: _____

Contact Person: _____

Mailing Address: _____

Proposed Effective Date: 5/15/2018

Approved Effective Date: 5/15/2018

City: _____ State: _____ Zip: _____

Facility Location (if different from above): _____

Telephone (Day): _____ Telephone (Evening): _____

Fax: _____ E-Mail Address: _____

Alternative Contact Information (if different from the Interconnection Customer)

Contact Name: _____

Title: _____

Address: _____

Telephone (Day): _____ Telephone (Evening): _____

Fax: _____ E-Mail Address: _____

Application is for: New Small Generating Facility

Capacity addition to Existing Small Generating Facility

If capacity addition to existing facility, please describe: _____

Will the Small Generating Facility be used for any of the following?

Net Metering? Yes No

To Supply Power to the Interconnection Customer? Yes No

To Supply Power to Others? Yes No

For installations at locations with existing electric service to which the proposed Small Generating Facility will interconnect, provide:

_____ (Local Electric Service Provider*)

_____ (Existing Account Number*)

[*To be provided by the Interconnection Customer if the local electric service provider is different from the Transmission Provider]

Proposed Effective Date: 5/15/2018

Approved Effective Date: 5/15/2018

Contact Name: _____

Title: _____

Address: _____

Telephone (Day): _____ Telephone (Evening): _____

Fax: _____ E-Mail Address: _____

Requested Point of Interconnection: _____

Interconnection Customer's Requested In-Service Date: _____

Small Generating Facility Information

Data apply only to the Small Generating Facility, not the Interconnection Facilities.

Energy Source: ___ Solar ___ Wind ___ Hydro ___ Hydro Type (e.g. Run-of-River): ___
Diesel ___ Natural Gas ___ Fuel Oil ___ Other (state type) _____

Prime Mover: ___ Fuel Cell ___ Recip Engine ___ Gas Turb ___ Steam Turb
___ Microturbine ___ PV ___ Other

Type of Generator: ___ Synchronous ___ Induction ___ Inverter

Generator Nameplate Rating: ___ kW (Typical) Generator Nameplate kVAR: _____

Interconnection Customer or Customer-Site Load: _____ kW (if none, so state)

Typical Reactive Load (if known): _____

Maximum Physical Export Capability Requested: _____ kW

List components of the Small Generating Facility equipment package that are currently certified:

Equipment Type	Certifying Entity
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

Is the prime mover compatible with the certified protective relay package? ___Yes ___No

Proposed Effective Date: 5/15/2018

Approved Effective Date: 5/15/2018

Generator (or solar collector)
Manufacturer, Model Name & Number: _____
Version Number: _____

Nameplate Output Power Rating in kW: (Summer) _____ (Winter) _____

Nameplate Output Power Rating in kVA: (Summer) _____ (Winter) _____

Individual Generator Power Factor
Rated Power Factor: Leading: _____ Lagging: _____

Total Number of Generators in wind farm to be interconnected pursuant to this

Interconnection Request: _____ Elevation: _____ ___Single phase ___Three phase

Inverter Manufacturer, Model Name & Number (if used): _____

List of adjustable set points for the protective equipment or software: _____

Note: A completed Power Systems Load Flow data sheet must be supplied with the Interconnection Request.

Small Generating Facility Characteristic Data (for inverter-based machines)

Max design fault contribution current: _____ Instantaneous or RMS ___?

Harmonics Characteristics: _____

Start-up requirements: _____

Small Generating Facility Characteristic Data (for rotating machines)

RPM Frequency: _____

(*) Neutral Grounding Resistor (If Applicable): _____

Synchronous Generators:

Direct Axis Synchronous Reactance, X_d : _____ P.U.

Direct Axis Transient Reactance, X'_d : _____ P.U.

Direct Axis Subtransient Reactance, X''_d : _____ P.U.

Negative Sequence Reactance, X_2 : _____ P.U.

Zero Sequence Reactance, X_0 : _____ P.U.

KVA Base: _____

Field Volts: _____

Field Amperes: _____

Proposed Effective Date: 5/15/2018

Approved Effective Date: 5/15/2018

Induction Generators:

Motoring Power (kW): _____
 I_2^2t or K (Heating Time Constant): _____
Rotor Resistance, R_r : _____
Stator Resistance, R_s : _____
Stator Reactance, X_s : _____
Rotor Reactance, X_r : _____
Magnetizing Reactance, X_m : _____
Short Circuit Reactance, X_d'' : _____
Exciting Current: _____
Temperature Rise: _____
Frame Size: _____
Design Letter: _____
Reactive Power Required In Vars (No Load): _____
Reactive Power Required In Vars (Full Load): _____
Total Rotating Inertia, H: _____ Per Unit on kVA Base

Note: Please contact the Transmission Provider prior to submitting the Interconnection Request to determine if the specified information above is required.

Excitation and Governor System Data for Synchronous Generators Only

Provide appropriate IEEE model block diagram of excitation system, governor system and power system stabilizer (PSS) in accordance with the regional reliability council criteria. A PSS may be determined to be required by applicable studies. A copy of the manufacturer's block diagram may not be substituted.

Primary frequency response operating range for electric storage resources:

Minimum State of Charge: _____
Maximum State of Charge: _____

Interconnection Facilities Information

Will a transformer be used between the generator and the point of common coupling? ____Yes
____No

Will the transformer be provided by the Interconnection Customer? ____Yes ____No

Transformer Data (If Applicable, for Interconnection Customer-Owned Transformer):

Is the transformer: ____single phase ____three phase? Size: _____kVA
Transformer Impedance: _____% on _____kVA Base

If Three Phase:

Transformer Primary: ____ Volts ____ Delta ____ Wye ____ Wye Grounded

Proposed Effective Date: 5/15/2018

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Transformer Secondary: _____ Volts _____ Delta _____ Wye _____ Wye Grounded
Transformer Tertiary: _____ Volts _____ Delta _____ Wye _____ Wye Grounded

Transformer Fuse Data (If Applicable, for Interconnection Customer-Owned Fuse):

(Attach copy of fuse manufacturer's Minimum Melt and Total Clearing Time-Current Curves)

Manufacturer: _____ Type: _____ Size: _____ Speed: _____

Interconnecting Circuit Breaker (if applicable):

Manufacturer: _____ Type: _____

Load Rating (Amps): _____ Interrupting Rating (Amps): _____ Trip Speed (Cycles): _____

Interconnection Protective Relays (If Applicable):

If Microprocessor-Controlled:

List of Functions and Adjustable Setpoints for the protective equipment or software:

Setpoint Function	Minimum	Maximum
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

If Discrete Components:

(Enclose Copy of any Proposed Time-Overcurrent Coordination Curves)

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Proposed Effective Date: 5/15/2018

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_____	_____	_____	_____
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
_____	_____	_____	_____
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
_____	_____	_____	_____

Current Transformer Data (If Applicable):

(Enclose Copy of Manufacturer's Excitation and Ratio Correction Curves)

Manufacturer: _____

Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____

Manufacturer: _____

Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____

Potential Transformer Data (If Applicable):

Manufacturer: _____

Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____

Manufacturer: _____

Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____

General Information

Enclose copy of site electrical one-line diagram showing the configuration of all Small Generating Facility equipment, current and potential circuits, and protection and control schemes. This one-line diagram must be signed and stamped by a licensed Professional Engineer if the Small Generating Facility is larger than 50 kW. Is One-Line Diagram Enclosed? ____Yes ____No

Enclose copy of any site documentation that indicates the precise physical location of the proposed Small Generating Facility (e.g., USGS topographic map or other diagram or documentation).

Proposed location of protective interface equipment on property (include address if different from the Interconnection Customer's address) _____

Enclose copy of any site documentation that describes and details the operation of the protection and control schemes. Is Available Documentation Enclosed? ____Yes ____No

Proposed Effective Date: 5/15/2018

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Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (if applicable).

Are Schematic Drawings Enclosed? Yes No

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Request is true and correct.

For Interconnection Customer: _____ Date: _____

Form I3

Large Generator Interconnection Information – Transmission Interconnection

Proposed Effective Date: 12/5/2019

Approved Effective Date: 12/5/2019

This Form should be completed by those bidders proposing to interconnect to the Company's transmission system. This is not a formal request to interconnect.

**APPENDIX 1 to Revised LGIP
INTERCONNECTION REQUEST FOR A
LARGE GENERATING FACILITY**

- The undersigned Interconnection Customer submits this request to interconnect its Large Generating Facility with Transmission Provider's Transmission System pursuant to a Tariff.
2. This Interconnection Request is for (check one):
 A proposed new Large Generating Facility.
 An increase in the generating capacity or a Material Modification of an existing Generating Facility.
 A Generating Facility proposed for inclusion in a resource solicitation process.
 3. The type of interconnection service requested (check one):
 Energy Resource Interconnection Service
 Network Resource Interconnection Service
 4. Interconnection Customer provides the following information:
 - a. Address or location or the proposed new Large Generating Facility site (to the extent known) or, in the case of an existing Generating Facility, the name and specific location of the existing Generating Facility;
 - b. Maximum summer at ____ degrees C and winter at ____ degrees C megawatt electrical output of the proposed new Large Generating Facility or the amount of megawatt increase in the generating capacity of an existing Generating Facility;
 - c. General description of the equipment configuration;
 - d. Commercial Operation Date (Day, Month, and Year);
 - e. Name, address, telephone number, and e-mail address of Interconnection Customer's contact person;
 - f. Approximate location of the proposed Point of Interconnection (optional);
 - g. Interconnection Customer Data (set forth in Attachment A)
 - h. Primary frequency response operating range for electric storage resources.
 - i. Requested capacity (in MW) of Interconnection Service (if lower than the Generating Facility Capacity).
 5. Interconnection Customer provides applicable study deposit amount as specified in the Revised LGIP.

\$75,000 for requests of less than 50 MW; or
\$150,000 for requests of 50 MW and Greater, but less than 200 MW; or
\$250,000 for requests of 200 MW and greater
 6. Interconnection Customer provides Readiness Milestone 1 (M1) as specified in the Revised LGIP.

Proposed Effective Date: 12/5/2019

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M1 is satisfied by any one of the three options below (also described in 3.4.1.f of the Revised LGIP) at Interconnection Customer's option. M1 may also be satisfied by providing additional security described in Section 7.7.5 *in lieu* of providing one of the three options to demonstrate readiness.

- i. Executed term sheet (or comparable evidence) related to a contract, binding upon the parties to the contract, for sale of (i) the constructed Generating Facility, (ii) the Generating Facility's energy, or (iii) the Generating Facility's ancillary services if the Generating Facility is an electric storage resource; where the term of sale is not less than five (5) years;
 - ii. Reasonable evidence the project has been selected in a Resource Plan or Resource Solicitation Process; or
 - iii. Provisional Large Generator Interconnection Agreement accepted for filing with FERC. Such an agreement shall not be suspended and shall include a commitment to construct the Generating Facility.
7. Interconnection Customer provides security equal to one times the study deposit described in Section 3.1 of the Revised LGIP in the form of an irrevocable letter of credit or cash.
8. If requesting NRIS: Interconnection Customer provides the expected point of delivery to deliver within the Transmission Provider's Control Area or to an adjoining Control Area if the Generating Facility is not designated a Network Resource pursuant to Section 30.2 of the Tariff.
9. Interconnection Customer provides Evidence of Site Control as specified in the Revised LGIP and Transmission Provider's business practices posted on OASIS.
10. This Interconnection Request shall be submitted to the representative indicated below:

[To be completed by Transmission Provider]
11. Representative of Interconnection Customer to contact:

[To be completed by Interconnection Customer]
12. This Interconnection Request is submitted by:
Name of Interconnection Customer: _____
By (signature): _____
Name (type or print): _____
Title: _____

Proposed Effective Date: 12/5/2019

Approved Effective Date: 12/5/2019

Date: _____

**Attachment A to Appendix 1
 Interconnection Request**

LARGE GENERATING FACILITY DATA

UNIT RATINGS

kVA _____ °F _____ Voltage _____
 Power Factor _____
 Speed (RPM) _____ Connection (e.g. Wye) _____
 Short Circuit Ratio _____ Frequency, Hertz _____
 Stator Amperes at Rated kVA _____ Field Volts _____
 Max Turbine MW _____ °F _____

Primary frequency response operating range for electric storage resources.

Minimum State of Charge: _____
Maximum State of Charge: _____

COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA

Inertia Constant, H = _____ kW sec/kVA
 Moment-of-Inertia, WR² = _____ lb. ft.²

REACTANCE DATA (PER UNIT-RATED KVA)

DIRECT AXIS QUADRATURE AXIS

Synchronous – saturated	X _{dv} _____	X _{qv} _____
Synchronous – unsaturated	X _{di} _____	X _{qi} _____
Transient – saturated	X' _{dv} _____	X' _{qv} _____
Transient – unsaturated	X' _{di} _____	X' _{qi} _____
Subtransient – saturated	X'' _{dv} _____	X'' _{qv} _____
Subtransient – unsaturated	X'' _{di} _____	X'' _{qi} _____
Negative Sequence – saturated	X _{2v} _____	
Negative Sequence – unsaturated	X _{2i} _____	
Zero Sequence – saturated	X _{0v} _____	
Zero Sequence – unsaturated	X _{0i} _____	

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Leakage Reactance X_{lm} _____

Open Circuit T'_{do} _____ T'_{qo} _____

Three-Phase Short Circuit Transient T'_{d3} _____ T'_{q} _____

Line to Line Short Circuit Transient T'_{d1} _____

Short Circuit Subtransient T''_d _____ T''_q _____

Open Circuit Subtransient T'_{d2} _____

Line to Neutral Short Circuit Transient T''_{do} _____ T''_{qo} _____

FIELD TIME CONSTANT DATA (SEC)
ARMATURE TIME CONSTANT DATA (SEC)

Three Phase Short Circuit T_{a3} _____

Line to Line Short Circuit T_{a2} _____

Line to Neutral Short Circuit T_{a1} _____

NOTE: If requested information is not applicable, indicate by marking "N/A."

MW CAPABILITY AND PLANT CONFIGURATION
LARGE GENERATING FACILITY DATA

ARMATURE WINDING RESISTANCE DATA (PER UNIT)

Positive R_1 _____

Negative R_2 _____

Zero R_0 _____

Rotor Short Time Thermal Capacity $I_2^2t =$ _____

Field Current at Rated kVA, Armature Voltage and PF = _____ amps

Field Current at Rated kVA and Armature Voltage, 0 PF = _____ amps

Three Phase Armature Winding Capacitance = _____ microfarad

Field Winding Resistance = _____ ohms _____ °C

Armature Winding Resistance (Per Phase) = _____ ohms _____ °C

CURVES

Provide Saturation, Vee, Reactive Capability, Capacity Temperature Correction curves.
 Designate normal and emergency Hydrogen Pressure operating range for multiple curves.

GENERATOR STEP-UP TRANSFORMER DATA RATINGS

Capacity Self-cooled/

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Maximum Nameplate
_____/_____/_____kVA

Voltage Ratio(Generator Side/System side/Tertiary)
_____/_____/_____kV

Winding Connections (Low V/High V/Tertiary V (Delta or Wye))
_____/_____/_____

Fixed Taps Available _____

Present Tap Setting _____

If more than one transformer stage is used to deliver the output from the proposed Generating Facility to the Transmission System, please provide the information above for each transformer or transformer type.

IMPEDANCE

Positive
Z₁ (on self-cooled kVA rating) _____% _____X/R

Zero
Z₀ (on self-cooled kVA rating) _____% _____X/R

EXCITATION SYSTEM DATA

Identify appropriate IEEE model block diagram of excitation system and power system stabilizer (PSS) for computer representation in power system stability simulations and the corresponding excitation system and PSS constants for use in the model.

GOVERNOR SYSTEM DATA

Identify appropriate IEEE model block diagram of governor system for computer representation in power system stability simulations and the corresponding governor system constants for use in the model.

WIND AND OTHER NON-SYNCHRONOUS GENERATORS

Number of generators to be interconnected pursuant to this Interconnection Request:

Elevation: _____ Single Phase _____ Three Phase _____

Inverter manufacturer, model name, number, and version:

Proposed Effective Date: 12/5/2019

Approved Effective Date: 12/5/2019

List of adjustable setpoints for the protective equipment or software:

Note: A completed General Electric Company Power Systems Load Flow (PSLF) data sheet or other compatible formats, such as IEEE and PTI power flow models, must be supplied with the Interconnection Request. If other data sheets are more appropriate to the proposed device, then they shall be provided and discussed at Scoping Meeting.

Project Information: Site Control and Adequacy

Total acres required to construct the Generating Facility: _____

Total acres under site control for the Generating Facility at the time of application:

Is Site Control required for Interconnection Facilities, i.e. transmission gen-tie or substation, to interconnect the Generating Facility? ___ Y ___ N

If yes, how many miles of gen-tie right-of-way are required? _____

What is the total number of acres required to build the gen-tie? _____

How many miles of gen-tie right-of-way are under Site Control at the time of this application?

List any local, state, or federal government permits required to construct the Generating Facility and any applicable Interconnection Facilities, i.e. transmission gen-tie:

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Approved Effective Date: 12/5/2019

INDUCTION GENERATORS

- (*) Field Volts: _____
- (*) Field Amperes: _____
- (*) Motoring Power (kW): _____
- (*) Neutral Grounding Resistor (If Applicable): _____
- (*) I_2^2t or K (Heating Time Constant): _____
- (*) Rotor Resistance: _____
- (*) Stator Resistance: _____
- (*) Stator Reactance: _____
- (*) Rotor Reactance: _____
- (*) Magnetizing Reactance: _____
- (*) Short Circuit Reactance: _____
- (*) Exciting Current: _____
- (*) Temperature Rise: _____
- (*) Frame Size: _____
- (*) Design Letter: _____
- (*) Reactive Power Required In Vars (No Load): _____
- (*) Reactive Power Required In Vars (Full Load): _____
- (*) Total Rotating Inertia, H: _____ Per Unit on KVA Base

Note: Please consult Transmission Provider prior to submitting the Interconnection Request to determine if the information designated by (*) is required.