Attachment A to Appendix 3

INTERCONNECTION REQUEST

1. The undersigned Interconnection Customer submits this request to interconnect its Generating Facility with the Transmission System pursuant to the Tariff.

2. This Interconnection Request is for (check one):

   _____ A proposed new Generating Facility.

   _____ An increase in the generating capacity or a Material Modification of an Existing Generating Facility.

   _____ Replacement of Existing Generating Facility with no increase in capacity

3. The type of interconnection service requested (check one):

   _____ Energy Resource Interconnection Service

   _____ Network Resource Interconnection Service

4. All requests for Network Resource Interconnection Service are also studied for Energy Resource Interconnection Service.

5. The Interconnection Customer provides the following information:

   a. Address or location or the proposed new 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:

   _____

   _____

   Geographic coordinates of the proposed new or Existing Generating Facility site:

   Latitude: ___ degrees, ___ minutes, ___ seconds (North)

   Longitude: ___ degrees, ___ minutes, ___ seconds (West);

   b. Maximum electrical output of the proposed new Generating Facility or the amount of increase in the generating capacity of an Existing Generating Facility;

   Maximum summer electrical output or increase of _____ megawatts at _____ degrees C

Maximum winter electrical output or increase of _____ megawatts at _____ degrees C

c. A description of the equipment configuration (i.e. Number of generators/inverters and number of Intermediate Step-up transformers) for the entire Generating Facility.

d. Preliminary one-line diagram of the Generating Facility that includes:
- Breaker layout, bus configuration (if available) and number of generators
- Zero impedance lines (if applicable)
- Distance from the collector substation to the POI in miles and the line impedance;

e. Collector System Feeder Spreadsheet and Layout Diagrams;

f. PSS/E User Defined Model files (.dll, .lib, .obj), documentation (generator model, power plant controller, etc.), and stability model files (.dyr, generator model, power plant controller, etc.);

g. Commercial Operation Date (month/day/year); ____/____/_____;

h. Name, address, telephone number, and e-mail address of Interconnection Customer's contact person in Item 9 below;

i. Location of the proposed Point of Interconnection including the substation name or the name of the line to be tapped (including the voltage), the estimated distance from the substation endpoints of a line tap, address, and GPS coordinates.

POI substation name: _____

If a line tap, POI line name:_____(endpoint 1) to _____(endpoint 2)

POI Distance from endpoint 1: _____miles

POI Distance from endpoint2: _____miles

POI voltage: ___kV

Address or location of the Point of Interconnection:

_____

_____

Geographic coordinates of the proposed Point of Interconnection:

Latitude: ____degrees, _____minutes, _____seconds (North)

Longitude: ___degrees, _____minutes, _____seconds (West);

j. Geographical map showing the approximate location of the proposed Point of Interconnection and the location of the Generating Facility;

k. Generating Facility Data (set forth in Attachment B to this Appendix 3);

l. Requested capacity (in MW) of Interconnection Service (if lower than the Generating Facility Capacity);

m. Fuel type(s) included in this project configuration:
__ Battery/Storage
__ Hybrid
__ Hydro
__ Nuclear
__ Solar
__ Thermal
__ Wind
__ Other: _____

Describe the prime mover (Combined Cycle Comb. Turbine, Combined Cycle Steam, Gas Turbine, Internal Combustion Engine, Steam Turbine, etc.): _____

n. Primary frequency response operating range for electric storage resources;

o. If Interconnection Facilities will be shared, the project number of other Existing Generating Facilities or Interconnection Requests with which Interconnection Facilities will be shared shall be listed below. If no project number is available, state the name of the Interconnection Customer and describe the applicable Generating Facilities below.

_____

_____

p. For request for Generating Facility Replacement, the planned or actual date of cessation of operation of the Existing Generating Facility: (month/day/year) ___/____/____.

6. Applicable deposit amount and application fee as specified in the GIP.

7. Evidence of Site Control as specified in Section 8.2 the GIP:

____ Site Control for the Generating Facility and one of the following:

____ Site Control for at least fifty percent (50%) of the Generating Facility's high voltage tie line to Point of Interconnection; **OR**

_____ Additional financial security in the amount of $80,000 per line right-of-way mile.

8. This Interconnection Request shall be submitted electronically, in the manner specified in Section 1 of the "Generator Interconnection Business Guide and Practice" manual posted on the Transmission Provider's Generator Interconnection Study posting page on OASIS.

9. Representative of Interconnection Customer to contact (including e-mail address):

Name of Contact Person: _____

Mailing Address: _____

City, State, Zip_____

Telephone: _____

E-mail address: _____

10. This Interconnection Request is submitted by:

Name of Interconnection Customer (Company): _____

By (signature): _____

Name (type or print): _____

Title:_____

Date:_____

Attachment B to Appendix 3

ASSUMPTIONS USED IN CONDUCTING THE DEFINITIVE INTERCONNECTION SYSTEM IMPACT STUDY

The Definitive Interconnection System Impact Study will be based upon the information set forth in the Interconnection Requests and results of applicable prior studies, subject to any modifications in accordance with Section 4.4 of the GIP.

GENERATING FACILITY DATA FOR THE DEFINITIVE INTERCONNECTION SYSTEM IMPACT STUDY

Interconnection Facilities Tie Line Information

Nominal Voltage (kV)	
Line length (miles)	
Summer Line Rating (MVA)	
Winter Line Rating (MVA)	
Positive Sequence Resistance R1(in p.u.*)	
Positive Sequence Reactance X1(in p.u.*)	
Positive Sequence Susceptance B1(in p.u.*)	
Zero Sequence Resistance R0(in p.u.*)	
Zero Sequence Reactance X0(in p.u.*)	
Zero Sequence Susceptance B0 (in p.u.*)	
Positive Sequence Shunt G1 (in p.u.*)	
Positive Sequence Shunt B1 (in p.u.*)	
Zero Sequence Shunt G0 (in p.u.*)	

Zero Sequence Shunt B0 (in p.u.*)	

*****On 100-MVA Base

Main Substation Transformer

(for a single generator or the step-up from collector system to POI voltage)

Number of transformers ____

RATINGS	Self-Cooled	Maximum Nameplate	
Capacity (kVA)			
MVA Base	_____MVA		
Maximum Nameplate Ratings		_____/_____MVA	
	Generator Side	System Side	Tertiary
Voltage Ratio			
	Primary	Secondary	
Nominal Voltage			
Winding Connections (Delta or Wye)			
Tapped Winding			
	Low Voltage	High Voltage	Tertiary Voltage
Winding Connections (Delta or Wye)			
IMPEDANCE	Primary-Secondary	Primary-Tertiary	Secondary-Tertiary
Positive Z1 (on self-cooled kVA rating)			

Zero Z0 (on self-cooled kVA rating)			
	Fixed Taps Available	Present Taps Available	
TAP SETTING			
Tap Ratio Range			
Number of Taps			
No Load Loss	_____ W		
Exciting I:	_____ p.u.		

Static Reactive Compensation Device

Voltage (kV)	
Total Size (MVAR)	
Step Size (MVAR)	Number of Steps

Equivalent Collector System

Equivalent Collector System for each modeled medium voltage feeder line
Collector system voltage = _____kV
R = _____per unit on 100 MVA Base and collector kV base (positive sequence)
X = _____per unit on 100 MVA Base and collector kV base (positive sequence)
B = _____per unit on 100 MVA Base and collector kV base (positive sequence)

Generator Step-up Transformer

Number of transformers ____

RATINGS	Self-Cooled	Maximum Nameplate	
Capacity (kVA)			
MVA Base	_____MVA		

Maximum Nameplate Ratings		_____/_____MVA	
	Generator Side	System Side	Tertiary
Voltage Ratio			
	Primary	Secondary	
Nominal Voltage			
Winding Connections (Delta or Wye)			
Tapped Winding			
	Low Voltage	High Voltage	Tertiary Voltage
Winding Connections (Delta or Wye)			
IMPEDANCE	Primary-Secondary	Primary-Tertiary	Secondary-Tertiary
Positive Z1 (on self-cooled kVA rating)			
Zero Z0 (on self-cooled kVA rating)			
	Fixed Taps Available	Present Taps Available	
TAP SETTING			
Tap Ratio Range			
Number of Taps			
No Load Loss	_____W		
Exciting I:	____ p.u.		

Unit Ratings

Number of generating units	

Inverter manufacturer, model name, number and version	
Nameplate kVA rating	
Voltage	
Terminal Voltage	
Generator type (e.g. Type III – DFIG or Type IV – Inverter)	
Fuel Type	
Prime Mover Type	
Power Factor (Lead/Lag)	
Connection (e.g. Wye)	
Max Turbine Power Output Capability (Summer MW/Winter MW)	
Frequency, Hertz	
Stator Amperes at Rated kVA	

COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA

Inertia Constant, H = _____ kW sec/kVA

REACTANCE DATA (PER UNIT-RATED KVA)

Subtransient (first cycle) Positive Sequence Resistance R1*	
Subtransient (first cycle) Positive Sequence Reactance X1*	
Subtransient (first cycle) Negative Sequence Resistance R2*	
Subtransient (first cycle) Negative Sequence Reactance X2*	
Subtransient (first cycle) Zero Sequence Resistance R0*	
Subtransient (first cycle) Zero Sequence Reactance X0*	
Stationary (after 50ms) Positive Sequence Resistance R1*	

Stationary (after 50ms) Positive Sequence Reactance X1*	
Stationary (after 50ms) Negative Sequence Resistance R2*	
Stationary (after 50ms) Negative Sequence Reactance X2*	
Stationary (after 50ms) Zero Sequence Resistance R0*	
Stationary (after 50ms) Zero Sequence Reactance X0*	
Voltage Controlled Current Source (VCCS) curve	

*****In p.u. nameplate kVA based

	Direct Axis	Quadrature Axis
Synchronous – saturated	Xdv	Xqv
Synchronous – unsaturated	Xdi	Xqi
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	X2v	
Negative Sequence – unsaturated	X2i	
Zero Sequence – saturated	X0v	
Zero Sequence – unsaturated	X0i	
Leakage Reactance	Xlm	

FIELD TIME CONSTANT DATA (SEC)

Open Circuit	T'_{do}	_____	T'_{qo}	_____
Three-Phase Short Circuit Transient	T'_{d3}	_____	T'_{q}	_____
Line to Line Short Circuit Transient	T'_{d2}	_____		
Line to Neutral Short Circuit Transient	T'_{d1}	_____		
Short Circuit Subtransient	T''_{d}	_____	T''_{q}	_____
Open Circuit Subtransient	T''_{do}	_____	T''_{qo}	_____

ARMATURE WINDING RESISTANCE DATA (PER UNIT)

Positive	R_1	_____
Negative	R_2	_____
Zero	R_0	_____

CURVES

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

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.

ENERGY STORAGE RESOURCES

Device manufacturer: _____

Technology (Li-ion, Lead Acid, Flow Battery, Pumped Hydro, Flywheel, etc.)_____

Check one of the following:
_____ Stand-alone
_____ Co-located with another Generating Facility (co-located means at the same POI)

Maximum Energy Output Rating (MWh) _____ at Maximum Power Output (MW) _____

Maximum Contractual Power Output (MW) _____

Charging Parameters

Check one of the following:

_____ Yes, the energy storage resource will take energy from the Transmission System when operating in charging mode. The maximum rate of charge capability of the Generating Facility will be _____ MW. The maximum rate of charge to be utilized (requested maximum) will be_____MW.

Charging Power Factor _____ lag _____ lead at rated output

_____ No, the energy storage resource will never take energy from the Transmission System when operating in charging mode, by either Self-Dispatch or at the direction of SPP. The monitoring and control equipment that will be used to ensure that the Generating Facility never takes energy from the Transmission System when operating in charging mode is described as follows:

_____
_____
_____

Inverter-Based Resource Data

Phase-Locked Loop ("PLL") controller parameters for inverter-based resources:

- PLL Proportional Gain K_p _____
- PLL Integral Gain K_i _____
- PLL Frequency Limits ω_l _____ (rad/sec) and ω_h _____ (rad/sec)

The above data applies to a generic structure of the PLL (also commonly known as a synchronous reference frame PLL) and that the actual PLL structure within an Original Equipment Manufacturer's (OEM) device may differ from this generic structure. Should a difference exist, the parameter values of the PLL shall be provided such that the most recent equivalently parameterized generic industry model shows the same trend as the performance shown by actual OEM equipment.

Plant Load

Load MW _____ ____
Load MVAR_____
Specify Load Bus Voltage _____kV

Mutual Coupling Impedance

Mutual coupling impedance and 'B' factors for mutually coupled transmission lines

Electromagnetic Transient (EMT) Models:

See SPP Electromagnetic Transient (EMT) Model Requirements Document

Attachment C to Appendix 3

DATA FORM TO BE PROVIDED BY INTERCONNECTION CUSTOMER FOR THE INTERCONNECTION FACILITIES STUDY

Provide location plan and simplified one-line diagram of the plant and station facilities. For staged projects, please indicate future generation, transmission circuits, etc.

One set of metering is required for each generation connection to the new ring bus or existing Transmission Provider station. Number of generation connections:

On the one line diagram indicate the generation capacity attached at each metering location. (Maximum load on CT/PT)

On the one line diagram indicate the location of auxiliary power. (Minimum load on CT/PT) Amps

Will an alternate source of auxiliary power be available during CT/PT maintenance?

_____ Yes _____ No

Will a transfer bus on the generation side of the metering require that each meter set be designed for the total plant generation? _____Yes _____ No (Please indicate on one line diagram).

What type of control system or PLC will be located at Interconnection Customer's Generating Facility?

_____

What protocol does the control system or PLC use?

_____

Please provide a 7.5-minute quadrangle of the site. Sketch the plant, station, transmission line, and property line.

Physical dimensions of the proposed interconnection station:

_____

Bus length from generation to interconnection station:

_____

Line length from interconnection station to Transmission Provider's transmission line.

_____

Tower number observed in the field. (Painted on tower leg)* _____

Number of third party easements required for transmission lines*:

_____

* To be completed in coordination with Transmission Provider.

Is the Generating Facility in the Transmission Provider's service area?

_____ Yes _____ No Local provider: _____

Please provide proposed schedule dates:

Begin Construction	Date:_____
Generator step-up transformer receives back feed power	Date: _____
Generation Testing	Date: _____
Commercial Operation	Date: _____