Generator Interconnection Agreement
Generating Facility Data For Solar PV
Required Prior to Initial Synchronization

Generating Facility Name: _____

Generating Facility Owner: _____

Maximum Net Export Capability requested at POI: _____ MW (Gross Generation – Station Service)

Station Service Load (Including Losses): _____MW and _____Mvar

Generating Facility Substation GPS Coordinate: Latitude _____ and Longitude _____ (decimal degrees)

Complete this data form and provide final design data sheets from vendor which show the following information (the vendor data sheets must be provided) along with Single Line Diagrams of facility:

1. **Aggregate Gross Capability of Generating Facility (at Max Net Export MW indicated above).**
   a) Maximum Gross MW Capability at inverter terminals. _____ MW
      i) Gross Reactive Production capability at inverter terminals at Max MW output. _____ MVAR
      ii) Gross Reactive Absorption capability at inverter terminals at Max MW output. _____ MVAR
   b) Minimum Gross MW Capability at inverter terminals. _____ MW
      i) Gross Reactive Production capability at inverter terminals at Min. MW output. _____ MVAR
      ii) Gross Reactive Absorption capability at inverter terminals at Min. MW output. _____ MVAR
   a) Do the inverters have the capability to produce/absorb reactive power during the night? Yes / No
      If so, describe: _____

2. **Generator Interconnection Tie Line (from Generating Facility to Interconnecting Substation).**
   a) Line voltage: _____ kV, line length: _____ Miles/Feet
   b) Line rating at 95°F ambient: _____ MVA, at 104°F ambient: _____ MVA
   c) R_1 = _____ ohm or _____ pu on 100 MVA and line kV base (positive sequence)
   d) X_1 = _____ ohm or _____ pu on 100 MVA and line kV base (positive sequence)
   e) B_1 = _____ μF or _____ pu on 100 MVA and line kV base (positive sequence)
   f) R_0 = _____ ohm or _____ pu on 100 MVA and line kV base (zero sequence)
   g) X_0 = _____ ohm or _____ pu on 100 MVA and line kV base (zero sequence)
   h) B_0 = _____ μF or _____ pu on 100 MVA and line kV base (zero sequence)

3. Main Transformer. Number of main transformers: _____

Two-Winding Main Transformer Data (as applicable):

a) Nominal Voltage for each winding (Low/High): _____ / _____ kV

b) Winding Connections (Low/High): Delta or Wye / Delta or Wye

c) Available tap positions: _____ / _____ / _____ / _____ / _____ kV **or** _____ % _____ # of taps.

d) Tap setting: _____

e) Include transformer test report including ratings, impedances, etc. _____

Three-Winding Main Transformer Data (as applicable)

f) GSU connection and winding (please attach diagram and mark to reference this form).

	H Winding Data	**X Winding Data**	**Y Winding Data**
Rated high side voltage base	_____ kV Delta or Wye connected	_____ kV Delta or Wye connected	_____ kV Delta or Wye connected
Tap positions available	_____/ _____/ _____/ _____/ _____ kV	_____/ _____/ _____/ _____/ _____ kV	_____/ _____/ _____/ _____/ _____ kV
Present Tap Setting (if applicable)	_____ kV	_____ kV	_____ kV

g) Include transformer test report including ratings, impedances, etc. _____

4. Collector System Equivalent Model.

a) Collector system nominal voltage = _____ kV

- High/Low voltage limits = _____ / _____ kV (or pu)

b) Collector system equivalent model rating at:

95°F ambient = _____ MVA 104°F ambient = _____ MVA

c) R_1 = _____ ohm or _____ pu on 100 MVA and collector kV base (positive sequence)

d) X_1 = _____ ohm or _____ pu on 100 MVA and collector kV base (positive sequence)

e) B_1 = _____ μF or _____ pu on 100 MVA and collector kV base (positive sequence)

f) R_0 = _____ ohm or _____ pu on 100 MVA and collector kV base (zero sequence)

g) X_0 = _____ ohm or _____ pu on 100 MVA and collector kV base (zero sequence)

h) B_0 = _____ μF or _____ pu on 100 MVA and collector kV base (zero sequence)

5. Inverter Step-Up Transformers. Number of inverter transformers: _____ Rating: _____ MVA

Two-Winding Inverter Step-Up Transformer Data (as applicable):

a) Nominal Voltage for each winding (Low/High): _____ / _____ kV

b) Winding Connections (Low/High): Delta or Wye / Delta or Wye

c) Available taps: _____ / _____ / _____ / _____ / _____ kV **or** _____ % _____ # of taps.

d) Tap setting: _____

e) Include transformer test report including ratings, impedances, etc. _____

Three-Winding Inverter Step-Up Transformer Data (as applicable)

e) GSU connection and winding (please attach diagram and mark to reference this form).

	H Winding Data	**X Winding Data**	**Y Winding Data**
Rated high side voltage base	_____ kV Delta or Wye connected	_____ kV Delta or Wye connected	_____ kV Delta or Wye connected
Tap positions available	_____/ _____/ _____/ _____/ _____ kV	_____/ _____/ _____/ _____/ _____ kV	_____/ _____/ _____/ _____/ _____ kV
Present Tap Setting (if applicable)	_____ kV	_____ kV	_____ kV

f) Include transformer test report including ratings, impedances, etc. _____

6. Inverter and PV Module Data.

a) Number of Inverters: _____

b) Nameplate Rating (each Inverter): _____ kW/ _____ kVA

c) Rated Power Factor Range: _____

d) Inverter rated voltage: _____ V

e) Maximum and minimum inverter operating voltages. _____

f) Inverter Manufacturer and Model #: _____

g) PV Module Manufacturer and Model #: _____

h) Provide dynamic modeling data, including plant volt/var control function model **and** active power/frequency control function model, in a Siemens/PTI PSS/E standard model. If a user-written model is submitted in place of a standard model, it must include the model characteristics, including block diagrams, values and names for all model parameters and a list of all state variables. All of the associated files, including source code, for dynamic modeling should be in PSS/E versions 32 and 33, and must be shareable on an interconnection-wide basis to support use in the interconnection-wide cases, as required by NERC Reliability Standard MOD-032-1.

7. Plant Reactive Power Compensation (beyond the inverters built-in reactive capability), if applicable**.**

a) Individual fixed shunt reactive device type: _____

- Number and size of each: _____×_____ MVA
- Rated voltage : _____ kV and max/min operating voltages: _____ / _____ kV
- Mode of operation: Fixed / Locked / Discrete with Voltage / VAR control

b) Dynamic reactive control device (e.g., SVC, STATCOM): _____

- Number and size of each: _____×_____ MVA

c) Control range at rated MW output: _____ Mvar (lead and lag)

d) Control mode (e.g., voltage, power factor, reactive power): _____

e) Regulation point: _____

f) Describe the overall reactive power control strategy: _____

g) Q priority enabled? Yes / No / Not Available

h) Provide dynamic modeling data for the dynamic reactive control device(s) in a Siemens/PTI PSS/E standard model. If a user-written model is submitted in place of a standard model, it must include the model characteristics, including block diagrams, values and names for all model parameters and a list of all state variables. All of the associated files, including source code, for dynamic modeling should be in PSS/E versions 32 and 33, and must be shareable on an interconnection-wide basis to support use in the interconnection-wide cases, as required by NERC Reliability Standard MOD-032-1.

8. Short Circuit Contribution of the Generating Facility at the Point of Interconnection.

a) Maximum Three Phase Fault Current: _____ Amps and Duration: _____

b) Maximum Single Line to Ground Fault* Current: _____ Amps and Duration: _____

* Single Line to Ground Fault at the Point of Interconnection with ties to utility at the POI open.

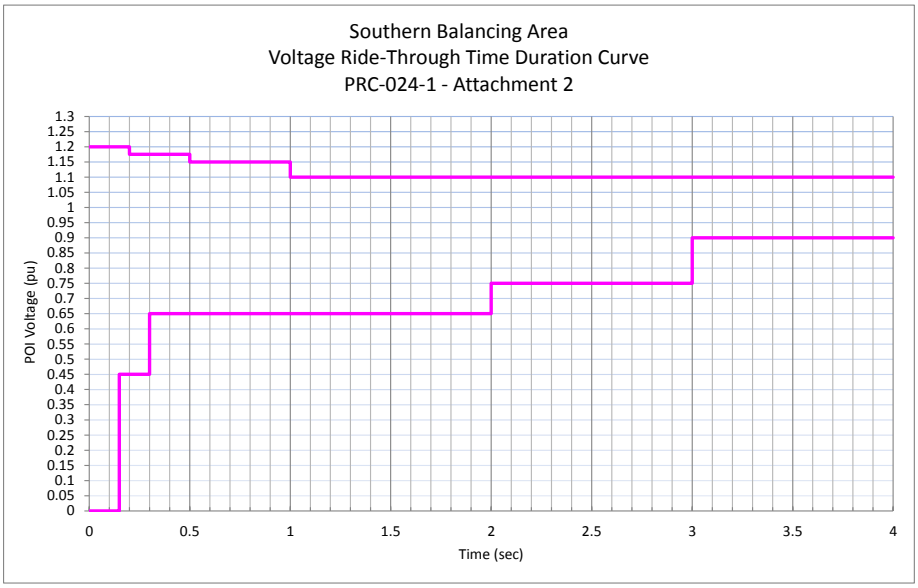
9. Harmonic Distortion of the plant at Point of Interconnection.

a) Total Harmonic Current Distortion. _____

b) Provide individual harmonic currents through 50^{th} harmonic, in % of fundamental current rating.

10. Voltage Ride-Through Capability.

Provide voltage ride-through time duration settings (per-unit voltage set point and corresponding ride-through time), reflecting the settings for the plant level controller. An example of a voltage ride-through time duration curve for applicable units is provided below for reference.



11. Frequency Ride-Through Capability.

Provide frequency ride-through capability settings (frequency set point and corresponding ride-through time), reflecting the settings for the plant level controller. An example of a frequency ride-through time duration curve for applicable units is provided below for reference.