Rule 5.500 Application for Interconnection of Distributed Energy Resources Greater than 150 kW

This form may be made available in an electronically fillable format and it is permissible to submit the form with electronic signatures.

Preamble and Instructions:
An owner of a distributed energy resource who requests interconnection to a State-regulated distribution or transmission facility must submit an application to the Interconnecting Utility. An application is accepted as complete when it provides all applicable information required along with the required Application fee. A site plan and one-line diagram must be supplied with the Application. Additional information to evaluate a request for interconnection may be required after an Application is deemed complete.

1. Applicant Information:

Name: _____

Address [eSITE ID]: _____

City:_____State:_____Zip: _____

Telephone (Day): _____(Alternate):_____

Email: _____

Utility Consumption Meter Number (if applicable): _____

Name of Utility:_____

Representative: (e.g., System installation contractor or coordinating company, if appropriate)

Name: _____

Address: _____

City:_____State:_____Zip: _____

Telephone (Day): _____ (Alternate): _____

Email: _____

Will the Generation Resource be used for any of the following? Check all that apply

Net-Metering?	Yes☐	No☐
Group Net-Metering? (If yes, please provide group information directly to your utility)	Yes☐	No☐
Non-Exporting?	Yes☐	No☐
To participate in the Standard Offer Program?	Yes☐	No☐
Participate in the wholesale electricity market?	Yes☐	No☐
Qualifying Facility[1] where 100% of output will be sold to Interconnecting Utility?	Yes☐	No☐
Qualifying Facility[1] intending to sell power at wholesale to an entity other than Interconnecting Utility?	Yes☐	No☐
Other (describe):_____		

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[1] Evidence of FERC QF Certification will be required prior to commercial operation.

For an energy storage system, check the mode of operation below: (Check all that apply)

        ☐ Peak Shaving   ☐ Retail Demand Management

        ☐ Emergency/Back-up   ☐ Frequency Regulation

        ☐ Wholesale market participation(describe)_____

        ☐ Other (describe)_____

2. <u>Project Specifications:</u>

All power ratings should be listed in AC throughout unless otherwise noted

Physical Address [eSITE ID] :   ☐ Same as above

_____

City:_____State:_____Zip:_____

Is this an amendment to an existing system? Check One   Yes☐   No☐

      If YES, what is existing CPG# _____

Please describe the proposed amendment: _____

_____

Requested Point of Interconnection (Include on site plan)_____

Requested in-service date: _____

Energy Source: Check all that apply

           ☐ Solar   ☐ Wind   ☐ Hydro

           ☐ Energy Storage   ☐ Other: _____

Interconnection Configuration?   Check One

           ☐ Generation Meter   ☐ Behind Consumption Meter

Total number of inverters to be interconnected pursuant to this Application:_____

_____

Total Aggregate Nameplate Rating for all generators (kW):_____

Generating Export Capacity [2] (kW):_____

<u>Individual Generator Data</u>:

Provide for each Generator, use additional sheets if needed.

Type of Generator: Check One

    ☐ DC Generator or Solar ☐ Synchronous ☐ Induction ☐ Other_____ Generator Manufacturer,

Model Name & Number:_____

Power Rating per generator_____

[2] As limited by any export controls.

Photovoltaic (PV) Data

Panel Manufacturer_____Model_____

Quantity of PV panels_____ Power Rating per panel (DC Watts)_____

Total Power Rating (DC Watts)_____

☐ Roof Mount

☐ Ground Mount

☐ Other
System Orientation: ☐ fixed mount   ☐ 1-axis tracking   ☐ 2-axis tracking

Individual Inverter Data (if any):

Provide for each inverter, use additional sheets if needed.

Inverter Manufacturer: _____

Model Name & Number:_____

Version Number:_____

Nameplate Rating: (kW)_____(kVA)_____(AC Volts)_____

Quantity of units installed: _____

If Power Factor not Unity:

    Rated Power Factor: (Underexcited)_____(Overexcited)_____

    Minimum Power Factor: (Underexcited)_____(Overexcited)_____

Do export controls apply to this inverter? (Check one) Yes☐   No☐

- Is the inverter UL 1741 / IEEE 1547.1 Compliant?

    Yes☐   No☐

- Is the inverter certified per UL 1741-SA and compliant with ISO-NE's Inverter

    Source Requirements Document (ISO-NE SRD)?

    Yes☐   No☐

- Is the inverter certified per UL 1741-SB and compliant with ISO-NE's Default IEEE 1547-2018

    Setting Requirements?

    Yes☐   No☐

If Yes to any of above bullets, include testing certificate or manufacturer a data sheet describing the inverter's UL 1741/IEEE 1547.1 listing.

Battery Storage/Backup Information

Is this Battery an add-on to an existing customer-generator facility?   Yes ☐ No ☐

    If Yes, existing CPG #: _____

Is this Battery: Battery (DC Coupled – No Export) + Solar   Yes ☐ No ☐

                    Battery (AC Coupled - Export) + Solar   Yes ☐ No ☐

                    Battery Only (AC Coupled - Export)   Yes ☐ No ☐

                    Battery (DC-Coupled – No Export)   Yes ☐ No ☐

    ☐ Other (describe if coupled with another energy resource): _____

_____

_____

Does the battery share an inverter with a Renewable Energy system?   Yes ☐ No ☐

If Yes, can the battery be charged from the Electric Utility electric distribution grid? Yes ☐ No ☐

If No, how is the battery Energy Storage System prevented from being charged by the electric distribution system? _____

_____

_____

Shared Inverter Information (DC coupled inverters with multiple sources)

Quantity: _____

Battery System Manufacturer: _____ Model: _____ Battery Type: _____

Battery Charge/Discharge Rating (kW AC): _____ Battery Energy Capacity (kWh): _____

DC Source/Prime Mover: _____

Do export controls apply to this inverter? (Check one)   Yes☐ No☐

Lagging Reactive Power Limit at Rated Real Power Output (MVAR)	
Leading Reactive Power Limit at Rated Real Power Output (MVAR)	
Lagging Reactive Power Limit at Zero Real Power Output (MVAR)	
Leading Reactive Power Limit at Zero Real Power Output (MVAR)	

- Is the inverter UL 1741 / IEEE 1547.1 Compliant?

    Yes☐   No☐

- Is the inverter certified per UL 1741-SA and compliant with ISO-NE's Inverter Source Requirements Document (ISO-NE SRD)?

    Yes☐   No☐

- Is the inverter certified per UL 1741-SB and compliant with ISO-NE's Default IEEE 1547-2018 Setting Requirements?

    Yes☐   No☐

If Yes to any of above bullets, include documentation provided by the inverter manufacturer describing the inverter's UL 1741/IEEE 1547.1 listing.

Dedicated Inverter Information (inverters with only batteries for DC source)

Quantity:_____

Battery System Manufacturer: _____Model:_____ Battery Type:_____

Battery Charge/Discharge Rating (kW AC): _____Battery Energy Capacity (kWh):_____

DC Source/Prime Mover: _____

Do export controls apply to this inverter? (Check one) Yes☐ No☐

Lagging Reactive Power Limit at Rated Real Power Output (MVAR)	
Leading Reactive Power Limit at Rated Real Power Output (MVAR)	
Lagging Reactive Power Limit at Zero Real Power Output (MVAR)	
Leading Reactive Power Limit at Zero Real Power Output (MVAR)	

- Is the inverter UL 1741 / IEEE 1547.1 Compliant?

    Yes☐   No☐

- Is the inverter certified per UL 1741-SA and compliant with ISO-NE's Inverter Source Requirements Document (ISO-NE SRD)?

    Yes☐   No☐

- Is the inverter certified per UL 1741-SB and compliant with ISO-NE's Default IEEE 1547-2018 Setting Requirements?

    Yes☐   No☐

If Yes to any of above bullets, include documentation provided by the inverter manufacturer describing the inverter's UL 1741/IEEE 1547.1 listing.

<u>Battery Intended Use and Operation</u>

Please provide a sequence of operations explaining how the system will operate under normal and off-grid conditions (explain how the battery will disconnect and reconnect to the grid). Please provide the type of switching and indicate if it is self-contained or utilizes separate components. An example would be self-contained device with DC to AC inverter, battery charger, and integrated AC transfer switch. On your one-line diagram please label the various equipment (inverter(s), charge controllers, switches, etc.) so that your written operational equipment discussion matches the one-line diagram. If your system rated kW outflow to the grid is restricted by control logic (outflow kW is less than inverter total capacity), then indicate the worst case outflow capacity.

_____

_____

_____

_____

_____

_____

_____

_____

<u>Limited-Export / Non-Export / Limited-Import Data</u>:

 If multiple export control systems are used, provide for each control system and use additional sheets if needed.

Is export controlled to less than the Total Aggregate Nameplate Rating? Yes ☐   No ☐

Method of export limitation:

☐ Power Control System   ☐ Reverse Power Protection

☐ Minimum Power Protection   ☐ Other (describe): _____

Export controls are applied to how many generators?   ☐ Multiple   ☐ One

If Power Control System is used, open loop response time: _____(s)

Power Control System output limit setting: (kW) _____(kVA) _____

Energy Storage System Power Control System operating mode:

☐ Unrestricted   ☐ Export Only   ☐ Import Only   ☐ No Exchange

Describe which Generators the export control system controls: _____

_____

_____

_____

<u>Rotating Machines Data</u>:

Manufacturer, Model Name & Number: _____

Version Number: _____

Nameplate Output Power Rating: (kW) _____ (kVA) _____

Rated Power Factor: (Underexcited) _____(Overexcited) _____

Minimum Power Factor: (Underexcited) _____(Overexcited) _____

☐ Single phase   ☐ Three phase (check one)

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

Export Capacity Requested (kW) : _____

Do export controls apply to this machine? Yes ☐   No ☐

RPM Frequency: _____

Neutral Grounding Resistor (If Applicable): _____

List components of the Interconnection Equipment Package that are UL or IEEE Certified:

   Equipment Type   Certifying Entity

<u>1.</u>   _____

<u>2.</u>   _____

<u>3.</u>   _____

<u>4.</u>   _____

<u>Synchronous Generators</u>

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

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

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

Generator Saturation Constant (1.0):   _____

Generator Saturation Constant (1.2):   _____

Negative Sequence Reactance, X_2:   _____ P.U.

Zero Sequence Reactance, X_0:   _____ P.U.

KVA Base: _____

Field Volts: _____

Field Amperes: _____

For synchronous generators, 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.

Induction Generators

  Motoring Power (kW):   _____

  I22t or K (Heating Time Constant):   _____

  Rotor Resistance, Rr: _____P.U.   Rotor Reactance, Xr: _____P.U.

  Stator Resistance, Rs: _____P.U.   Stator Reactance, Xs: _____P.U.

  Magnetizing Reactance, Xm: _____P.U.

  Short Circuit Reactance, Xd: _____P.U.

  Exciting Current: _____Amps

  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

3. <u>Transformer and Protective Relay Specifications</u>

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 ☐

(a) <u>Transformer Data:</u> (if applicable, for Interconnection Customer-Owned Transformer)

Is the transformer?   ☐Single phase   ☐Three phase (check one)

Size: _____kVA

Transformer Impedance: _____percent on _____kVA Base

If Three Phase:

Transformer Primary	_____Volts	☐ Delta ☐ Wye	☐ Grounded Wye
Transformer Secondary	_____Volts	☐ Delta ☐ Wye	☐ Grounded Wye
Transformer Tertiary	_____Volts	☐ Delta ☐ Wye	☐ Grounded Wye

(b) <u>Transformer Fuse Data:</u> (if applicable, for Interconnection Customer-Owned Fuse)

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

Manufacturer: _____Type: _____

Size: _____Speed: _____

(c) <u>Interconnecting Circuit Breaker:</u> (if applicable)

Manufacturer: _____ Type: _____

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

(d) <u>Interconnection Protective Relays:</u> (if applicable)

If Microprocessor-Controlled:

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

Setpoint Function	Minimum	Maximum
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____

(e) <u>Discrete Components:</u> (if applicable)

(Enclose/Attach 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: _____

(f) <u>Current Transformer Data:</u> (if applicable)

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

Manufacturer:_____

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

(g) <u>Potential Transformer Data:</u> (if applicable)

Manufacturer:_____

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

4. <u>General Information</u>

Enclose/Attach copy of site electrical one-line diagram showing the configuration of all
Project equipment, current and potential circuits, and protection and control schemes.
This one-line diagram must be signed and stamped by a licensed Professional Engineer.

       Is one-line diagram enclosed?   Yes ☐   No ☐

Enclose/Attach copy of any site documentation that indicates the precise physical location of the
proposed Project and all protective equipment and labels Point of Interconnection on existing
electrical system (e.g., USGS topographic map or other diagram or documentation).

       Is site documentation enclosed?   Yes ☐   No ☐

Enclose/Attach copy of any site documentation that describes and details the operation of the
protection and control schemes.

       Is available documentation enclosed?   Yes ☐   No ☐

Enclose/Attach 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 ☐

5. <u>Applicant Signature</u> (may be electronic)

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

Signed: _____

Title: _____

Date: _____

Operation is contingent on Utility approval to interconnect the Project and receipt of all other
required regulatory approvals.