BAYFIELD Electric Cooperative • Iron River, WI

Your Touchstone Energy™ Cooperative
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Distributed Energy Resource (DER) Interconnection Application Form

All Interconnection Customer requests to interconnect a Distributed Energy Resource ("DER") with the Bayfield Electric Cooperative ("Cooperative") electric distribution system, must complete and submit this Interconnection Application Form to the along with a **$500 non-refundable Processing Fee**. Each proposed DER interconnection requires a separate Interconnection Application Form and Processing Fee.

Following the receipt of the Interconnection Application Form and Processing Fee, the Cooperative will determine if the application is complete. If not complete, the Cooperative will return the Interconnection Application Form to the applicant indicating which additional items are needed to process the application.

System Impact Study

The Cooperative reserves the right to require a System Impact Study ("SIS") to assess the impact of the proposed DER facility on the reliability and power quality of the Cooperative distribution system. The Cooperative will determine if a SIS is needed based on factors including, but not limited to, the proposed DER size, type, and interconnection location with the system. For applications requiring a SIS, the applicant shall submit a deposit of $10,000 to fund the study. Any unused funds for the SIS will be returned to the applicant.

I. Interconnection Customer Information

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

Name:_____

Contact Name: _____

Title:_____

E-mail Address: _____

Mailing Address: _____

City:_____ State:_____ Zip:_____

Telephone (Day):_____ (Evening):_____

Facility Location (*if different from above*)

Mailing Address: _____

City:_____ State:_____ Zip: _____

Alternative Contact Information/Owner/Lessor (*if different from the Interconnection Customer*)

Contact Name: _____

Title: _____

Company: _____

E-mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Application is for:

- ☐ New DER facility
- ☐ Capacity change to a proposed or existing DER facility
- ☐ Change of ownership of a proposed or existing DER facility to a new legal entity
- ☐ Change of control of a proposed or existing DER facility of the existing legal entity

If capacity addition to an existing DER Facility, please describe: _____

_____

_____

_____

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

To supply power to the Interconnection Customer	☐ Yes	☐ No
To supply power to Bayfield Electric Cooperative	☐ Yes	☐ No
To supply power to others	☐ Yes	☐ No

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*(**NOTE**: The following is to be completed for a new DER facility or a capacity change to a proposed or existing DER facility.)*

Requested point of interconnect: _____

Requested in-service date: _____

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

Existing account number: _____

Service address: _____

Billing Address (*if different from Service Address*): _____

II. General DER Information

Information applies only to the DER Facility, not the Interconnection Facilities.

Prime Mover:

☐ Photovoltaic (PV) ☐ Fuel Cell ☐ Reciprocating Engine

☐ Gas Turbine ☐ Steam Turbine ☐ Micro-turbine

☐ Battery ☐ Other: _____

Energy Source:

Renewable	Renewable	Non-Renewable
☐ Solar – Photovoltaic	☐ Hydro – Run of River	☐ Fossil Fuel – Diesel
☐ Solar – Thermal	☐ Hydro – Storage	☐ Fossil Fuel – Natural Gas
☐ Biomass – Landfill Gas	☐ Wind	☐ Fossil Fuel – Oil
☐ Biomass – Digester Gas	☐ Geothermal	☐ Fossil Fuel – Coal
☐ Biomass – Solid Waste	☐ Other/Specify	☐ Other/Specify
☐ Biomass – Wood	_____	_____

Energy Reuse

☐ Battery Storage

Type of DER: ☐ Synchronous ☐ Induction ☐ DFIG ☐ Inverter

Total DER nameplate output rating:_____kW-AC_____kW-DC _____kVAR

Is the DER facility package certified? ☐ Yes ☐ No

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

	Quantity	Equipment Type	Certification
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

III. Load and Export Information

Interconnection Customer or customer-side peak load:_____kW-AC (*state if none*)

Interconnection Customer or customer-side minimum load:_____kW-AC (*state if none*)

Interconnection Customer DER auxiliary load:_____kW-AC (*state if none*)

Expected reactive load (*if known*):_____kVAR

Maximum export capabilities requested:_____kW-AC (*required*)

IV. Inverter-Based DER Facility Characteristics (*if applicable*)

Solar Panel Information

	Quantity	Manufacturer	Model
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

Individual Photovoltaic Panel

Current at maximum power point (I_{mpp}):_____Amps

Voltage at maximum power point (V_{mpp}):_____Volts

Short-circuit current in standard test conditions (I_{sc}):_____Amps

Open-circuit voltage in standard test conditions (V_{oc}):_____Volts

Short-circuit current temperature coefficient (α_{sct}):_____%/°C

Open-circuit voltage temperature coefficient (β_{oct}):_____%/°C

Normal operating cell temperature (NOCT):_____°C

Reference ambient temperature (T_a ref):_____°C

Standard test condition temperature (T_{stc}):_____°C

Standard test condition irradiance (G_{stc}):_____W/m^2

Total Photovoltaic Array

☐ Fixed Tilt Array ☐ Single Axis Tracking Array ☐ Double Axis Tracking Array

Number of photovoltaic panels in series (N_s): _____

Number of photo voltaic panels in parallel (N_p): _____

DC voltage of array:_____Volts-DC

Rated power of array:_____kW-DC

Inverter Information

☐ Line-commutated ☐ Self-commutated

Rated DC side voltage (Vdc):_____Volts

DC side capacitor:_____μF

AC side inverter rating:_____kVA

AC side active power rating:_____kW

AC side reactive power rating:_____kVAR

AC side minimum power factor rating:_____%

Internal coupling resistance (R):_____Ω

Internal coupling inductance (L):_____H

Maximum instantaneous fault contribution per inverter:_____kA @_____Volts

Maximum instantaneous fault contribution of installation:_____kA @_____Volts

Maximum RMS fault contribution per inverter:_____kA @_____Volts

Maximum RMS fault contribution of installation:_____kA @_____Volts

Harmonic characteristics: _____

Inverter Modeling Parameters (valid for initial 2 to 6 cycles)

Inverter equivalent MVA base:_____MVA

Short-circuit equivalent positive sequence resistance (R_1):_____p.u.

Short-circuit equivalent positive sequence reactance (X_1):_____p.u.

Short-circuit equivalent negative sequence resistance (R_2):_____p.u.

Short-circuit equivalent negative sequence reactance (X_2):_____p.u.

Short-circuit equivalent zero sequence resistance (R_0):_____p.u.

Short-circuit equivalent zero sequence reactance (X_0):_____p.u.

V. Rotating Machine DER Facility Characteristics (*if applicable*)

Synchronous Machines

Equivalent MVA base: _____MVA

Field voltage:_____Volts

Field amperage:_____Amps

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.

Induction Machines

Motoring power:_____kW

Equivalent MVA base:_____MVA

I^2t or K (Heating time constant): _____

Rotor resistance, R_r:_____p.u.

Stator resistance, R_s:_____p.u.

Rotor reactance, X_r:_____p.u.

Stator reactance, X_s:_____p.u.

Magnetizing reactance, X_m:_____p.u.

Short current reactance, X_d:_____p.u.

Exciting current:_____Amps

Required reactive power (No load):_____kVAR

Required reactive power (Full Load):_____kVAR

Total rotating inertia, H:_____p.u.

VI. Interconnection Facilities Information *(if applicable)*

Will more than one transformer be used between the DER and the point of common coupling?

☐ Yes ☐ No

(If yes, provide the below information for each transformer. The number of transformers must match the one-line diagram and transformer specification sheets.)

Will the transformer be provided by the Interconnection Customer? ☐ Yes ☐ No

Transformer Data (*if supplied and Owned by Interconnection Customer*)

☐ Single-Phase ☐ Three-Phase

Size:_____kVA

Impedance:_____%

For three-phase transformers:

Primary Winding Voltage:_____Volts

☐ Delta ☐ Wye, grounded neutral (Co-op Standard) ☐ Wye, floating neutral

Secondary Winding Voltage:_____Volts

☐ Delta ☐ Wye, grounded neutral (Co-op Standard) ☐ Wye, floating neutral

Tertiary Delta Winding? ☐ Yes ☐ No

Transformer fuse data (*if applicable*)

Manufacturer:_____Type:_____Size:_____Speed: _____

VII. Additional Information

One-Line Diagram

Enclose site electrical one-line diagram showing the configuration of all DER Facility equipment, current and potential circuits, and protection and control schemes.

- Include the project owner's name, project name, project address, model numbers and nameplate sizes of equipment, including number and nameplate electrical size information for solar panels, inverters, wind turbines, disconnect switches, latitude and longitude of the project location, and tilt angle and orientation of the photovoltaic array for solar projects.
- Depict the metering arrangement required whether installed on the customer side of an existing meter or directly connected to the grid through a new or separate delivery point requiring a separate meter.
- List of adjustable set points for the protective equipment or software should be included on the electrical one-line diagram.
- Signed and sealed by a licensed Professional Engineer if the DER Facility is greater than 40 kW.

Is one-line diagram enclosed? ☐ Yes ☐ No

Site Plan

Enclose site plan showing the physical location of the proposed DER and point of interconnection with the utility.

- Indicate the latitude and longitude coordinates.
- Overlay on an aerial map.
- Included the proposed location of protective interface equipment on property.

Is a site plan enclosed? ☐ Yes ☐ No

Equipment Specifications

Include equipment specification information (product literature) for the solar panels and inverter(s) that provides technical information and certification information for the equipment to be installed with the application.

Are equipment specifications enclosed? ☐ Yes ☐ No

Protection and Control Schemes

- Enclose copy of any site documentation that describes and details the operation of the protection and control scheme.
- Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (*if applicable*)

Are protection and control documents and schematics enclosed? ☐ Yes ☐ No

VIII. Applicants Signature

All DER Interconnections must comply with the Cooperative's DER Interconnection Technical Standards.

I hereby certify that, to the best of my knowledge, all the information provided in this DER Interconnection Application Form is true and correct. I also certify that I have received a copy of the Cooperative's DER Interconnection Technical Standards.

Interconnection Customer

Signature:_____ Date:_____
(Authorized Agent of the Legal Entity)

Printed Name: _____