


# Wisconsin Electric Cooperative DER Application Form



## Jump River Electric Cooperative, Inc.

Since 1938

Your Touchstone Energy® Cooperative 

### INSTRUCTIONS

**SUBMIT THIS FORM DIRECTLY TO YOUR ELECTRIC COOPERATIVE**

Notice: This form must be completed and submitted with fees established in Table III of the Interconnection Requirements of Wisconsin Electric Cooperatives (IRWEC), which are also shown below. Personal information collected will be used for administrative purposes only.

This application form is for interconnection to the electric distribution system of distributed energy resource (DER) systems sized up to 15 megawatts (MW) alternating current (AC) and associated equipment in compliance with the IRWEC.

If a DER Facility has an interconnection agreement but has simply changed ownership, do not fill out this form. Fill out “Change of Ownership Form for DER Systems.”

Cooperative DER Fee Schedule					
Category	Export Capacity	Application Review Fee	Engineering Review Fee	Distribution System Study	Commissioning Fee
1	20 kW or less	\$300	Cost based	Cost based	\$150
2	Greater than 20 kW to 200 kW	\$300 + \$10/kW	Cost based	Cost based	\$250
3	Greater than 200 kW to 1	\$2,000 + \$2/kW	Cost based	Cost based	\$1,000
4	Greater than 1 MW to 15 MW	\$4,000 + \$0.50/kW	Cost based	Cost based	\$2,500

An applicant seeking to interconnect a distributed energy resource facility to the distribution system of an electric cooperative shall maintain liability insurance equal to or greater than the amounts stipulated in the Table below, per occurrence.

Minimum Liability Insurance Coverage		
Category	Generation Capacity	Minimum Liability Insurance Coverage
1	20 kW or less	\$300,000
2	Greater than 20 kW to 200 kW	\$1,000,000
3	Greater than 200 kW to 1 MW	\$2,000,000
4	Greater than 1 MW to 15 MW	Negotiated

# Wisconsin Electric Cooperative DER Application Form

COLORED SECTIONS OF THIS FORM CORRESPOND WITH DIFFERENT SYSTEM TYPES: SOLAR WIND STORAGE GENERATORS - COMPLETE ALL NON-HIGHLIGHTED SECTIONS AND ANY HIGHLIGHTED SECTIONS THAT APPLY

## 1. APPLICANT CONTACT INFORMATION

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Last Name	First Name	Middle Name
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Company (If Applicable)	Representative (If Applicable)	Title
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Street Address	City	State	County
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Primary Phone Number	Additional Emergency Phone	Email Address
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## 2. LOCATION OF THE DER SYSTEM

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Street Address	City	State	Zip Code
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Primary Phone Number	Additional Emergency Phone	Electric Service Account No.
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Meter Number	Latitude – Longitude (Optional)	County
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Does this application relate to a change or modification of an existing system?

If there is already generation at the point of interconnection, this is a modification, and the total export capacity kW in alternating current at this location (existing plus addition) shall be used within this application.

Yes, this is a modification       No, there is no generation currently at this point of interconnection

## 3. MEMBER SERVICE TYPE

Residential       Farm       Commercial       Industrial       Other (list below)

## 4. APPLICANT'S OWNERSHIP INTEREST IN THE DER SYSTEM

Owner       Co-Owner       Other (list below)

# Wisconsin Electric Cooperative DER Application Form

## 5. PRIMARY INTENTION OF DER SYSTEM

- Net Metering  Certified Qualifying Facility under PURPA (Public Utility Regulatory Policies Act of 1978)  
 Offset load, non-export of power  Other (describe below)
- 

## 6. TYPE OF INTERCONNECTION

- Parallel Operation (operation for more than 100 milliseconds while connected to distribution system)  
 Momentary parallel operation (less than or equal to 100 millisecond connection) or isolated operation/open transition

## 7. ELECTRICITY USE, PRODUCTION, AND PURCHASES

- a. Anticipated annual electricity consumption of the facility or site: \_\_\_\_\_ kWh/yr  
b. Anticipated annual electricity production of the generation system: \_\_\_\_\_ kWh/yr  
c. Anticipated annual electricity purchases from the Cooperative (a – b) \_\_\_\_\_ kWh/yr\*

\* Value will be negative if there are net sales to the Cooperative

## 8. PROJECT DESIGN AND ENGINEERING

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Company

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Representative

Title

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Email Address

Phone Number

## 9. INSTALLING CONTRACTOR INFORMATION (IF KNOWN)

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Company

Electrical Contractor's License Number

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Representative

Title

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Email Address

Phone Number

# Wisconsin Electric Cooperative DER Application Form

## 10. GENERATION TYPE

Single Phase       Three-Phase

If three-phase, specify configuration below:

3-wire delta       2-wire wye       4-wire grounded wye

**11. IF PROTECTIVE EQUIPMENT IS SEPARATE FROM THE INVERTER, PROVIDE A PROTECTION AND CONTROL DIAGRAM ALONG WITH DATA SHEETS ON ALL RELATED EQUIPMENT IN ACCORDANCE WITH IRWEC. IF EQUIPMENT IS KNOWN, ATTACH MANUFACTURER SPECIFICATION DATA SHEETS**

**12. GENERATOR AND INVERTER INFORMATION – COMPLETE ONLY THE COLOR-CODED SECTIONS THAT APPLY**

### 12.1 SOLAR GENERATOR AND INVERTER INFORMATION

\_\_\_\_\_ Watts  
Solar Panel Manufacturer      Rated Power Per Panel

\_\_\_\_\_ kW  
Model Number      Number of Panels      System's Total AC Rating

Fixed Mount       Single-axis tracking       Dual-axis tracking       Other (describe below)

\_\_\_\_\_ Tilt      \_\_\_\_\_ Azimuth

\_\_\_\_\_ Inverter Manufacturer      \_\_\_\_\_ Inverter Model Number

\_\_\_\_\_ min.      \_\_\_\_\_ max.  
Inverter Maximum Nameplate AC Rating      Volts      Power Factor Adjustment Range

\_\_\_\_\_ Total Number of Inverters      \_\_\_\_\_ Certifications (e.g. UL)

### 12.1.A – INTERCONNECTION DISCONNECT SWITCH SHORT CIRCUIT CURRENT SPECIFICATIONS

a. Total short circuit current contribution of the generating system (at point of interconnection) in amps:

\_\_\_\_\_ Single Phase      \_\_\_\_\_ Three-Phase Symmetrical      \_\_\_\_\_ Asymmetrical

b. Load break capability rating of disconnection device in amps (must be equal to or greater than part a)

\_\_\_\_\_ Single Phase      \_\_\_\_\_ Three-Phase Symmetrical      \_\_\_\_\_ Asymmetrical

# Wisconsin Electric Cooperative DER Application Form

## 12.1.B – IF APPLICABLE – 2<sup>ND</sup> TYPE OF SOLAR INVERTER

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Inverter Manufacturer	Inverter Model Number				
_____	_____				
Inverter Maximum Nameplate AC Rating	Volts	Power Factor Adjustment Range	min.	_____	max.
_____	_____	_____	_____	_____	_____
Total Number of Inverters	Certifications (e.g. UL)				
_____	_____				
_____ kW	_____ kVA				
System Total AC Rating*					

## 12.1.C – INTERCONNECTION DISCONNECT SWITCH SHORT CIRCUIT CURRENT SPECIFICATIONS

a. Total short circuit current contribution of the generating system (at point of interconnection) in amps:

\_\_\_\_\_ Single Phase    \_\_\_\_\_ Three-Phase Symmetrical    \_\_\_\_\_ Asymmetrical

b. Load break capability rating of disconnection device in amps (must be equal to or greater than part a)

\_\_\_\_\_ Single Phase    \_\_\_\_\_ Three-Phase Symmetrical    \_\_\_\_\_ Asymmetrical

## 12.2 WIND GENERATOR AND INVERTER INFORMATION

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Wind Turbine Manufacturer

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Model Number	Number of Turbines
_____	_____

Generator Technology:     Synchronous     Induction     Dually-Fed Induction  
 Power Electronic Converter     Other (specify below)

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_____ kW	_____ mph
Rated Power of Each Turbine	At Average Wind Speed
_____ kW	_____ mph
Maximum Power of Each Turbine	At Maximum Wind Speed
Inrush (Startup) Current – Induction Machines Only	_____ Amps

# Wisconsin Electric Cooperative DER Application Form

## 12.2.A – IF APPLICABLE

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Inverter Manufacturer		Inverter Model Number	
		_____ min.	_____ max.
Inverter Maximum Nameplate AC Rating	Volts	Power Factor Adjustment Range	

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Total Number of Inverters		Certifications (e.g. UL)	
_____ kW		_____ mph	
Rated Power of Each Turbine		At Average Wind Speed	
_____ kW		_____ mph	
Maximum Power of Each Turbine		At Maximum Wind Speed	
Inrush (Startup) Current – Induction Machines Only		_____ Amps	

## 12.2.B – INTERCONNECTION DISCONNECT SWITCH SHORT CIRCUIT CURRENT SPECIFICATIONS

a. Total short circuit current contribution of the generating system (at point of interconnection) in amps:

\_\_\_\_\_ Single Phase    \_\_\_\_\_ Three-Phase Symmetrical    \_\_\_\_\_ Asymmetrical

b. Load break capability rating of disconnection device in amps (must be equal to or greater than part a)

\_\_\_\_\_ Single Phase    \_\_\_\_\_ Three-Phase Symmetrical    \_\_\_\_\_ Asymmetrical

## 12.3 ENERGY STORAGE SYSTEM INFORMATION (continued on next page)

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Energy Storage System Manufacturer

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Energy Storage System Model Name and/or No.	Number of Energy Storage Units
_____ kW (DC)	_____ kWh
Nameplate Rating (Per Unit)	Nameplate Capacity (Per Unit)

Energy Storage Type:  Lithium-ion battery     Flow battery (specify below)  
 Lead-acid battery     Other (specify below)

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# Wisconsin Electric Cooperative DER Application Form

## 12.3 ENERGY STORAGE SYSTEM INFORMATION (Continued)

Control System Manufacturer \_\_\_\_\_

Controller Model \_\_\_\_\_

### TOTAL ENERGY STORAGE SYSTEM RATINGS:

\_\_\_\_\_ kW (DC) \_\_\_\_\_ kVA \_\_\_\_\_ kWh \_\_\_\_\_  
Total Nameplate Rating Total Energy Capacity System Voltage System Frequency

\_\_\_\_\_ kW (DC) \_\_\_\_\_ kVA \_\_\_\_\_ kW (DC) \_\_\_\_\_ kVA  
Maximum Charging Power Maximum Discharging Power

\_\_\_\_\_ kW (AC) \_\_\_\_\_ kWh (AC) \_\_\_\_\_ kW (AC)  
ESS Maximum Continuous Output ESS Maximum Usable Energy ESS Peak Output

\_\_\_\_\_ % \_\_\_\_\_ hours  
Maximum Depth of Discharge Maximum Duration at Maximum Discharge (C Rate)

Certifications (e.g. UL): \_\_\_\_\_

Is a generation source included in the DER facility at this point of interconnection?  Yes  No

If yes, what type? \_\_\_\_\_

### 12.3.A – OPERATING MODES

Operating Modes Available \_\_\_\_\_

Operating Modes Enabled \_\_\_\_\_

Firmware Version \_\_\_\_\_

Will the system export energy to the grid?  Yes  No

Will the system charge from the grid?  Yes  No

If not, what generation source charges the energy storage system? \_\_\_\_\_

Location of transfer switch?  Integrated with inverter  External

# Wisconsin Electric Cooperative DER Application Form

## 12.3.B – INTERCONNECTION DISCONNECT SWITCH SHORT CIRCUIT CURRENT SPECIFICATIONS

a. Total short circuit current contribution of the generating system (at point of interconnection) in amps:

\_\_\_\_\_ Single Phase \_\_\_\_\_ Three-Phase Symmetrical \_\_\_\_\_ Asymmetrical

b. Load break capability rating of disconnection device in amps (must be equal to or greater than part a)

\_\_\_\_\_ Single Phase \_\_\_\_\_ Three-Phase Symmetrical \_\_\_\_\_ Asymmetrical

## 12.4 ENGINE/GENERATOR INFORMATION (Applies only if utilizing closed-transition switch)

\_\_\_\_\_  
Engine/Generator Manufacturer

\_\_\_\_\_  
Model Number

\_\_\_\_\_  
Number of Units Installed

Generation Type:  Synchronous  Induction  Other (provide attachments to describe)

### INTERFACE INFORMATION: GENERATOR SYNCHRONIZER

\_\_\_\_\_  
Manufacturer

\_\_\_\_\_  
Switch Rating

kVA

\_\_\_\_\_  
Model No.

Automatic Synchronizer  Manual Synchronizer

Fuel Source:  Diesel  Petroleum  Natural Gas  Biogas  Other (specify below)

### GENERATOR MAXIMUM RATINGS

\_\_\_\_\_ kW \_\_\_\_\_ kVA \_\_\_\_\_ Volts \_\_\_\_\_ Amps \_\_\_\_\_ Hz \_\_\_\_\_ Power Factor %

Power Factor Adjustment Range \_\_\_\_\_ min \_\_\_\_\_ max

Neutral Grounding System Used:  Ungrounded  Grounded

Grounding Impedance \_\_\_\_\_ Z

# Wisconsin Electric Cooperative DER Application Form

For Synchronous Generators (kVA Base)

For Induction Generators (kVA Base)

Synchronous Resistance \_\_\_\_\_ ( $X_d$  %)  
Transient Resistance \_\_\_\_\_ ( $X_d'$  %)  
Sub-transient Resistance \_\_\_\_\_ ( $X_d''$  %)  
Zero Sequence Resistance \_\_\_\_\_ ( $X_0$  %)  
Negative Sequence Resistance \_\_\_\_\_ ( $X_1$  %)

Locked Rotor Current \_\_\_\_\_ Amps  
Stator Leakage Resistance \_\_\_\_\_ ( $R_s$  %)  
Rotor Resistance \_\_\_\_\_ ( $R_r$  %)  
Rotor Leakage Resistance \_\_\_\_\_ ( $R_l$  %)

For induction machines, what is the inrush (startup) current \_\_\_\_\_ Amps

If the generator is > 1 MW (Category 4) provide the following:

M1 \_\_\_\_\_ (momentum constant)  
M2 \_\_\_\_\_ (momentum constant)  
Field Voltage \_\_\_\_\_ Volts  
Field Current \_\_\_\_\_ Amps

Stator Reactance \_\_\_\_\_ ( $X_s$  %)  
Rotor Reactance \_\_\_\_\_ ( $X_r$  %)  
Magnetizing Reactance \_\_\_\_\_ ( $X_m$  %)  
Short Circuit Reactance \_\_\_\_\_ ( $X_d$  %)

If the system includes more than one type of engine/generator, include additional copies of this page as needed

## 12.4.A – SYSTEM TOTALS

\_\_\_\_\_ kW \_\_\_\_\_ kVA \_\_\_\_\_ Volts \_\_\_\_\_ Amps \_\_\_\_\_ Hz \_\_\_\_\_ Power Factor %

Total inrush (startup) current \_\_\_\_\_ Amps

## 12.3.B – INTERCONNECTION DISCONNECT SWITCH SHORT CIRCUIT CURRENT SPECIFICATIONS

a. Total short circuit current contribution of the generating system (at point of interconnection) in amps:

\_\_\_\_\_ Single Phase \_\_\_\_\_ Three-Phase Symmetrical \_\_\_\_\_ Asymmetrical

b. Load break capability rating of disconnection device in amps (must be equal to or greater than part a)

\_\_\_\_\_ Single Phase \_\_\_\_\_ Three-Phase Symmetrical \_\_\_\_\_ Asymmetrical

# Wisconsin Electric Cooperative DER Application Form

## 13. ESTIMATED CONSTRUCTION START DATE

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## 14. REQUESTED IN-SERVICE DATE

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## 15. COST OF SYSTEM

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## 16. LIABILITY INSURANCE

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Carrier	Limits
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Agent Name	Phone Number	Email Address
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Self-Insured (e.g., if a local unit of government)

Note: *Minimum liability insurance coverages are given within Table I in the IRWEC document (also shown on page 1 of application)*

Note: *Applicant must also provide Proof of Insurance as an Attachment*

## 17. DESIGN REQUIREMENTS

a. Has the proposed paralleling equipment (such as an inverter) been certified by a nationally recognized testing laboratory? (e.g. UL 1741)?  Yes  No

b. If certified, list the applicable certifications (e.g. UL 1741)

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c. If not certified, does the proposed DER meet the requirements defined in the respective Cooperative's Technical Specifications Manual (TSM)?  Yes  No

# Wisconsin Electric Cooperative DER Application Form

## 18. REQUIRED ATTACHMENTS

- Technology-based attachments and related manufacturer specification data sheets.
- One-line schematic diagram of the system that includes:
  - a. Generator(s), inverter(s), battery(ies), if applicable, and their nameplate capacities.
  - b. Conductor and conduit size, type, and length.
  - c. Point where the DER facility is electrically connected to the member's electrical system.
  - d. Method of interconnection.
  - e. Point of common coupling.
  - f. Production meter, if required by the Cooperative.
  - g. Lockable interconnection disconnect switch.
  - h. RSD such as a BESS emergency shutdown switch.
  - i. Method of grounding, including generator and transformer ground connections.
  - j. Protection functions and systems.
- Site plan showing the location of major equipment, electrical service entrance, electric meter, interface equipment, interconnection disconnect switch, adjoining street name, and the street address of the DER facility.
- Proof of insurance per Section 16.
- Proof of equipment certification or other compliance with requirements described in Section 17.

## 18. APPLICANT AND DESIGNER/ENGINEER SIGNATURE

To the best of my knowledge, all the information provided in this Application Form is complete and correct.

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Applicant Signature

Date

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Project Designer/Engineer Signature

Date