

# Wisconsin Electric Cooperative DER Application Form

## 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

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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

Last Name	First Name	Middle Name	
Company (If Applicable)	Representative (If Applicable)	Title	
Street Address	City	State	County
Primary Phone Number	Additional Emergency Phone	Email Address	

### 2. LOCATION OF THE DER SYSTEM

Street Address	City	State	Zip Code
Primary Phone Number	Additional Emergency Phone	Electric Service Account No.	
Meter Number	Latitude – Longitude (Optional)	County	

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)

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### 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)

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### 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

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## 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

Solar Panel Manufacturer		Rated Power Per Panel		Watts
Model Number		Number of Panels	System's Total AC Rating	
kW				
<input type="checkbox"/> Fixed Mount <input type="checkbox"/> Single-axis tracking <input type="checkbox"/> Dual-axis tracking <input type="checkbox"/> Other (describe below)				
Tilt		Azimuth		
Inverter Manufacturer		Inverter Model Number		
Inverter Maximum Nameplate AC Rating		Volts	min.	max.
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

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

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)	
	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

Wind Turbine Manufacturer	
Model Number	Number of Turbines
Generator Technology: <input type="checkbox"/> Synchronous <input type="checkbox"/> Induction <input type="checkbox"/> Dually-Fed Induction	
<input type="checkbox"/> Power Electronic Converter <input type="checkbox"/> Other (specify below)	
_____ 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

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### 12.2.A – IF APPLICABLE

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)	
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)

Energy Storage System Manufacturer	
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: <input type="checkbox"/> Lithium-ion battery	<input type="checkbox"/> Flow battery (specify below)
<input type="checkbox"/> Lead-acid battery	<input type="checkbox"/> Other (specify below)

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### 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

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### 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



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For Synchronous Generators (kVA Base)

For Induction Generators (kVA Base)

Synchronous Resistance	_____ ( $X_d$ %)	Locked Rotor Current	_____ Amps
Transient Resistance	_____ ( $X_d'$ %)	Stator Leakage Resistance	_____ ( $R_s$ %)
Sub-transient Resistance	_____ ( $X_d''$ %)	Rotor Resistance	_____ ( $R_r$ %)
Zero Sequence Resistance	_____ ( $X_0$ %)	Rotor Leakage Resistance	_____ ( $R_l$ %)
Negative Sequence Resistance	_____ ( $X_1$ %)		

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

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

M1	_____ (momentum constant)	Stator Reactance	_____ ( $X_s$ %)
M2	_____ (momentum constant)	Rotor Reactance	_____ ( $X_r$ %)
Field Voltage	_____ Volts	Magnetizing Reactance	_____ ( $X_m$ %)
Field Current	_____ Amps	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

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### 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

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### 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