



OKLAHOMA ELECTRIC COOPERATIVE

Your Touchstone Energy® Partner 

Dear **Oklahoma Electric Cooperative** member:

Thank you for requesting information about interconnecting a small wind generator to OEC's system. To assist our members, we have developed a streamlined process for the safe, reliable, efficient, and cost-effective interconnection of small renewable energy systems.

Our mission is to protect the safety of cooperative personnel and member-consumers, maintain the integrity and reliability of the grid, and establish mechanisms to ensure rate equity for all member-consumers. Because small wind systems can affect the safety and reliability of the distribution system, we have developed technical interconnection rules that address those safety and reliability impacts. These rules ensure that we can continue to provide you and all other member-consumers with safe and reliable electricity service.

We are ready to help you by providing information and answering questions. We want to give you the tools you need to make an informed decision about a Distributed Generation System.

In this packet, you will find the following documents:

- Frequently asked questions (FAQs), which provide answers to the questions that member-consumers most often ask their cooperatives.
- Distribution Cooperative Agreement for Interconnection of Distributed Generation – Short Form Contract
- Application for DG systems 25kW or less

We look forward to working with you. If you have any questions, please don't hesitate to contact me at (405) 217-6628 or nick.shumaker@okcoop.org.

Yours sincerely,

Nick Shumaker
Electrical Engineer
Oklahoma Electric Cooperative
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P.O. Box 1208
Norman, OK 73070

DISTRIBUTED GENERATION FREQUENTLY ASKED QUESTIONS (FAQs)

Will OEC allow me to install a wind generator or solar panels to my service?

Yes. OEC allows, and encourages, interconnection of all types of distributed generation (DG), especially renewables like wind and solar.

What is Distributed Generation?

Any small scale generator that is located at or near the point of end use. DG may or may not be connected to the OEC distribution system. However, the most common types of DG in Oklahoma, wind and solar, are almost always interconnected to OEC's system.

What is the difference between DG and a wind farm?

The main difference is that DG is small customer-owned equipment that provides power to the customer in parallel with OEC's system. A wind farm is a collection of very big wind generators connected to the transmission system. OEC does not own any transmission line and, therefore, is not directly involved in wind farms.

How do I get involved in a wind farm?

Unfortunately, OEC's service territory is not where power suppliers are currently looking to place wind farms. OEC's power supplier, Western Farmers Electric Cooperative (WFEC), owns several wind farms throughout Oklahoma. WFEC, as well as other power suppliers, carefully select wind farm locations based upon a number of factors and only then do they contact landowners in order to get the generators built.

Are there any tax breaks or incentives for renewable DG systems?

OEC is not an expert on state and federal DG tax policy. DG manufacturers should be more knowledgeable about current and future tax incentives.

Will OEC buy my power from a DG system?

Yes. OEC buys power in 2 ways: Net Metering and Power Export. Net Metering is offered for systems 25 kW and smaller. Power Export is offered for systems 25 kW to 3 MW systems. Power Export is where OEC will install a separate meter and buy back power at the wholesale rate.

What is Net Metering?

Net metering allows your electric meter to turn backwards (or count backwards with a digital meter) when your generator produces more energy than you are currently using. For example, let's say your DG system produces 1000 kWh and your residence uses 1800 kWh in a given month. When OEC reads your meter, the usage will only show you used 800 kWh. Therefore, the bill you receive the following month will only be for 800 kWh. If your DG system produced your full usage of 1800 kWh, OEC will only bill you the customer charge, currently \$0.60 per day for residential accounts. In short, Net Metering means OEC essentially buys back power from you at the retail rate as long as you don't produce more power than you use in a month.

What happens if I produce more than I use in a month?

If you produce more than you use in a month, the excess power comes back to OEC free of charge. OEC does not credit your account or write a check for the excess generation. For example, let's say your DG system produces 1000 kWh and your residence uses 800 kWh in a given month. When OEC reads your meter, it will show a negative reading. OEC will zero out the reading and you will only be billed the customer charge (check <http://www.okcoop.org/content/electric-rates> for current rates). The excess 200 kWh are provided back to OEC free of charge.

It does not seem fair that excess power in a month goes back to OEC free of charge.**Why does OEC have this policy?**

OEC adopted this policy for several reasons. The main reason is because Net Metering is not economically beneficial to OEC. The OEC customer charge does not recapture all of OEC's distribution expenses or WFEC's transmission expenses that are rolled into the kWh charge.

Many years ago the Co-op would, under Oklahoma Corporation Commission (OCC) rules, install 2 meters for all DG systems to meter the usage at the member's account and the production of the generator. OEC would then sell power at the retail rate (approximately \$0.11 per kWh today) and buy back the power at the wholesale or avoided cost rate (approximately \$0.03 per kWh today).

Several years ago, the OCC changed its rules and allowed for Net Metering for small (approximately 15 kW) DG systems. It did this as a way to encourage wind power in Oklahoma. In acknowledgement of the fact that Net Metering is not necessarily good for utilities, the OCC limited Net Metering to only offset a customer's actual usage. This also reduced an administrative burden for utilities due to the fact that only one meter is needed to bill the same as normal accounts.

When OEC members voted out from under OCC regulation, the Co-op adopted an even broader application of Net Metering by extending it to DG systems up to 25 kW, OEC adopted the OCC idea that excess power comes back to the utility free of charge at that time.

It is important to note that it is very rare for a typical DG installation to offset 100% of the monthly usage.**Can OEC look at excess power on a yearly basis instead of a monthly?**

We currently offer only the monthly settlement option.

What about DG systems over 25 kW?

OEC allows interconnection for DG systems up to 3mW but Net Metering is limited to systems 25 kW or less. For systems over 25 kW, the Co-op will install separate facilities to the generator and the power will be delivered directly to our distribution system. The output is metered and OEC pays the owner of the generator for the power output at the

wholesale or avoided cost rate (approximately \$0.03 per kWh today). This is called Power Export

It is important to note that the larger the DG system, the more of an impact it will have on OEC's distribution system. Consequently, OEC has more requirements for interconnection of DG systems over 25 kW. For more information, please contact OEC's Engineering Department.

What voltage requirements does OEC have for Net Metering?

Since OEC's distribution system and your DG system will operate as parallel power sources, the DG system must be the same voltage level as your service. For residential services, this is almost always single-phase 120/240V 60 Hz.

What happens if OEC has a power outage?

If OEC loses power, the DG system should shut down. If the DG system remained in service, it would actually back-feed and energize OEC's line. (This would be a very dangerous situation where OEC crews would expect the line to be dead and it is actually energized.)

What does OEC require if I decide to install a DG system of 25 kW or less?

For DG systems that are Net Metered, all equipment is located on the member's side of the meter; therefore, OEC is not directly involved in the installation. OEC does have the following requirements that must be met before it allows Net Metering to occur:

- 1) Member must submit an application and pay a \$25 application fee.
- 2) Certification from manufacturer or engineering firm that equipment meets IEEE 1547, UL 1741 and other applicable codes and standards.
- 3) Highly recommended that member use an Oklahoma licensed electrician/electrical contractor.
- 4) Installations of a separate, lockable, OEC accessible safety disconnect.
- 5) Contract between OEC and member must be executed.
- 6) OEC inspection of the final installation.

OEC requires the DG system to comply with all applicable laws, ordinances rules and regulations of any federal, county, state, and/or local authority, including, but not limited to: the most recent *IEEE Standard 1547 Guide for Distributed Generation Interconnection*, applicable ANSI standards, including ANSI C84.1 Range A, relating to installation, safety, easements, code restrictions, operation and other matters.

What is IEEE 1547 and how do I know that my DG system meets its requirements?

IEEE 1547 is an industry wide specification that provides requirements for safe interconnection to a utility's power distribution system. The DG manufacturer should have a certification, usually from Underwriters Laboratory (UL), stating its equipment meets IEEE 1547 and other applicable codes and standards.

Why does the cooperative have so many requirements before DG can be connected to the grid?

As a rural electric cooperative, OEC is your partner in providing you with safe, reliable electric service. OEC has requirements in place to address issues of safety, grid integrity and cost fairness. Those requirements ensure that the cooperative can (1) protect the safety of customers and cooperative employees; (2) maintain the integrity of the grid; and (3) establish mechanisms to ensure each customer shares appropriately in the costs.

I want to install a DG system of 25 kW or smaller. Where do I start?

The first step is to contact a manufacturer and/or sales representative of DG systems to determine what type of system you want, how much it will cost, and the expected payback of the system. Once you find a system you are satisfied with, simply fill out the application below and send it to OEC for review.

For more information see:

- 1) American Wind Energy Association - www.awea.org
- 2) SolarBuzz.com - <http://www.solarbuzz.com/statsCosts.htm>
- 3) OEC Distributed Generation Procedures & Guidelines Manual:
<http://bit.ly/DGmanual>
- 4) Oklahoma Wind Power Initiative www.ocgi.okstate.edu/owpi
- 5) U.S. Department of Energy
http://www.eere.energy.gov/windandhydro/windpoweringamerica/small_wind.asp

DISTRIBUTION COOPERATIVE AGREEMENT FOR INTERCONNECTION OF DISTRIBUTED GENERATION

SHORT FORM CONTRACT

This Interconnection Agreement (“Agreement”) is made and entered into this ____ day of _____, 20____, by Oklahoma Electric Cooperative, (“Cooperative”) and _____ (“DG Owner/Operator”), each hereinafter sometimes referred to individually as “Party” or both referred to collectively as the “Parties”. In consideration of the mutual covenants set forth herein, the Parties agree as follows:

The provisions of the Cooperative’s Distributed Generation Manual shall be considered to be a part of this contract.

This agreement provides for the safe and orderly operation of the electrical facilities interconnecting the DG Owner/Operator’s facility at _____

_____ and the electrical distribution facility owned by the Cooperative.

This Agreement does not supersede any requirements of any applicable tariffs in place between the DG Owner/Operator and the Cooperative.

1. Intent of Parties: It is the intent of the DG Owner/Operator to interconnect an electric power generator to the Cooperative’s electrical distribution system.

It is the intent of the Cooperative to operate the distribution system to maintain a high level of service to its customers and to maintain a high level of power quality.

It is the intent of both Parties to operate the facilities in a way that ensures the safety of the public and their employees.

2. Operating authority: The DG Owner/Operator is responsible for establishing operating procedures and standards within its organization. The operating authority for the DG Owner/Operator shall ensure that the Operator in Charge of the generator is competent in the operation of the electrical generation system and is aware of the provisions of any operating agreements and regulations relating to the safe operation of electrical power systems.

The operating authority for the DG Owner/Operator is:

Name or title of operating authority _____

Address _____

Phone number _____

3. Operator in Charge: The operator in charge is the person identified by name or job title responsible for the real time operation of all electrical facilities related to the interconnection and owned by the organization.

The Operator in charge for the DG Owner/Operator is:

Name or title of operating authority _____
Address _____
Phone number _____

4. Limitation of Liability and Indemnification:

Notwithstanding any other provision in this Agreement, with respect to the Cooperative's provision of electric service to DG Owner/Operator and the services provided by the Cooperative pursuant to this Agreement, Cooperative's liability to DG Owner/Operator shall be limited as set forth in the Cooperative's tariffs and Terms and Conditions for Electric Service, which are incorporated herein by reference.

Neither Cooperative nor DG Owner/Operator shall be liable to the other for damages for any act or omission that is beyond such party's control, including, but not limited to, any event that is a result of an act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm, flood, explosion, breakage or accident to any part of the System or to any other machinery or equipment, a curtailment, law, order, or regulation or restriction by governmental, military, or lawfully established civilian authorities.

Notwithstanding Paragraph 5.b of this Agreement, the DG Owner/Operator shall assume all liability for, and shall indemnify Cooperative for, any claims, losses, costs, and expenses of any kind or character to the extent that they result from DG Owner/Operator's negligence or other wrongful conduct in connection with the design, construction or operation of the Facilities or Interconnection Facilities. Such indemnity shall include, but is not limited to, financial responsibility for (a) monetary losses; (b) reasonable costs and expenses of defending an action or claim; (c) damages related to death or injury; (d) damages to property; and (e) damages for the disruption of business. This paragraph does not create a liability on the part of the DG Owner/Operator to the Cooperative or a third person, but requires indemnification where such liability exists.

Cooperative and DG Owner/Operator shall each be responsible for the safe installation, maintenance, repair and condition of their respective lines, wires, switches, or other equipment or property on their respective sides of the Point of Interconnection. The Cooperative, while retaining the right to inspect, does not assume any duty of inspecting the DG Owner/Operator's lines, wires, switches, or other equipment or property and will not be responsible therefore. DG Owner/Operator assumes all responsibility for the electric service supplied hereunder and the facilities used in connection therewith at or beyond the Point of Interconnection.

For the mutual protection of the DG Owner/Operator and the Cooperative, only with Cooperative prior written authorization are the connections between the Cooperative's service wires and the DG Owner/Operator's service entrance conductors to be energized.

5. Metering: Metering shall be accomplished as described in the Cooperative's DG Manual. Net Metering is allowed on DG \leq 25 kW. Reconciliation can occur monthly (no charge)

6. Insurance: Insurance shall be required as described in the Cooperative's DG Manual.

7. Suspension of Interconnection: It is intended that the interconnection should not compromise the Cooperative's protection or operational requirements. The operation of the DG Owner/Operator's System and the quality of electric energy supplied by the DG Owner/Operator shall meet the standards as specified by the Cooperative. If the operation of the DG Owner/Operator's system or quality of electric energy supplied (in the case of power export) does not meet the standards as specified, then (the Cooperative) will notify the DG Owner/Operator to take reasonable and expedient corrective action. The Cooperative shall have the right to disconnect the DG Owner/Operator's System, until compliance is reasonably demonstrated. Notwithstanding, the Cooperative may in its sole discretion disconnect the DG Owner/Operator's generating plant from the Distribution Facility without notice if the operating of the Generating Plant may be or may become dangerous to life and property.

8. Compliance with Laws, Rules and Tariffs: Both the Cooperative and the DG Owner/Operator shall be responsible for complying with all applicable laws, rules and regulations, including but not limited to the laws of the state of Oklahoma, and the Cooperative's DG Manual, Tariffs, Rules and Regulations, By-Laws and other governing documents. The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the tariff schedules and rules of the Cooperative as applicable to the electric service provided by the Cooperative, which tariffs and rules are hereby incorporated into this Agreement by this reference. The Cooperative shall have the right to publish changes in rates, classification, service or rule, with the proper notification to all DG owners/operators and Cooperative members.

9. Maintenance Outages: Maintenance outages will occasionally be required on the Cooperative's system, and the Cooperative will provide as much notice and planning as possible to minimize downtime. It is noted that in some emergency cases such notice may not be possible. Compensation will not be made for unavailability of Cooperative's facilities due to outages.

10. Access: Access is required by the Cooperative to the DG Owner/Operator's plant site for maintenance, operating and meter reading. The Cooperative reserves the right, but not the obligation, to inspect the DG Owner/Operator's facilities.

11. Force Majeure: For the purposes of this Agreement, a Force Majeure event is any event: (a) that is beyond the reasonable control of the affected party; and (b) that the affected party is unable to prevent or provide against by exercising reasonable diligence, including the following events or circumstances, but only to the extent that they satisfy the preceding requirements: acts of war, public disorder, rebellion or insurrection; floods, hurricanes, earthquakes, lightning, storms or other natural calamities; explosions or fires; strikes, work stoppages or labor disputes; embargoes; and sabotage. If a Force Majeure event prevents a party from fulfilling any obligations under this agreement, such party will promptly notify the other party in writing and will keep the other party informed on a continuing basis as to the scope and duration of the Force Majeure event. The affected party will specify the circumstances of the Force Majeure event, its expected duration and the steps the affected party is taking to mitigate the effect of the event on its performance. The affected party will be entitled to suspend or modify its performance of obligations under this Agreement but will use reasonable efforts to resume its performance as soon as possible.

Distributed Generation Procedures and Guidelines Manual for Members

12. **Term:** This agreement may be canceled by either party with 30 days notice to the other party.

AGREED TO BY

DG Owner/Operator

Cooperative

Name (Print)

Name (Print)

Signature

Signature

Title

Title

Date

Date

APPLICATION FOR DG SYSTEMS 25 kW OR LESS

OWNER/APPLICANT INFORMATION

Company: _____

Mailing Address: _____

City: _____ County: _____ State: _____ Zip Code: _____

Phone Number: _____ Account Number: _____

DG MANUFACTURER INFORMATION

Company: _____

Mailing Address: _____

City: _____ County: _____ State: _____ Zip Code: _____

Phone Number: _____ Representative: _____

Type of Generator (circle one): **Wind** **Solar** **Other** Estimated Size: _____ (kW)

ELECTRICAL CONTRACTOR

Company: _____ Phone Number: _____

Representative: _____ Oklahoma License #: _____

GENERAL DESCRIPTION OF PROPOSED INSTALLATION

The customer agrees to provide the Cooperative with any additional information required to complete the interconnection. The customer shall operate his equipment within the guidelines set forth by the Cooperative.

Applicant _____ Date _____

Please fill out the entire form. Please mail the completed form and a check for \$25 (application fee) payable to *Oklahoma Electric Cooperative* to

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Title: Electrical Engineer
Address: PO Box 1208
Norman, OK 73070
Phone: 405-321-2024
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