



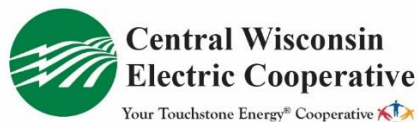
CENTRAL WISCONSIN ELECTRIC COOPERATIVE **NEW DISTRIBUTION GENERATION SYSTEM PROCEDURES**

- 1) **All systems must be approved by CWEC before any installation is started.**
- 2) A diagram shall be provided and approved by CWEC before starting the project.
- 3) System needs to be installed by a licensed contractor.
- 4) Contractor needs to submit Distributed Generation Application & Interconnection Agreement. (Refer to Distributed Rules & Regulations sheet)
- 5) Member shall notify contractor that CWEC requires installation of a second meter socket. CWEC can install a meter that records kwh DG is generating. CWEC will install the meter.
- 6) Proof of homeowner's liability coverage with a minimum of \$300,000.
- 7) Wiring Certificate completed by a licensed electrician.
- 8) Distributed Generation Metering
Call CWEC so our technician can contact the contractor to schedule installation of meters and system inspection. CWEC will furnish, install and maintain watt-hour meter(s) equipped to measure energy flow in and out of the member's distributed generation location. This meter will have the ability to record the energy generated by the member that is supplied to the Cooperative's distribution system if the member generates excess energy. Excess energy supplied to the Cooperative's distribution system will be purchased by the Cooperative at the Cooperative's unbundled energy rate.

The Cooperative reserves the right to charge the member for metering costs above the standard for the rate class of the service.

The member shall furnish, install and maintain all additional wiring and equipment required for the installation of the member's generating system. All wiring must be done in a manner acceptable to the Cooperative.

- 9) CWEC will issue the rebate check upon receipt of all required paperwork showing completion of the project and an invoice showing payment to the contractor.



10401 Lystul Rd, Rosholt, WI 54473 715-677-2211



Before You Say YES to Solar

If you are considering a photovoltaic “solar system” for your home, there is more to consider than promised monthly savings. Here are some of the many aspects to consider:

- Know all the costs, not just those for equipment and installation.
- In addition to equipment and labor, there are also pricey “soft costs” that can cost more than the system itself, according to Energy.gov.
- Soft costs include permit acquisition, financing charges and “pass-along” marketing, advertising and research costs.
- Thoroughly investigate the company: Is it backed by the Better Business Bureau? How long has it been in business? Is it contracted to do business in my state?
- Collect objective opinions about the pros and cons of solar versus electric.
- What happens when it’s cloudy? How does that impact energy supply?
- Are installers specially trained and certified to install solar?
- Is the work supervised by a master electrician?
- Who maintains the equipment and how much does that cost?
- Does the company carry major insurance for individuals working on my property?
- How does the system interface with my electric utility and its requirements?
- Should I buy or lease the system and what happens if I move?
- What are the safety issues surrounding solar?
- How is the power safely disconnected if needed?
- Does my utility require me to carry special insurance?

Please contact us with any questions about solar versus traditional electric energy transmission and delivery, as well as concerns about connection to the power grid.





10 STEPS TO TAKE BEFORE INSTALLING SOLAR

As your Touchstone Energy cooperative, we want to be your source for energy and information. Since solar power generation is rapidly becoming more widely available, we put together this information to help answer questions you might have. Contact us for more information about solar.

10 STEPS TO TAKE BEFORE INSTALLING SOLAR

As prices decline and technology improves, installing a residential solar system—also called a photo-voltaic or PV system—makes sense for some consumers. However, even with these recent improvements in PV, it's important to find out the facts before committing to a purchase. Consider these points as you explore whether solar is right for your situation.

1. MAKE YOUR HOME MORE ENERGY EFFICIENT BEFORE BUYING A SOLAR SYSTEM.

Adding insulation, sealing air leaks, and completing other basic fix-it projects make sense for several reasons. You can cut your energy costs immediately, and you'll also be able to reduce the size of PV system you purchase. Your cooperative may offer a free energy audit to members, or might be able to provide a list of qualified auditors in your area.

2. RESEARCH, RESEARCH, RESEARCH, BEFORE INVESTING IN A SOLAR SYSTEM.

Your electric cooperative should be one of your first contacts. Experts at your co-op can answer basic questions, provide resource materials, direct you to reputable websites, and might also maintain a list of reputable contractors and other experts in your region.

3. UNDERSTAND HOW A SOLAR SYSTEM MESHES WITH YOUR COOPERATIVE'S SYSTEM.

Most solar systems are designed to provide you with a portion of the electricity needed, but won't provide 100 percent of your needs. At night and on cloudy days, and possibly at other high-energy-use times, you'll need more power than your PV system can produce. That means you'll still be connected to your cooperative's power lines. Because these systems are grid-connected, energy can flow both ways. Each utility—including your electric cooperative—sets appropriate policies and rates for connecting PV systems to their lines (the grid) and for possibly purchasing any excess energy your system might provide. As you begin to explore solar systems, be sure you ask cooperative experts about rate structures, interconnection, essential safety precautions, and any other connection-related details.

4. REVIEW YOUR CURRENT ENERGY USE SO YOU CAN DETERMINE WHAT SIZE PV SYSTEM TO INSTALL.

Your electric cooperative staff can help you review your past energy use, and help you determine how the projects you've undertaken to improve energy efficiency may help lower your future energy use. One pertinent bit of information that will be useful is looking at how your energy use fluctuates throughout the day. Having that information will help you determine—with expert assistance—the size and type of system best suited to your situation.

5. TALLY UPFRONT COSTS.

Most electric cooperatives do not sell, install, or maintain PV systems, so you will either purchase or lease a system from a contractor who is not a part of the cooperative. If you purchase a solar system, you will be the owner, and you'll be responsible for the purchase price, as well as ongoing maintenance and repair costs. If leasing is the option you prefer, you will pay less initially, but you'll likely have higher ongoing costs. In either case, it pays to spend time figuring out all of the expenses you'll be responsible for during the life of the system. These may include: installation (in addition to the price of the system), interconnection costs, insurance, taxes, and possibly others, too. If you are leasing, ask contractors about the length of the term, if the contract is transferrable to a new homeowner should you sell your home, potential for price increases, as well as the same questions you'd ask if you were to purchase a PV system. In the "credit" column of your price comparisons, look at any incentives, rebates, and tax credits offered for either a purchase or a lease.

6. SEARCH FOR INCENTIVES, REBATES, AND TAX CREDITS.

Any financial incentives available will help reduce your investment costs. Opportunities vary by state and locale, and many have expiration dates. One database offering details is www.dsireusa.org. This site includes a clickable, interactive map, showing federal and state incentives, credits, exemptions, grants, loans, and rebates for residential and commercial/industrial projects. In addition, your electric cooperative staff and your contractor should have up-to-date details about incentives available where you live.

7. ACCEPT SHORT- AND LONG-TERM RESPONSIBILITIES.

If you purchase a PV system, you'll need to meet the requirements of your electric cooperative's interconnection agreement. That includes paying any costs of connecting to the cooperative grid. Local and/or state officials are responsible for conducting safety inspections, but it's your responsibility to notify them in advance about your installation. After the interconnection requirements are met, and the safety and integrity of your system are approved, your cooperative will take care of the connection to the grid. And, as the owner of the system, you'll be responsible for maintenance

and system repairs. If you lease a system, your responsibilities will depend on the agreement you sign. Be sure you know and understand what your responsibilities are.

8. FOLLOW ALL SAFETY PRECAUTIONS.

Most solar systems are grid-connected. Because of the two-way flow of electricity, excess energy your PV system collects during the daytime flows into your cooperative's lines. This shoulders you with the responsibility for the safety of your cooperative line staff, others who may come in contact with a downed power line, and your cooperative's equipment. Improper connection and maintenance of your system may endanger people and the reliability of the grid.

9. CHOOSE A REPUTABLE CONTRACTOR/INSTALLER.

Start with a list of options garnered from website research, your electric cooperative, local or state Better Business Bureaus, renewable energy associations, your state energy office, your state Attorney General's office, extension service staff, and any other local experts you can call on for assistance and advice. Contact at least a few of those contractors appearing on your list, especially if recommended by multiple state and local experts. Winnow your list after asking many questions checking out other installations the contractor has completed, comparing bids (get at least three), checking references, and thoroughly examining contracts. If possible, ask a contract specialist or lawyer to review the contract before signing. (See our fact sheet Questions to Ask a Solar Contractor Before Signing a Contract).

10. MAINTAIN GOOD RECORDS.

Keep files on your pre-purchase research and pre-installation data provided by your cooperative, as well as bids, contracts, inspection reports, maintenance records, and all other details you may need to refer to in the future. In addition, you'll want to know about system performance, so set up a system to track and compare your actual system performance with predictions provided by the contractor/installer.

**FOR MORE INFORMATION, VISIT
TOUCHSTONEENERGY.COM**



QUESTIONS TO ASK A SOLAR CONTRACTOR

As your Touchstone Energy cooperative, we want to be your source for energy and information. Since solar power generation is rapidly becoming more widely available, we put together this information to help answer questions you might have. Contact us for more information about solar.

QUESTIONS TO ASK SOLAR CONTRACTORS BEFORE SIGNING A CONTRACT

As with any major home improvement project, purchasing from the right installer/contractor is every bit as important as the product you are purchasing. Due diligence is critical to ensure you get the best system, for a fair price, and that it's installed correctly and on time.

QUESTIONS ABOUT THE CONTRACTOR'S/COMPANY'S BACKGROUND

Ask these questions to be sure the contractor knows the business thoroughly and has satisfied other customers. Also, be sure to request copies of insurance documents, certifications and licenses, so you know that the contractor and installers have gone through required training. Be sure to call former customers and check out other installations the contractor has completed. You should query local Better Business Bureaus and your state Attorney General's office, and check online rating services for comments about the contractor and the equipment you plan to purchase.

1. How long have you been in business?

2. Are you licensed to do business in my state?

3. How many PV systems have you installed? Can you provide a list of consumer references in my area? Can I talk with former customers and also see successful installations?

4. Who will do the installation at my site? Are they employees or subcontractors? If you involve subcontractors, do they work with a number of other employers, too? Have these subs worked on many of your installations?

5. What training have you and your installers had, and what, if any, certifications do you and your installers hold? Do you have an installer with a Master Electrician license, and is there an installer on your team licensed to install solar?

6. Does your company carry these types of insurance: general liability for at least \$1 million, professional liability, workers compensation, other types?

7. Have you ever been involved in a legal dispute involving a solar installation?

QUESTIONS ABOUT THE INSTALLATION AT YOUR HOME

Ask these questions to find specific details on what the contractor is proposing and why, as well as general information on what you can expect during and after installation.

1. What size and type of system do you recommend for my site? Why?
2. Are there any steps I must take before the installation - such as removing trees or replacing my roof?
3. What brand(s) of systems do you install? What advantages do these brands offer over other options? Are the systems manufactured in the U.S. or elsewhere?
4. What warranties do you and the manufacturer offer? Do you offer a warranty on installation? If the manufacturer is not located in the U.S., are there any difficulties with warranty work? How do I make a claim on defective or short-lived equipment?
5. What tax credits, rebates and other incentives will this installation qualify for? Who files the paperwork for any/all of these incentives?
6. How much of my energy usage will this system provide?
7. What will the payback period be?
8. Will I be able to monitor the output of my panels? What is the process for doing so?
9. How and when will you involve staff from my electric cooperative in the installation? Do you have experience interconnecting with utility grids?
10. Will permits be needed for this installation? Who obtains them and pays any fees?
11. When will you begin the installation? How long will it take to complete?
12. What is your daily schedule? (For example, is it M-F, 8:00 to 5:00, with an hour for lunch?)
13. Will you be on the job site daily? If not, how will we communicate if there are questions or problems that arise? And how do I reach you after hours?

14. If my energy use changes, can I increase the number of solar panels later?
15. Is it possible the installation may cause my roof to leak? If so, does your company take responsibility for repairs?

QUESTIONS ABOUT THE BID/CONTRACT

Why you should ask these questions? All of this information should be included in both your bid and on the contract you sign. Check these details carefully, then compare to other bids you obtain. (Get at least three bids, all in writing.) Be wary of any really low bids. If the contractor can't supply the information, ask why not. After checking any contract to be sure this information is included, have a contract expert or lawyer review the contract before signing it.

1. Is this bid an estimate or a fixed price? What is the process you will follow if you find unexpected problems with this installation and want to charge extra to fix the problems?
2. Does the bid include the total cost of the project, including components, materials and labor?
3. Does the bid include a breakdown of each of the components (make and model number, size/kWh per year, as well as price of each) so I can see what each portion will cost?
4. Does the bid include details about permits?
5. Does the bid include the time frame for beginning and ending the installation?
6. Does the bid include warranty information, as well as how to place a claim?
7. Does the bid include expected operation and maintenance costs; projected monthly, annual and lifetime costs and savings; and projected energy production?
8. Does the bid include payment options, as well as financing details?
9. Does the bid include details about who will file paperwork for tax credits, rebates and other incentives?
10. What documentation will I receive when the project is done? (This may include lien releases and other contract-related paperwork, as well as warranties, operating manuals and more.)

QUESTIONS ABOUT PAYMENT

Ask these questions so you know how you will be billed and the expected payment due dates.

1. How much will the down payment be? When will it be due?
2. What is the payment schedule?
3. How long after work is completed will the final payment be due?
4. Do you offer financing or have a relationship with a bank that offers financing?

**FOR MORE INFORMATION, VISIT
[TOUCHSTONEENERGY.COM](https://www.touchstoneenergy.com)**



SOLAR SYSTEMS: WHAT SIZE IS RIGHT FOR YOU?

As your Touchstone Energy cooperative, we are your source for energy and information. Since interest in solar power generation is growing, we put together a series of fact sheets to help answer questions you might have. Contact us for more information about solar and assistance in making decisions about whether solar is a good option for you.

SOLAR SYSTEMS: WHAT SIZE IS RIGHT FOR YOU?

All solar systems begin with a series of small photovoltaic (PV) cells that produce electricity directly from sunlight. These PV cells are combined to form a module or panel. Several panels are connected together to form an array or a solar system. Arrays can be small—from a few panels to power a roadside warning sign or a remote cabin—up to a large array covering hundreds of acres as part of a utility-scale solar farm.

Solar systems generally can be divided into three types, based on size.

ROOFTOP SYSTEMS

This type of system is most often thought of as a residential system, although rooftop systems may also be installed on commercial and industrial facilities. However, for the most part, rooftop systems are smaller in scale, and for practical purposes, have far less capacity to produce solar than other types.

- As the name suggests, rooftop systems are mounted on a roof. This may be a home, a commercial/industrial building, a public building, or even a parking garage
- The actual amount of energy produced depends on the location. Typical home rooftop systems are sized to produce between

2 and 10 kilowatts (kW). On average, 75 square feet of solar panels are needed to produce each kilowatt of direct current (DC) power during peak solar periods.

- While prices vary, residential system prices have fallen to an average of \$3.50 per watt peak capacity of direct current Wp-DC. Watt peak capacity is the maximum capacity of a module under optimal conditions.
- Ownership of rooftop systems can vary: The system may be owned by the building's owner. A leased solar system may be owned by the company installing the leased system, or a community solar system may be owned by the electric cooperative installing it.
- The energy produced by the rooftop solar system helps offset energy use of the building on which it is installed. During some times of the day or months of the year, it may produce more energy than is used within the home or commercial building.
- The number of solar panels installed on the building can be expanded over time, depending on the size and configuration of the building, and the owner's desire to install additional capacity.

UTILITY-SCALE SYSTEMS

- Utility-scale systems may range from a capacity of 500 kW to hundreds of megawatts (MW).
- For perspective, a 1-MW alternating current (AC) solar array can produce enough energy to power about 200 homes (depending on location) and may cover 5-7 acres. Because of the amount of land required, utility-scale projects are often located in more rural, less populated areas.
- Because of their size, most utility-scale solar systems are installed in a fixed-tilt ground-mount configuration. This means that the panels are placed on the ground (rather than on a building), and are tilted in place to gain maximum exposure to sunlight.
- A solar array can be installed on marginal land that can't be used for agriculture or building sites, such as brownfield sites, landfills, and airport buffer areas. However, the site must be relatively flat or south-sloping without significant shading from vegetation or other obstructions.
- Utility-scale solar systems owned and/or operated by an electric cooperative usually feed electricity directly into the transmission or distribution grid. The utility provides solar power to customers in one of two ways: by adding the power to the co-op's power portfolio—which benefits all cooperative members; or by selling power directly to individual members who are motivated to purchase solar energy. Selling directly to consumers may be done in one of two methods, also. First, members may sign on to a cooperative-offered Green Power Purchase program that sells the renewable attributes of the power directly to members. Some cooperatives also support a community solar program, described below. Though utility-owned programs come in many variations, most programs feed power to the grid, rather than directly to a home or business site.
- Economies of scale have a direct impact on costs. The 2015 calculations indicate that a large (20 MW-AC) solar system can be installed for an average of \$1.55 per Wp-DC; the cost is even less in some areas.


COMMUNITY SOLAR SYSTEMS

- The size and scope of community solar systems typically fall between rooftop systems and utility-scale systems. Community solar systems are larger than residential rooftop systems but usually smaller than utility-scale projects. The capacity of these systems is typically between 20 kW and 1 MW (enough to power between 4 and 200 homes).
- Local cooperatives build, operate, and maintain their own community solar systems. Often these systems are located within the cooperative's service territory. Smaller systems are most likely to be local. One advantage: members can actually see the system "in action."
- Ground-mounting is the most common installation method, although some community solar installations have been placed on top of parking garages and public buildings.
- Ownership models vary, but in all cases, members who purchase solar through the cooperative community solar system receive credit on their bill for their share of the output from the solar system. The two most common ownership methods are:
 - » Members may purchase or lease a portion or unit of the system.
 - » Members subscribe to a unit of capacity from the project they don't own any part of it.
- There are significant advantages to community solar projects for both the co-op and the member. These include being able to participate in solar even if your home is not suited to supporting a solar system or if you don't want the upfront investment. Participating in a community solar program offers economies of scale. That is, it's cheaper per unit to build a large system rather than a small one, and there is more flexibility for consumers to participate. Cooperative advantages also include the economy of scale and the ability to manage the power inputs to a greater degree.

**FOR MORE INFORMATION, VISIT
TOUCHSTONEENERGY.COM**



Central Wisconsin Electric Cooperative

Your Touchstone Energy® Cooperative 

10401 Lystul Rd, Rosholt, WI 54473 715-677-2211

DISTRIBUTED GENERATION RULES & REGULATIONS

The Cooperative will allow distributed generation in accordance with applicable state and federal rules and regulations.

Member's desiring to operate generators in parallel with the Cooperative's system will be permitted to do so in accordance with these regulations.

A. The member will be required to enter into a written agreement covering the installation and operation of the member's generator system in parallel with the Cooperative's system.

B. The member shall provide the Cooperative with plans of their proposed installation including detailed electrical diagrams and other necessary data on the proposed generator system, including the interconnection device, for the Cooperative's review and approval prior to installation. This approval process will include a review by the Cooperative of the effect of the proposed generation on the Cooperative's distribution system, including its protective scheme. The member requesting interconnection may be required to pay the cost of this review. No installation will be permitted that reduces reliability to other members or causes voltage conditions on the system to be outside of the limits of ANSI C84.1 Range A. No installation will be permitted that is expected to produce objectionable harmonics on the system. Any mitigation required to resolve harmonic problems created by a member-owned generation shall be completed and paid for by the member.

C. The control system shall provide for automatic separation, in two (2) seconds or less as per IEEE 1547, of the distributed generator from the Cooperative's system in the event of a loss of power from the Cooperative's electric system. The DG controls must wait five (5) minutes after the return of normal Cooperative system voltage and frequency before closing the breaker or switch which interconnects the DG to the Cooperative's system.

D. A LOCKABLE disconnecting device with a visible break suitable for use as a hold tag location shall be installed just beyond the meter and ahead of the generator input into the Cooperative's system.

E. The completed installation will be subject to a final inspection and test by the Cooperative before commencement of parallel operation is permitted. Also, the member shall agree to obtain approval from the Cooperative prior to making any revisions to the member's energy

source, its control systems or the interconnection between the two power systems after the initial installation.

F. The member will receive and pay for the electric service to be furnished by the Cooperative on the appropriate rate schedule. The Cooperative's meters shall be equipped with detents to avoid net metering for any power or energy fed back into the Cooperative's system for generators that are above 20 KW.

G. The Cooperative may at any time install special meters or other apparatus as may be desired to monitor the operation of the two systems in parallel or to protect the safety of its employees or accuracy of its meters.

H. The member will be responsible for the cost of any alterations to the Cooperative's distribution system to interconnect the proposed generation to the Cooperative's distribution system, including upgrade of conductor size or installation of transformers to accommodate the output of the unit.

I. For any member choosing to significantly self-generate, that is, to provide over 50% of their own power, the member will be served under provisions of a rate schedule that charges the Cooperative's full cost of service for that type of installation.

J. The installation shall meet the requirements of the Institute of Electrical and Electronics Engineers (IEEE) 1547 "Standard for Interconnecting Distributed Resources with Electric Power Systems," requirements of the National Electrical Code (ANSI/NFPA 70) latest edition, requirements of the National Electrical Safety Code (IEEE C2) latest edition, requirements of the State of Wisconsin, requirements of the local municipality and the engineering requirements of the Cooperative. The member shall certify that these requirements have been met and shall provide an electrical inspection by a certified inspector.

K. The member making the installation shall indemnify and hold harmless the Cooperative from the operation, non-operation or interconnection of member-owned generation equipment. In addition, the member shall carry liability insurance in an amount acceptable to the Cooperative to cover potential claims with the Cooperative named as an additional insured. A certificate of insurance shall be submitted to the Cooperative.

L. The member shall sign with the Cooperative the necessary agreement for transmission service when the member wishes the Cooperative to transmit the output of its generator to another party. In addition, if the Cooperative is to supply standby service or synchronization service, the member shall pay to the Cooperative monthly fees to cover the costs to reserve capacity or provide an alternating current signal.

M. Should the parallel operation of a generator cause interference with the Cooperative's system or other members' services, the member shall discontinue parallel operation until the condition has been corrected to the satisfaction of the Cooperative.

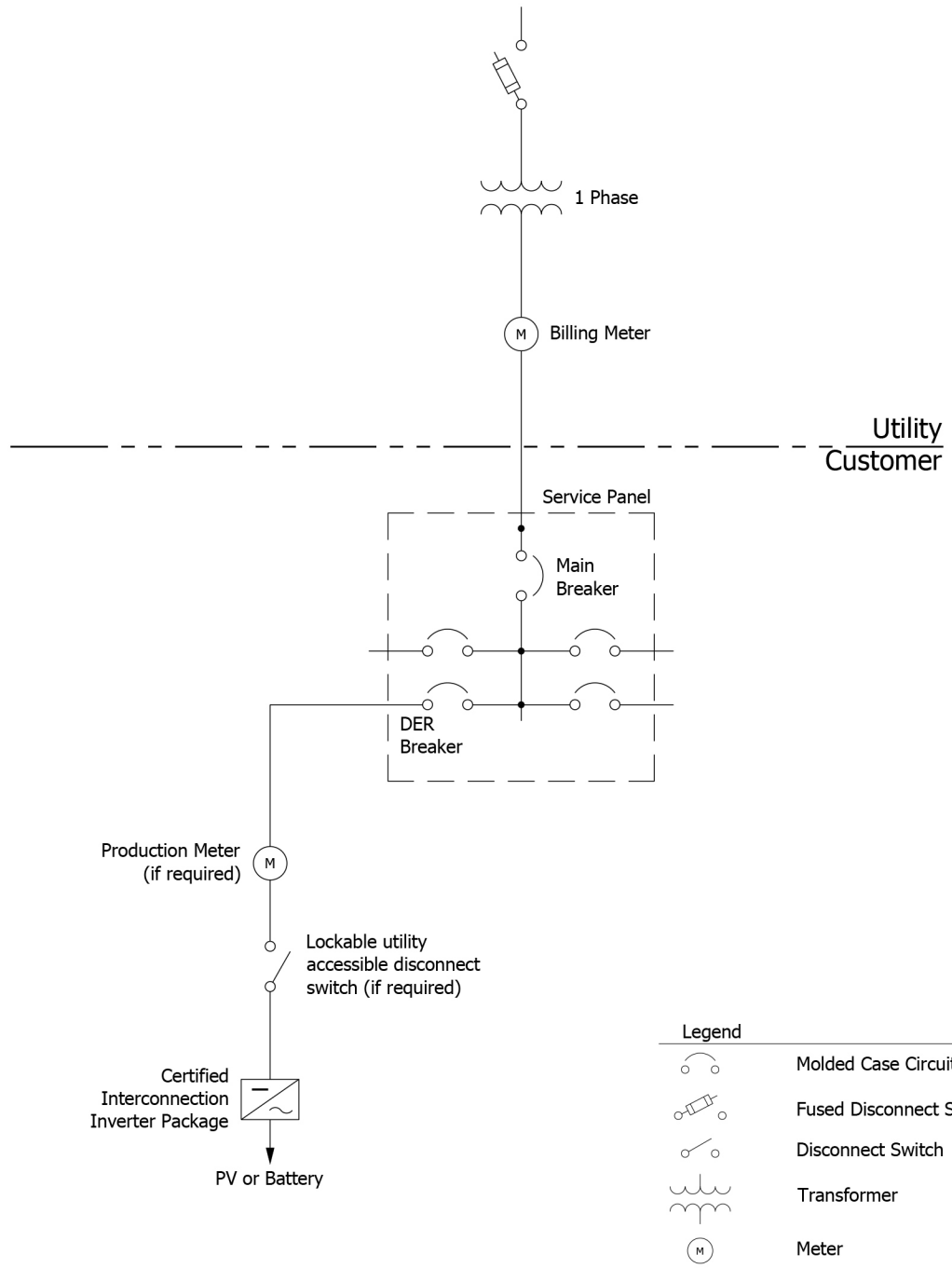
N. For generators that exceed the capacity of the Cooperative's distribution system, the member must obtain an agreement with an appropriate energy marketer to purchase the output of the generator. The member must also make the necessary agreements for transmitting the power with the American Transmission Company (ATC) and the Midcontinent Independent System Operator (MISO).

Commercial or industrial members proposing to install any type of distributed generation will be considered on an individual basis.

DISTRIBUTED GENERATION METERING

The Cooperative will furnish, install and maintain watt-hour meter(s) equipped to measure energy flow in and out of the member's distributed generation location. Such metering will have the ability to record the energy generated by the member that is supplied to the Cooperative's distribution system if the member generates excess energy. Excess energy supplied to the Cooperative's distribution system will be purchased by the Cooperative at the Cooperative's unbundled energy rate. The Cooperative reserves the right to charge the member for metering costs above the standard for the rate class of the service.

The member shall furnish, install and maintain all additional wiring and equipment required for the installation of the member's generating system. All wiring must be done in a manner acceptable to the Cooperative.



Sample One-Line Diagram for Certified Inverter Package Installations
Less than 20kW



Central Wisconsin Electric Cooperative

Your Touchstone Energy® Cooperative
10401 Lystul Road, PO Box 100
Rosholt, WI 54473
715-677-2211 | 1-800-377-2932
www.cwecoop.com

**DISTRIBUTED GENERATION APPLICATION FORM
(Generation 20 kW or less)**

1. Contact Information – The applicant is the party that is legally responsible for the generating system

Applicant's Last Name: _____ First: _____ Middle: _____

Applicant's Mailing Address:

Phone Number: _____ E-mail Address: _____

Emergency Contact Numbers for Responsible Party

Day Phone: _____ Evening Phone: _____ Weekend Phone: _____

Cell Phone: _____

2. Location of the Generation System

Street Address:

Latitude – Longitude (optional): _____ County _____
(i.e. 49° 32' 06" N – 91° 64' 18"W)

3. Electric Service Account Number

4. Applicant's Ownership interest in the Generation System

Owner Co-owner Lease Other

If co-owner or leased, list other parties involved: _____

5. Primary Intent of the Generation System

Onsite use of power, or net energy billing Commercial power sales

6. 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 purchased (i.e., (a) – (b)) _____(kWh)yr*

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

7. Installing Contractor Information

Contractor's Last Name: _____ First: _____ Middle: _____

Name of Firm: _____

Phone Number: _____ E-Mail Address: _____

Contractors Mailing Address:

8. Requested In-Service Date

9. Provide One-Line Schematic Diagram of the System

Schematic is Attached Number of Pages _____

10. Generator/Inverter Information

Manufacturer: _____ Model Number: _____

Version Number: _____ Serial Number: _____

Generation Type (select one) Single Phase Three Phase

Generation Type (select one) Synchronous Induction Inverter Other _____

Name Plate AC Ratings (select one) _____ kW _____ kVa _____ volts

Primary Energy Source Wind Solar Biomass Manure Digester Other

Note: If there is more than one generator and/or inverter, attach an addition sheet describing each.

11. Site Plan Showing Location of the External Disconnect Switch (attach additional sheets as needed)

12. Liability Insurance

Carrier: _____ Limits: _____
(min \$300,00)
Agent Name: _____ Phone Number: _____

The Applicant (Site Owner or Operator, if different) shall provide a Certificate of Insurance, both demonstrating that this liability insurance is in place.

13. Design Requirements

- a. Is the proposed distributed generation paralleling equipment certified as detailed by testing requirements of UL1741 as stated in PSC 119.26? Yes No

If not certified, you will need to provide the cooperative an engineering design Showing that the installation meets the design requirements of the cooperative.

For item 13(a), if your answer is yes, please furnish details (e.g., copies of manufacturer's specifications). If you do not know the answer, it is recommended you contact the equipment manufacturer for the answer and provide the same with the completed application.

14. Other Comments, Specification and Exceptions (attach additional sheets if needed)

15. Applicant and Installer Signature

To the best of my knowledge, all the information provided in this Application Form is complete and correct. I have been provided a copy of Cooperative Policy 621: Distributed Generation and I have read and understand this policy.

Applicant Signature: _____ Date: _____

Installer Signature: _____ Date: _____



Distributed Generation Interconnection Agreement (20 kW or less)

Public Service Commission of Wisconsin

P.O. Box 7854

Madison, WI 53707-7854

6029 (12/06/05)

Distributed By

Name and Address

Supplied By

Name and Address

Public Service Commission of Wisconsin
P. O. Box 7854
Madison, WI 53707-7854

This Distributed Generation Interconnection Agreement (the "Agreement"), is made and entered into this _____ (day) of _____ (month), _____ (year) by and between _____ hereinafter called "Public Utility" and _____ hereinafter called the "Applicant". Public Utility and the Applicant are hereinafter collectively referred to as the "Parties" and individually as a "Party."

Recitals

- A. Public Utility is the owner of the electric distribution system serving _____ [Insert legal description of property or address] ("Public Utility's Distribution System").
- B. Applicant desires to install a Distributed Generation (DG) facility or energy storage device with a capacity up to 20 kW, including related interconnection equipment (the "DG Facility") and to interconnect the DG Facility to the Public Utility's distribution system.
- C. Public Utility has previously reviewed and approved Applicant's DG Interconnection Application Form (PSC 6027), dated _____, and supporting materials (the "Application"). The completed Application is attached as Exhibit 1 and incorporated into this Agreement.
- D. Applicant wishes to interconnect the DG Facility to Public Utility's distribution system and Public Utility is willing to permit such interconnection subject to the terms and conditions set forth in: (1) Wisconsin Administrative Code Chapter PSC 119; (2) the completed Application approved by Public Utility; and (3) this Agreement.
- E. No agency or partnership is created with the interconnection of the applicants DG Facility.

Agreement

NOW THEREFORE, in consideration of the foregoing Recitals and for good and valuable consideration, the Public Utility and Applicant agree as follows:

1. Design Requirements.

The DG Facility shall be installed in compliance with Wisconsin Administrative Code Chapter PSC 119.

2. Applicant's Representations and Warranties.

Applicant represents and warrants that:

- a. The DG Facility is fully and accurately described in the Application;
- b. All information in the Application is true and correct;
- c. The DG Facility has been installed to Applicant's satisfaction;
- d. Applicant has been given warranty information and an operation manual for the DG Facility; and
- e. Applicant has been adequately instructed in the operation and maintenance of the DG Facility.

3. Interconnection Disconnect Switch.

The Public Utility may require that the Applicant furnish and install an interconnection disconnect switch that opens, with a visual break, all ungrounded poles of the interconnection circuit. The interconnection disconnect switch shall be rated for the voltage and fault current requirements of the DG Facility, and shall meet all applicable UL, ANSI, and IEEE standards, as well as applicable requirements of the Wisconsin Electrical Safety Code, Volume 2, Chapter Comm 16. The switch enclosure shall be properly grounded. The interconnection disconnect switch shall be accessible at all times, located for ease of access to Public Utility personnel, and shall be capable of being locked in the open position. The Applicant shall follow the Public Utility's recommended switching, clearance, tagging, and locking procedures.

4. Modifications to the DG Facility.

Applicant shall notify Public Utility of plans for any material modification to the DG Facility by providing at least twenty (20) working days advance notice. A "material modification" is defined as any modification that changes the maximum electrical output of the DG Facility or changes the interconnection equipment (e.g., changing from certified to non-certified devices or replacement of any component with a component of different functionality or UL listing). The notification shall consist of a completed, revised Application and such supporting materials as may be reasonably requested by Public Utility. Applicant agrees not to commence installation of any material modification to the DG Facility until Public Utility has approved the revised Application. The Public Utility shall indicate its written approval or rejection of any revised Application within twenty (20) working days after it receives the completed application and all supporting materials.

5. Insurance.

Throughout the term of this Agreement, Applicant shall carry a liability insurance policy that provides protection against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of Applicant's ownership and/or operation of the DG Facility under this Agreement. The limits of such policy shall be at least \$300,000 per occurrence or prove financial responsibility by another method acceptable, and approved in writing, to Public Utility. The failure of the Applicant or Public Utility to enforce the minimum levels of insurance does not relieve the Applicant from maintaining such levels of insurance or relieve Applicant of any liability. Prior to execution of this Agreement applicant shall provide Public Utility with a certificate of insurance containing a minimum 30-day notice of cancellation.

6. Indemnification.

Subject to the limitations set forth in this Section, and to the extent allowable by law, each Party to this Agreement shall indemnify, hold harmless and defend the other Party, its officers, directors, employees and agents from and against any and all claims, suits, liabilities, damages, costs and expenses (including without limitation, reasonable attorneys and expert witness fees) for damage to property, or injury to, or death of, any individual, including the employees, officers, directors and agents of the indemnified Party or any other third parties, to the extent caused wholly or in part by the negligence or the intentional wrongdoing of the indemnifying Party. Notwithstanding anything in this Section or in any other provision of this Agreement to the contrary, the liability of each Party to this Agreement shall be limited to direct actual damages, and all other damages at law or in equity are hereby waived. Under no circumstances shall a Party be liable to the other Party, whether in tort, contract or other basis in law or equity for any special, indirect, punitive, exemplary, or consequential damages, including lost profits. Applicant's and Public Utility's indemnification obligations under this Section and the limits upon their respective liability shall continue in full force and effect notwithstanding the expiration or termination of this Agreement with respect to any event or condition giving rise to an indemnification obligation that occurred prior to such expiration or termination.

7. DG Facility Commissioning Testing.

Applicant shall notify Public Utility in writing that installation of the DG Facility is complete and that the interconnection equipment is available for testing by Public Utility at least fifteen (15) working days before Applicant interconnects the DG Facility with Public Utility's Distribution System. Public Utility shall thereupon have the right to test the DG Facility. Public Utility shall also have the right to witness any testing by Applicant of the DG Facility. Any Public Utility testing of the DG Facility shall be completed within ten (10) working days. If Public Utility waives its right to test the installed DG Facility by notifying Applicant in accordance with this Section, Applicant may interconnect the DG Facility to Public Utility's Distribution System upon the earlier to occur of the following: (a) notification by Public Utility; or (b) fifteen (15) working days after Applicant has notified Public Utility that installation of the DG Facility is complete.

8. Access to DG Facility.

Applicant shall permit (and, if the land on which the DG Facility is located is not owned by Applicant, cause such land owner to permit) Public Utility's employees and agents to enter the property on which the DG Facility is located at any reasonable time for the purposes of inspecting and/or testing Applicant's DG Facility to insure its continued safe and satisfactory operation and the accuracy of Public Utility's meters. Such inspections shall not relieve Applicant from its obligation to maintain the DG Facility and any related equipment owned by Applicant in safe and satisfactory operating condition.

Public Utility shall have the right to witness any testing by Applicant of the DG Facility.

9. Disconnection of a DG Facility to Permit Maintenance and Repairs.

Upon reasonable notice by Public Utility, Applicant shall disconnect the DG Facility to permit Public Utility to perform routine repairs and maintenance to Public Utility's Distribution System, or to install modifications thereto.

10. Disconnection of a DG Facility without Notice.

When Public Utility so requests, Applicant shall discontinue operation of the DG Facility and Public Utility may isolate the DG Facility from Public Utility's Distribution System, upon any of the following

- a. Termination of this Agreement;
- b. If, in Public Utility's reasonable judgment, the DG Facility fails to comply with the Design Requirements specified in Wisconsin Administration Code §§ PSC 119.20 and PSC 119.25.
- c. In the event of an emergency on Public Utility's Distribution System; or
- d. Upon any other breach of this Agreement by Applicant (a "Default"), that Applicant fails to remedy within ten (10) working days after receipt of written notice from Public Utility.

In the event of such disconnection, pursuant to b, c, or d above, the DG Facility shall remain isolated from Public Utility's Distribution System until, in the reasonable judgment of Public Utility, the DG Facility meets the Design Requirements, Applicant has cured any Default, and Public Utility's Distribution System is functioning in a safe manner. If Applicant fails to cure a Default within sixty (60) working days, Public Utility shall further have the right to terminate this Agreement without liability to Applicant for such termination.

11. Disputes; Right to Appeal to PSCW.

Nothing in this agreement prevents Applicant from filing a petition with the Public Service Commission to appeal any requirement imposed by Public Utility as a condition to interconnection of DG Facility, that Applicant alleges is unreasonable.

12. Amendments; Non-Waiver.

Any amendment or modification to this Agreement must be in writing and executed by Applicant and Public Utility. The failure of Applicant or Public Utility to insist on performance by the other Party of any provision of this Agreement shall not waive the right of the Party who failed to insist on performance to enforce the same provision at a later time.

13. Term of Agreement.

This Agreement shall become effective immediately upon the execution, by the Parties, and shall continue in effect until terminated by any of the following:

- a. Mutual written agreement of the Parties;
- b. Abandonment or removal of the DG Facility by Applicant;
- c. By Public Utility pursuant to Section 10 of this Agreement;
- d. By Applicant upon thirty (30) working days prior written notice given to the Public Utility.

14. Successors and Assigns.

- a. Assignment by Applicant. Applicant shall not assign its rights and obligations under this Agreement in whole or in part without the prior written consent of Public Utility, which consent shall not be unreasonably withheld or unduly delayed. Public Utility may withhold its consent to any proposed assignment if the proposed assignee fails to assume the obligations of Applicant under this Agreement in writing.
- b. Assignment by Public Utility. The Public Utility shall have the right to assign this Agreement in whole upon written notification to the Applicant.
- c. Successors. This Agreement shall be binding upon the personal representatives, heirs, successors, and permitted assigns of the respective Parties.

15. Applicant and Public Utility Signature.

**IN WITNESS WHEREOF, Applicant and Company have executed this Agreement
as of the year and date first set forth above.**

Applicant Signature _____

Title _____ Date _____

Public Utility _____

Title _____ Date _____

Central Wisconsin Electric Cooperative Wiring Certificate

State of Wisconsin, County of _____
Customer's Name: _____ Map Location: _____
Owner's Name (if different): _____ Permit # (if available): _____
Service Address: _____
City/Town/Village: _____
Electrician's Name: _____
Electrician's Phone Nbr: _____ Cell Nbr: _____

Type of Service:

- | | | |
|--------------------------------------|--|--|
| <input type="checkbox"/> Residential | <input type="checkbox"/> Temporary Service | <input type="checkbox"/> Overhead Service |
| <input type="checkbox"/> Farm | <input type="checkbox"/> Permanent Service | <input type="checkbox"/> Underground Service |
| <input type="checkbox"/> Commercial | <input type="checkbox"/> Rewire/Upgrade | |

Phases: _____ Amps: _____ Volts: _____

Remarks: _____

This is to certify that the above service is compliant with the Wisconsin State Electrical Code.

For Proof of Compliance:

Electrician's Signature: _____

Electrician's License Nbr: _____

Exemption Nbr: _____ Date: _____

Solar Upkeep

The more time and energy we spend on maintenance and upfront design and construction, the less it costs down the road with the production of solar energy.

Lightning can affect arrays, inverters and other parts in a photovoltaic solar system, reducing overall performance. When that happens, all components may need to be checked and damaged parts replaced to return the system to peak performance.

Solar arrays require regular inspections and periodic cleaning to remove grime and debris, hard water stains and other contaminants that might reduce their efficiency. Discolorations on component surfaces can be an indication of heat buildup, pointing to potential other problems that might worsen without repairs.

A walking inspection of ground-mounted arrays or ladder checks of systems mounted atop carports or pergolas might be easy, but rooftop system inspections and maintenance can present more challenges.

It takes a set of specialized skills to be able to do some of the things that need to be done.

PV CONTRACTORS

- 1) Northwind Solar
578 Allen St
Amherst, WI 54406
www.northwindre.com
715-630-6451

- 2) Photovoltaic Systems, LLC
7910 Hwy 54
Amherst, WI
www.pv-systems.org
715-824-2069



Energy Conservation Rewards

We are a strong advocate of energy conservation and using renewable energy sources. To make our member's energy projects more affordable we offer energy conservation rewards.

To apply for energy conservation rewards send CWEC a copy of your paid store receipt showing the purchased item(s). For household appliance requests include a copy of the yellow energy guide label that includes the energy star logo.

Residential Lighting

LED Bulb (screw-in)	\$1 each (five bulb minimum), capped at 50% of cost
LED Fixture	\$1 per 800 lumens in the fixture, capped at 50% of cost
Occupancy Sensor	\$5 each

Non-Residential Lighting

LED Bulb (screw-in) Five bulb minimum.....	\$1 each
LED Fixture	\$1 per 800 lumens in the fixture
T5 LED Tube	\$5 per lamp fixture, capped at 50% of cost
T8 LED Tube	\$2 per lamp fixture, capped at 50% of cost
Occupancy Sensor	\$5 each
LED Exit Sign	\$5 each

Power Strips & Water Flow Restrictors

Flow Restrictor - Faucet, < 1.5 GPM	\$1 each
Flow Restrictor – Shower, < 2.5 GPM	\$5 each
Smart Power Strip/Bar	\$25 each, capped at 50% of cost <i>(includes Wi-Fi power strips)</i>

Heating & Cooling

Geothermal Heat Pumps	10% of unit cost, \$650 cap
Electric Thermal Storage – Whole House	10% of unit cost, \$500 cap
Air Source Heat Pump	\$250
Dual Fuel Electric	\$250
Electronically Commutative Motor ECM	\$100
High Efficiency Boilers	\$150
Central Air SEER Rating 14+	\$100
Programmable Thermostat	50% of unit cost, \$200 cap

Energy Audits

Inspection Allowance	Please call for more Information or go to www.cwecoop.com <i>(CWEC only services up to the meter, a licensed electrician must check any other electrical concerns)</i>
----------------------------	--

Weatherization

Air Sealing/Insulation Reward	50% of cost, \$250 cap <i>Does not apply to new construction</i>
New Windows & Doors	\$25 per, \$250 cap <i>Does not apply to new construction</i>

Household Appliances -refrigerator, washer, dishwasher, freezer, microwave, dehumidifier, window air conditioner, and air exchange (energy guide label must include the energy star logo to qualify) (mini fridges are not eligible)

Energy Star Rebate	\$25 per Energy Star appliance
Refrigerator & Freezer Recycling	\$25 per appliance <i>(not to exceed cost of recycling)</i> <i>(mini fridges are not eligible)</i>

Continued... Energy Conservation Rewards

Electric Water Heaters

New Construction.....	Free 50-gallon AO Smith
Conversion from gas	Free 50-gallon AO Smith
Replacing Electric	\$100
<i>*Free or rebated water heaters require enrollment in load management program</i>	
Solar Water Heaters	\$20 per therms saved, cap of 25% total cost of system or \$500, whichever is less
Heat Pump Water Heaters	\$250

Renewables

Solar Electric Systems	30% of system cost, maximum \$500
Wind Systems.....	30% of system cost, maximum \$500
<i>*Renewables require prior co-op approval and Interconnection Agreement</i>	

Agriculture, Commercial & Industrial

Dairy Plate Cooler/Well Water Pre-Cooler	\$500
Dairy Refrigeration Heat Recovery w/Electric Backup	\$300
Low Energy Livestock Waterer \leq 500 watts, insulated tank	\$90
Zero Energy Livestock Waterer \leq 500 watts, insulated tank	\$110
Dairy Refrigeration Tune-up	\$50
Compressed Air Audit	\$500
High-Volume Low Speed Fan (HVLS)	\$50 per fan
Exhaust Fan.....	\$4 per inch
Fans \leq 36" must be \geq 18 pounds force/kW	
Fans \geq 36" must be \geq 21 pounds force/kW	
Fans must be AMCA or University of Illinois BESS Lab rates	
Enter inches of each fan: _____	
Enter efficient rating in cfm/watt @ 0.05" SP: _____	
Circulation Fan.....	\$3 per inch
Fans \leq 36" must be \geq 18 pounds force/kW	
Fans \geq 36" must be \geq 21 pounds force/kW	
Fans must be AMCA or University of Illinois BESS Lab rates	
Enter inches of each fan: _____	
Enter thrust rating in pounds force/kW: _____	
Scroll Refrigerator Compressor	\$50 per HP
Maximum incentive \$1,000/compressor	
Enter HP of each compressor: _____	
Variable Frequency Drive (VFD): Ag primary use water system	\$80 per HP
Minimum 1/2 HP to qualify	
Maximum incentive \$1,000/drive	
Enter HP of each VFD: _____	
Variable Frequency Drive (VFD): Ag secondary use water system	\$65 per HP
Minimum 1/2 HP to qualify	
Maximum incentive \$1,000/drive	
Enter HP of each VFD: _____	
Variable Frequency Drive (VFD): Irrigation well pump.....	\$65 per HP
Minimum 1/2 HP to qualify	
Maximum incentive \$1,000/drive	
Enter HP of each VFD: _____	



Continued... Energy Conservation Rewards

Variable Frequency Drive (VFD): Ventilation/circulation fan \$65 per HP
Minimum ½ HP to qualify
Maximum incentive \$1,000/drive
Enter HP of each VFD: _____

Variable Frequency Drive (VFD): Process Pump \$65 per HP
Minimum ½ HP to qualify
Maximum incentive \$1,000/drive
Enter HP of each VFD: _____

Variable Frequency Drive (VFD): Constant torque. \$50 per HP
Minimum ½ HP to qualify
Maximum incentive \$1,000/drive
Enter HP of each VFD: _____

Irrigation Pump Inspection 50% of cost, \$150 cap

Commercial Grade Electric Water Heater \$250
80 gallon or larger