

Frequently Asked Questions: Interconnecting Distributed Generation

- 1. What is distributed generation?** Also known as co-generation, it is any form of electricity generating technology installed by a customer or independent energy producers that is connected to the grid at the distribution level.
- 2. What is required by the cooperative if I install distributed generation?** Cooperatives must adhere to all applicable federal and state laws when working with a member to connect generation to the grid. The cooperative has outlined the interconnection process in its Tariff, filed with the Iowa Utilities Board and included in this packet, specifically, Section 25: Co-generation and Small Power Production.

When considering the installation, a strong emphasis must be placed on safety considerations for the cooperative's employees and members; protection of the cooperative's and members' delivery system; and fairness to other members of the cooperative from a cost perspective. A written agreement between the cooperative and the member is developed to ensure proper communication and protections are in place, prior to connection of the facility to the grid. Consideration must also be given to established requirements for installation, maintenance, metering, switching and liability insurance.

- 3. What is required of me, as a member, if I decide to install distributed generation?** The general requirements include paying for any interconnection devices that are necessary to protect the safety of the cooperative representatives and to maintain the integrity of the delivery system. The member is also required to carry liability insurance in the amount of \$1,000,000. Individuals must pay for the necessary metering equipment used to measure energy delivered back to the grid by the member. The member will also be responsible for all engineering costs or additional equipment associated with the interconnection.
- 4. Why do I have to carry \$1 million dollars of liability insurance?** It is very common for businesses and individual homeowners to carry liability policies to insure against various types of losses or claims. Conceptually and generally, customers should not view carrying liability insurance on distributed generation any differently than the liability insurance that is carried to drive an automobile. Insurance on automobiles is carried to provide coverage for damages to others and their property. This basic business principle applies to carrying liability insurance for distributed generation. Just as it is true for other personal property, it is up to the owner of a system to assume responsibility for insurance coverage.
- 5. What if I disagree with some of the requirements of the cooperative — what is the process for challenging this?** Members are encouraged to discuss any concerns with Pella Cooperative Electric representatives to resolve questions or issues associated with connecting distributed generation to the grid. As your rural electric cooperative, it is our goal to work with our members to address questions and concerns. However, many of the requirements are based on federal or state statutes and regulations. Pella Cooperative Electric can't modify these requirements.

6. **What is the process for installing distributed generation?** Before investing in any form of distributed generation or before connecting it to the grid, the member-consumer should meet with the appropriate Pella Cooperative Electric representatives to gain an understanding of the expectations for both the cooperative and the member. The member and the cooperative will work together toward a written agreement, which will address these expectations as well as each party's responsibilities. The agreement will also cover the terms and conditions associated with the interconnection, including rates that the cooperative will pay the member for the power they deliver to the grid, insurance requirements and metering requirements, to name a few. This agreement must be in place before the facility can be connected to the grid.
7. **How much does distributed generation cost?** It depends greatly on the type and size of generation installed. There are several aspects of cost: the cost of the generator, the cost of the balance of the plant (the power electronics, structure, installation), the cost of interconnection (including any required engineering studies to ensure that the system can be integrated with the grid without impacting the quality or reliability of service to neighboring cooperative consumers, and any upgrades needed to the distribution system), and the cost of maintenance from a reliable service provider.
8. **Which vendors should I work with to purchase a generator?** Pella Cooperative Electric does not endorse one particular vendor. There are several resources, the Iowa Energy Center for example, which may give you some additional background information on a particular vendor. Members should fully research a company before purchasing generating equipment. Pella Cooperative Electric suggests you ask these questions of your vendor:
 1. **How reliable is the rated energy output? How did you calculate the output?** Experts advise ignoring peak output and power curved provided by vendors. Rather, look for the monthly or annual energy numbers – in kilowatt-hours – for the generator. For example, if you are considering a wind turbine, ask the manufacturer to calculate the output for the average wind speeds that you expect or have measured at your site. If the vendor does not provide energy production estimates, find another manufacturer.
 2. **Is the inverter UL listed?** If the inverter is not UL listed, find another vendor. Most utilities require that an inverter have a UL 1741 certification for interconnection with the grid. As part of the certification, the inverter is required to fail open in the absence of power on the grid.
 3. **What is the estimated total installed cost?** It's important to know the total installed cost of a system to ensure sufficient budgeting. For a wind system, you would need to budget not only for the turbine, but also the tower, installation labor expenses, as well as the cost of equipment rental, materials, shipping, and sales tax.
 4. **How long is the warranty? What does it cover? Parts? Labor? Can it be extended? If so, what will it cost?** Warranties generally range from one to five years. The longer the warranty, the better. Make sure the warranty covers labor as well as parts. Cooperative members should ask owners of systems purchased from the same vendor about performance and reliability before making a decision on an extended warranty, if available. (Special Note: If you live in an area prone to lightning strikes and are considering a wind system, you should consider the option of lightning protection. If not available through the vendor, third-party vendors can design and install adequate protection systems.)
 5. **What are your credentials? How long have you been in business? How many systems have you sold? Have your systems been certified?** Look for vendors that have been in business for at least five years, or have acquired the product line of another

vendor. In addition, cooperative members should ask the vendor for the names of at least two people who have installed a system that is the same as or similar to the model the cooperative member is interested in.

- 9. How long will it take before I am able to generate electricity?** This will depend on several variables including design and engineering studies, installation of required interconnection equipment, construction time, availability of necessary equipment, weather, etc. By working with Pella Cooperative Electric, a timeline can be established taking into account the variables related to connecting to the grid.
- 10. How much electricity can be generated?** You should first determine how much electricity you want to generate. Based on your current electricity usage, decide how many kilowatt-hours you would like to produce. Once you know how much energy you want, you can select a the right system to meet your needs.

The vendor should be able to give you an idea of the output capacity of the system, but it's also necessary to look at local conditions. For example, the wind speed at your site at the height you intend to erect your wind turbine is a critical factor in estimating your energy output and may vary from the figures your vendor used to calculate output.

- 11. Do I have to have two meters if I install distributed generation?** Cooperatives require metering capability to measure electrons being drawn from the grid by the member and metering capability to measure electrons being delivered to the grid by the member. Most situations may necessitate two meters.
- 12. Does the cooperative offer “net metering?”** Pella Cooperative Electric does not offer net metering as it violates the cost-causer principle and negates cost-fairness among cooperative members.

Most cooperatives have chosen not to net meter consumer-owned generation because it is a subsidy that raises costs for other consumers on the system. Net metering policies require utilities to pay consumers the retail price for wholesale power. The retail rate utilities charge includes not only the marginal cost of power, but also recovers costs incurred by utilities for transmission, distribution, generating capacity, and other utility services not provided by the consumer-generator. The policies also require utilities to pay high costs for what may be low-value power. Power from wind and photovoltaic (PV) systems is intermittent, cannot be scheduled or dispatched reliably to meet system requirements. Further, net metering allows customers to underpay the fixed costs they impose on the system. A utility has to install sufficient facilities to meet the peak requirements of the consumer and recover the costs of those facilities through a kilowatt-hour charge. When the net meter rolls backwards, it understates the total energy used by the consumer, and thus understates the consumer's impact on the fixed costs of the systems. It also understates the consumer's total share of other fixed charges borne by all consumers such as taxes.

- 13. What rate will the cooperative pay me for electricity generated?** Pella Cooperative Electric will pay rates based on avoided cost for energy that the member generates and delivers to the grid to ensure other members on the system do not bear an undue cost for their electricity. This avoided cost standard is pursuant to federal regulations. Please contact the cooperative for this information.

- 14. How does the cooperative determine what rate it will pay a member for energy?** This is based on the avoided cost principle and may vary depending on the size of the particular generating facility. Federal regulations require a standard rate for qualifying facilities with a design capacity of 100 kilowatts or less and the regulations allow for an individually negotiated rate for units over 100 kilowatts. Currently, our standard rate for qualifying facilities varies. Please contact the cooperative for this information.
- 15. Does the cooperative charge a different rate to generators versus customers that do not generate their own electricity?** No, Pella Cooperative Electric does not currently have a separate price or rate schedule for co-generators, but reserves the right to create a separate price or rate based upon the unique characteristics of such member-consumers.
- 16. What is the cooperative's backup rate when my generator is not generating?** The rate customers pay during this time period is the normal cost-based rate for the rate class applicable to the customer. However, under federal regulations the cooperative can charge a different rate for backup, supporting and maintaining power.
- 17. What rebates or other incentives do entities such as the state or federal government have for distributed generation?** Incentives can come in the form of tax credits, low interest loans or other delivery mechanisms. Your tax accountant or tax attorney can advise you on the availability of various tax credits or other tax incentives relating specifically to your installation of a generator. Incentives may include:
- The Farm Bill Extension Act of 2007, which continued agricultural programs through 2012, provides \$500 million in grants for small-scale renewable energy projects. The grants are available for agricultural producers that earn at least 50% of their income from agricultural products. Small rural businesses also are eligible. The application process for a grant or loan under Section 9006 can be complicated and time-consuming. A sample application form is available on the Department of Energy's (DOE's) website at http://www.eere.energy.gov/windandhydrop/windpoweringamerica/pdfs/farm_bill_small_wind_sample_application.pdf.
 - The State of Iowa has incentives to help reduce the installed cost of distributed generation. The Database of State Incentives for Renewables and Efficiency (DSIRE) provides detailed information on incentives at <http://www.dsireusa.org>.
- 18. What kind of payback can I expect in terms of breaking even?** The payback period can range from several years to several decades, depending on the cost of the system and it's output. You can estimate a simple payback by the following formula, assuming the system is properly sized not to exceed your demand:

(Installed cost including interconnection costs, \$)

(kwh/year x retail price of electricity, \$/year) – (annual operation and maintenance cost, \$/year)

The annual operation and maintenance costs include insurance premiums, maintenance calls, service contracts, and the net present worth of long-term repairs.

- 19. Do I have to pay any taxes, such as property taxes, if I install distributed generation?** Depending on the particular situation, the generator may be subject to some replacement taxes. This question should be directed to your tax accountant and/or tax lawyer.
- 20. Is distributed generation worthwhile to put up?** Installing your own generation is an individual decision for each member. A cooperative's role in this process is to help educate the member regarding the co-op's expectations in this process. First and foremost, Pella Cooperative Electric must protect the safety of cooperative members and employees as well as maintain the integrity and reliability of the grid and establish mechanisms to ensure cost fairness. The greatest payback to the member occurs when you consume all the energy produced by the generator.

The cooperative will try to help you obtain information you deem relevant to your decision-making process. However, the decision is one you must make on your own or with the assistance of consultants hired to provide you with advice.