St. Croix ELECTRIC
A Touchstone Energy® Cooperative
1925 Ridgeway St. | Hammond, WI 54015
www.scecnet.net | 715-796-7000

Distributed Generation: Frequently Asked Questions

1) What is distributed generation (DG)?

Distributed generation includes generating technologies located close to where the electricity is being used that are connected to the electric power grid and serve as supplement to or an enhancement of the traditional electric power system. The technologies of interest today for member-owners primarily include solar and wind generation, and energy storage solutions. Distributed generation allows member-owners to produce some or all of the electricity they need.

Renewable energy distributed generation systems only produce power when their energy source, such as wind or sunlight, is available; this is called intermittent power. Due to the intermittency of the power supply from distributed generation, there often are times when the member-owner still needs to receive electricity from the Cooperative's grid. When the distributed generation system produces more power than the member-owner can consume at that time, the excess power is sent onto the Cooperative's grid. This reduces the overall amount of electricity that the Cooperative needs to supply at the time the distributed generation system is producing power.

2) What are the primary differences between central station generation and distributed generation?

Central station generation produces electricity at a power plant, which is transmitted through the interconnected grid infrastructure to a widely distributed group of users, which provides significant cost efficiencies. Central station generation often uses a diverse mix of fuel sources, including coal, oil, natural gas, nuclear, hydro, wind, solar and biomass. Central station generation provides diversity in system size, optimal operation times for maximum efficiency, and geographic location. Base load central station generation resources (e.g. typically coal, oil, nuclear and natural gas) are designed to and can operate 24 hours a day, 7 days a week, and can also be dispatched as needed to meet load, regardless of factors such as weather.

Distributed generation is generally smaller in size than central station generation and located on or near a member's source of energy needs. Although technology is changing, most renewable energy distributed generation sources are unable to meet the dispatchability requirements of the grid. Currently, not all distributed generation is able to completely serve member loads without relying on utility-based backup.

3) How does distributed generation affect the current energy model?

For decades, power from central station generation has been and continues to be the most reliable and affordable way to provide power to large numbers of members. When members only receive power from centralized sources, Cooperative member-owners benefit from economies of scale and the Cooperative can adequately plan for future energy demand and have adequate generation available to meet those needs.

Distributed generation, while supported by electric cooperatives, introduces many new variables that need to be continuously factored into energy planning and delivery. Some of those factors include - but are not limited to: supply and demand forecasts, the rate structure to ensure non-discriminatory rates so all member-owners pay their fair share for the costs associated with delivering and receiving power from the grid, and various distributed generation inspection protocols to ensure the continued safe operation of the grid.

4) What is St. Croix Electric Cooperative's position with respect to distributed generation?

As a member-owned electric cooperative, St. Croix Electric supports distributed generation as long as it is developed and installed in compliance with the Cooperative's policies, and local, state and federal laws and regulations.

5) Is distributed generation right for me?

It is solely the responsibility of the member-owner to determine if owning a distributed generation system is a good investment. St. Croix Electric Cooperative does not provide financial assistance with the analysis; however, we can assist you with finding appropriate and credible resources to help with the decision-making process. Before determining if distributed generation is right for you, you'll want to determine your goals (e.g. environmental stewardship, serving a percentage of your energy demand, etc.), evaluate the type and size of distributed generation desired, understand your economics, and investigate and understand all applicable requirements and regulations.

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6) Should I invest in energy efficiency improvements first?

Yes! Completion of a thorough energy efficiency audit is an important precursor to considering and understanding the economics of distributed generation for you. Implementing energy efficiency measures in advance of installing a renewable energy system can save you money by reducing your overall energy or water consumption, which subsequently reduces the size of the distributed generation system you'll need to meet your energy needs.

7) What type (wind, solar, etc.) and size of generation system should I choose?

Choosing the size of a distributed generation system requires thorough research and analysis of your daily and annual energy use, and a determination as to whether you've maximized energy efficiency options for your property. The energy use analysis will indicate what time of day you are using the most energy and the profile of your usage across all hours. Not only will this information allow you to size your system according to your energy consumption needs, it also will show what system will be most suitable. For example, if your peak energy usage is 6 p.m. to 8 p.m., a solar system may not be the best choice as solar energy generation typically peaks earlier in the day. Factors such as your geographic location, city/county codes and zoning requirements, and overall system economics will be important considerations in your decision-making process. You also should understand your cooperative's policies for purchasing the power you don't consume if you have excess generation.

8) What is the process of interconnecting distributed generation?

Distributed generation systems require significant analysis and fact-finding, and then careful evaluation of the information that you learn in the process. If you are considering investing in and potentially installing a distributed generation system, it's important that you follow these key steps: 1) Identify and implement energy efficiency opportunities. 2) Schedule a meeting with St. Croix Electric (715-796-7000). We can help you understand interconnection requirements and point you in the right direction for credible resources that can further assist with the analysis process. 3) Analyze your electric loads. 4) Determine applicable codes. 5) Identify and discuss your options with credible resources and contractors. 6) Schedule a follow-up meeting with St. Croix Electric.

9) What is an interconnection agreement, and does St. Croix Electric Cooperative require one?

An interconnection agreement is a legal contract for the connection of the distributed generation facility to the Cooperative's grid, specifying the location, size, cost, manner of payment, terms of operation and respective responsibilities of the Cooperative and the distributed generation facility owner.

To ensure your own safety and that of your fellow cooperative member-owners, you must notify St. Croix Electric Cooperative if you intend to install a distributed generation system. With any type of distributed generation system - whether cogeneration or renewable - maintaining the safety, stability and reliability of the overall grid is of the utmost priority.

10) What are my responsibilities when owning a distributed generation system?

As the individual owner of the distributed generation system, you will be responsible for the initial upfront costs to install the system as well as ongoing maintenance and repair costs. The owner of the distributed energy system is responsible for obtaining the proper equipment and ensuring that all requirements are met of St. Croix Electric Cooperative's interconnection agreement, as well as applicable state, local and federal codes. In addition, you will be responsible for paying necessary costs associated with interconnection and operation of the system.

11) What are St. Croix Electric Cooperative's responsibilities?

Once all interconnection requirements are met and the safety and integrity of the system meet all necessary criteria, then SCEC is responsible for the final stages of interconnection. Ongoing maintenance and system repairs are the responsibility of the generation system owner.

12) What questions should I ask a vendor? (using solar panels as the example)

During your research, many questions will be identified that you should ask a vendor including, but not limited to:

- What is the total installed (turnkey) cost of the system?
- How much money is due upfront? What is the schedule of payments?
- If my energy use changes, can I add more panels later?
- Who will be working on my property and how much experience do they personally have installing solar?
- When was your company established and how many solar projects has it completed to date? Can your company provide a list of the projects and references for them?
- Is your company affiliated with other parties to deliver the installation? If so, who are they?
- How does your company handle it when you get busy? Do you work with sub-contractors?
- Is your solar installer company a licensed electrical contractor, which is required to install solar electric systems? (Ask to see the company's license)
- Are your solar installers North American Board of Certified Energy Practitioners (NABCEP) Solar Photovoltaic (PV) Electric trained and certified?

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- Are you accredited with the Better Business Bureau? If so, what is your rating?
- Will the age or type of my roof affect the cost of installation?
- Do I need a new roof now in order to install? Is my roof suitable to carry the additional live and dead load forces that the solar array will exert?
- How will installation affect my roof? Will it create leaks? What if it does create leaks, are you then responsible for repairs?
- If I'm planning on re-doing my roof, should I install panels before or after?
- How will solar affect my homeowner's insurance?
- Does your company have a standard insurance certificate with adequate general liability coverage of $1 million or more? (Ask to see it)
- Does your company have professional liability insurance? (Ask to see it)
- Does your company carry workers' compensation? (Ask to see it)
- Do you have the ability to cover me as an "additional insured"?
- Does the company have a master electrician on staff to obtain the required electrical permits and to supervise the electrical work for your project? (Ask to see the certificate)
- Do you have a licensed professional engineer on staff to review and approve drawings for submission to city/county building code and fire department officials?
- Will you complete all of the paperwork associated with getting the permits and financing?
- In which country are the solar panels and inverters you are selling made?
- Will the company honor your manufacturer's multiyear performance warranty?
- How long will the installation take?
- How much of my energy use would my solar system cover?
- How much would my monthly energy bills be after installation? From you and from my cooperative?
- How long would my payback period be on my solar array? What are the key assumptions associated with my payback that may impact that result?

13) What type of records should I keep?

You should keep records of all of your research and document the answers you receive to all of your questions. It's also important to maintain information about expected system performance and promises made by the vendor. Electric use records should be kept for at least a year prior to installation and each month following installation for comparison purposes so you can monitor your savings.

14) What if the vendor that I choose goes out of business?

This is an important question to ask your vendor and other resources, such as the Better Business Bureau.

15) What are the distributed generation installation and operating costs?

Many factors will impact the cost to install distributed generation, such as the type and size of system, construction, maintenance and installation fees, interconnection fees (e.g. line upgrades, isolating devices, system protection equipment), interest rates for loans, retail electric rate, St. Croix Electric Cooperative's policies, and insurance. The engineering study that St. Croix Electric Cooperative conducts as part of the interconnection process will determine what equipment is necessary for interconnection.

16) What tests will be needed to ensure the system is operating properly?

St. Croix Electric Cooperative will conduct a commissioning test to ensure the system is operating properly. This is a highly specialized activity where a power installation is tested by a trained engineer to exacting industry standards. The test will verify that the system has all of the needed protective and interconnection equipment, and can operate properly and safely.

17) Who conducts the necessary inspections?

Local and/or state officials conduct safety inspections. Confirm with your contractor, in the early planning stages, who will need to schedule these inspections.

18) Should I buy or lease?

As is the case with other major purchases, buying and leasing options have different benefits and those benefits vary depending on your financial situation and purchasing goals. By doing your homework, understanding the economics of the system and assessing the pros and cons of both options, you can arrive at an informed decision that is best for your individual situation.

19) The vendor has described a lease arrangement in which they own the system and I pay them a monthly fee for system output. Is that allowed in Wisconsin?

Under federal law, our obligation is to buy from the owner of the distributed generation system as long as it meets the requirements of a qualifying facility as defined by the Public Utility Regulatory Policies Act of 1978 (PURPA).

20) If I lease, who is responsible for maintenance?

Information about responsibility for system maintenance should be covered early on in your discussions with the vendor and be documented within the lease agreement entered into with the company providing the equipment.

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21) What kind of maintenance costs should I anticipate?

Maintenance costs will vary depending on many things, such as the size and type of system; whether the generation unit is new, used or leased; and weather impacts. A reputable vendor should outline and document these cost assumptions when you are considering investing in a distributed generation system.

22) Are there state or federal incentives or tax credits?

The Database of State Incentives for Renewables & Efficiency (www.dsireusa.org) is one source of information on state and federal incentives, tax credits and policies that support renewables and energy efficiency in the U.S. The site features an interactive map, which allows users to click on a state to see a comprehensive listing of federal and state incentives, credits, exemptions, grants, loans and rebates for residential and commercial/ industrial projects and programs.

23) What is net metering?

"Net metering" means service to an electric consumer in which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to directly offset electricity provided by the electric utility to the electric consumer during the applicable billing period.

24) How does net metering impact the entire utility system?

Due to current utility and cooperative rate structures that were designed with the concept of consumers always using the utility's central station services, net metering - as structured today - is essentially a cost shifting mechanism that provides a subsidy to the owner of the distributed generation system. The per kilowatt-hour (kWh) rates paid by members includes an incorporated infrastructure fee for the cost of building and maintaining the system needed to deliver electricity to a member's home. Under the current design, members with distributed generation systems who are reimbursed for their electricity production may not be paying their fair share of the infrastructure costs necessary to construct, operate and maintain the grid so that they can rely on the grid when their distributed generation is not producing electricity.

25) What are my insurance needs?

All distributed generation owners should be prepared to provide proof of general liability insurance as part of the interconnection agreement. Specific requirements may be discussed with St. Croix Electric Cooperative when you review your interconnection agreement.

26) What happens when my DG system fails or there is a power outage?

Typically, if there is a power outage, the DG system will automatically disconnect from the grid and may shut down if grid power is necessary for it to function. If the DG system was allowed to remain in-service, it could backfeed and energize the Cooperative's lines. This would present a serious danger to line crews who would expect the power lines to be de-energized so repairs could be made to safely and efficiently restore service.

If your DG system fails, your power will come from the Cooperative through the grid until you are able to restore the DG system to service.

27) If there is a catastrophic event, who pays for the loss?

As the owner of the DG system, you are responsible for all costs or insurance claims associated with the system. St. Croix Electric Cooperative does not have financial responsibility for your system.

28) If there are injuries to the public or crew during the installation process, who is responsible?

Your attorney can provide more information on liability. It is the responsibility of the property owner to obtain necessary insurance. This is an important question to pose to your installer to ensure they also have insurance.

29) If I decide to remove the system, who is responsible?

As the owner of the distributed generation system, you will be responsible for removal of the system.

30) Are additional resources available to assist with the decision-making process?

At the outset of your process, it's important to talk to St. Croix Electric Cooperative's member services manager. You also should consult with experts in renewable energy and distributed generation who can advise you of additional resources; help you understand the economics of a DG system; help you determine if a DG system is right for you and what type of renewable energy technology would be best for your property; discuss financing, potential tax incentives and financial incentives; and discuss other requirements, such as insurance.

Staying engaged with St. Croix Electric Cooperative staff during all aspects of considering installating a DG system is critical to the success of the project. Our priority is to help members make informed decisions, help ensure the safety of all parties involved and that all interconnection requirements are met. We are your trusted energy advisor, looking out for our members' best interests.

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