DAKOTA® ELECTRIC ASSOCIATION

Your Touchstone Energy® Cooperative

Electric Service Manual

Section 4 – Generation Interconnection

Contents

Section 4 – Generation Interconnection

4.1 General Information

A generator is anything which produces electricity. When interconnected to a distribution system this is sometimes referred to as a Distributed Energy Resource (DER). This could be a gas-powered generator, a wind turbine or a solar panel. Proper interconnection of a generator to a home or commercial electrical system is extremely important. An improper installation can affect your safety, the safety of the public and the safety of Dakota Electric's employees. Knowing what you are doing may save your life or your property.

The following is some information which must be followed to ensure a safe and reliable generation interconnection.

- All generation interconnections must follow the requirements of the National Electrical Safety Code (NEC).

- All installations must be inspected and approved by proper authorities. Contact a licensed electrician to help ensure a safe and reliable installation.

- All generation which is operated in parallel with the Dakota Electric electrical system, is required to install a production meter. Dakota Electric will supply the meter and the member supplies the meter socket. The production meter is required to allow Dakota Electric to know the total load which can be applied to the distribution system. This is necessary to ensure proper capacity of the electrical supply equipment. The installation of a generation system can mask the peak load requirements of the main service. Immediately after a power outage or during times when the generation system is unavailable the total unmasked electrical demand is applied to the distribution system and the distribution system must be sized to supply that electrical demand.

    - Production meter socket must be installed within 10ft of the existing Dakota Electric service meter
    - Meter shall be labeled with “Production Meter”
    - Meter shall be located outside any building and shall be accessible to Dakota Electric personnel at all times
    - The mounting of the production meter must comply with the Residential Meter Location Requirements, Section 3.1
    - The location of the production meter must be identified on the on-line diagram that is submitted with the generation interconnection application.

Notice to Co-generators - in compliance with Minnesota Adopted Rules Relating to Cogeneration and Small Power Production, Chapter 7835, Dakota Electric Association is required to interconnect with and purchase electricity from co-generators and small power producers that satisfy the conditions of a Qualifying Facility*.

Dakota Electric has available and will provide free information to all interested members regarding rates and interconnection requirements. An application for interconnection is required for a Qualifying Facility to interconnect and operate in parallel with the cooperative's distribution system and is subject to the approval by the cooperative. Any disputes over interconnections, sales and purchases are subject to resolution by the Minnesota Public Utilities Commission.

*A Qualifying Facility is a generation system that meets the requirements of the federal PURPA rules ("Public Utility Regulatory Policies Act - 1978"). These facilities are powered by renewal sources, such as solar, wind, hydro and biomass, Diesel fueled, and gas fueled generators are not qualifying facilities under the PURPA rules.

Portable Emergency or Standby Generator Installations - Installing a temporary back-up generator that will provide electricity during power outages for your home or business, through the building's existing wiring, requires careful installation. Failure to properly interconnect a generator could result in back-feeding the utility system and energize the primary wires at thousands of volts. This could be lethal for the general public and Dakota Electric field crews working to restore your electrical service. For more information on the issues involved see Section 4.2 Portable Emergency or Standby Backup Generator.

Permanent Generator Installations – Including Small Renewable Generation Systems
When permanently installing a generation system, notification and coordination with Dakota Electric is required. This is due to the possibility of the generation system back-feeding the Dakota Electric System.

Dakota Electric will work with you to ensure a safe and reliable installation. Dakota Electric has adopted the Generation Interconnection Process and Requirements established by the State of Minnesota for all generation systems (solar, wind, bio-mass, diesel, natural gas or other fuel source) smaller than 10 MW.

For more information on the process and requirements of interconnecting a permanent generator see Section 4.3 Permanent Generator Installations or if your Distributed Energy Resource is small and utilized a certified grid tie inverter, see Section 4.4 Small Renewable Energy Installations.

4.2 Portable Emergency or Standby Backup Generators

- **Avoid Back-Feeding Dangers / Use a Transfer Switch** - To make this type of installation as safe as possible, a transfer switch must be installed to break the connection with the Dakota Electric electrical system before the generator is connected and, similarly, disconnect the generator connection before normal utility power is restored to the building. This transfer switch is normally located between your buildings main service panel and the utility meter. This type of switch is called a "double-pole, double-throw" open transition transfer switch. For more information on generation interconnection requirements see Section 4.3

- **Operating a Transfer Switch -** A transfer switch or a grid tie rated inverter are essential to safely provide back-up power to your home or business with a generator. Electric current from Dakota Electric's lines normally passes through a transformer to step 7,200 volts of electricity down to 120 and 240 volts for your home's use. Operating a generator without a properly designed interconnection may feed a 120-volt current back into the transformer, which will step the voltage up to 7,200 volts and potentially give a lethal shock to anyone who contacts the line. When power is restored to Dakota Electric's lines, the generator will also be damaged if the interconnection is not designed and installed properly. When using a transfer switch, it must be sized according to the rating of a home's service entrance equipment. Common sizes include 100, 150, or 200 amperes. Comply with NEC electrical code requirements to ensure proper standby generator installation.

- **Inspection** - Make sure your local electrical inspector examines all facility wiring changes or additions. Besides coordination with Dakota Electric, Minnesota State Statues require that you have any wiring additions or changes inspected before energizing.

- **Qualified Installer** - If you are not sure that your generator is installed correctly, contact a qualified professional or your local electrical inspector. Remember, you are responsible for any damage or injuries that result from improper installation or operation of a generator.

  No matter what type of generator you are installing, including solar, wind, gas or diesel powered, proper connection is critical. Do not attempt to connect a generator within your home or business without proper equipment and knowledge. The electricity you generate will back feed to the outside utility lines, where it can kill or injure utility field crews attempting to restore power. Proper installation is required to prevent the generator from sending electricity back through the wires and transformer and energizing the utility lines.

4.3 Permanent Generator Installations

Dakota Electric Association has adopted the State of Minnesota process and requirements for interconnecting distributed generation. This process and technical requirements help to coordinate and ensure a safe interconnection between your distributed generation system and the DEA distribution system.

The first step in the interconnection process is to submit your generation system information using the application in Appendix B (Link below). The following links will provide more information about the interconnection process and technical requirements for all types of generation.

Summary Letter – Summarized the most relevant information required for interconnecting non-inverter based generation

Interconnection Process
- Appendix A – Flow Chart
- Appendix B – Application
- Appendix C – Engineering Data Submittal
- Appendix D – Engineering Study Information
- Appendix E – Interconnection Agreement Template

Technical Requirements – Describes the types of interconnections, issues and requirements for protection, metering, monitoring, insurance and other interconnection information

Contact Dakota Electric

For questions about the process to interconnect Distributed Energy Resources (DER) to your residence, contact the Dakota Electric Residential Generation Coordinator, at (651) 463-6180. For questions about interconnection with a commercial or industrial service, contact the Commercial Generation Coordinator at (651) 463-6186

4.4 Small Renewable Energy Installations

Dakota Electric supports the interconnection of renewable generation systems such as wind or solar. A streamlined process has been created to cover the interconnection of inverter based renewable generation having a total rated nameplate capacity of less than 40 kW.

The first step in the interconnection process is to submit your generation system information using the Interconnection Application (Link below). The following links will provide basic information about the interconnection process and technical requirements for small inverter based generation.

Summary Letter – Summarized the most relevant information required for interconnecting small inverter based generation

Interconnection Process
Interconnection Requirements
Interconnection Application
Uniform Statewide Contract

Dakota Electric's Residential Solar Incentive Program

2019 Qualified Facility Rates

Contact Dakota Electric
For questions about the process to interconnect Distributed Energy Resources (DER) to your residence, contact the Dakota Electric Residential Generation Coordinator, at (651) 463-6180. For questions about interconnection with a commercial or industrial service, contact the Commercial Generation Coordinator at (651) 463-6186

Other Sources of Information
Minnesota Department of Commerce (Solar Information) – (Wind Information)
National Renewable Energy Laboratory (NREL)
American Solar Energy Society (ASES)
American Wind Energy Association (AWEA)