



Your Touchstone Energy<sup>®</sup> Cooperative 

# Electric Service Manual

## Section 4 – Distributed Energy Resource (DER) Interconnection



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## Section 4 – Distributed Energy Resource (DER) Interconnection

### 4.1 General Information

A Distributed Energy Resource (DER) is anything which produces electricity. A DER could be a gas-powered generator, a wind turbine, batteries, a solar panel, etc. Proper interconnection of a DER 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 are requirements which must be followed to ensure a safe and reliable DER interconnection.

- All DER 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 DER generation, that is operated in parallel with Dakota Electric's distribution system, is required to be reviewed and approved by Dakota Electric prior to interconnection. Also, most DER interconnections will require the installation of a Dakota Electric production meter. Dakota Electric will supply the meter and the member (installer) supplies and installs the meter socket. The production meters on smaller single-phase installations allows Dakota Electric to remotely shut down the operation of the DER during emergencies. The production meter is required and allows Dakota Electric to know the total load which may be applied to the distribution system after system outages. This is necessary to ensure proper capacity of the electrical distribution equipment required to supply the maximum electrical demand for each home and businesses.

The installation of a DER system can mask the peak load requirements of a home or business by supplying some of the electrical needs during maximum loads. Immediately after a power outage or during times when the DER system is unavailable, the total unmasked electrical demand is applied to the distribution system and the distribution system equipment must be sized to supply that total electrical demand.

- The requirements for the production meter and meter socket are as follows
  - The production meter socket shall meet all the requirements of [Section 3.1.2](#)
  - The production meter socket shall be installed within 10ft of the existing Dakota Electric service meter

- The meter socket shall be labeled with “Production Meter”
- The meter shall be located on an outside wall and shall always be accessible to Dakota Electric personnel
- 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 one-line diagram that is submitted with the generation interconnection application.



[MTR-SOLAR](#) is a reference drawing which shows typical wiring for residential inverter-based DER system and production meter.

[Notice to Co-generators](#) - In compliance with Minnesota 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 will provide free information to all interested members regarding rates and interconnection requirements. An interconnection application is required and subject to approval from the cooperative before a qualifying facility interconnects and operates in parallel with the cooperative’s distribution system. 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’ primary energy source is renewable sources, such as solar, wind, hydro, biomass, waste or geothermal resources. Diesel fueled generators and Energy Storage (battery) systems are not qualifying facilities under the PURPA rules.*

**Portable Emergency or Standby DER Generator Installations** - Installing a temporary back-up DER generator that provides electricity during power outages and utilizes your home or business existing wiring, requires careful installation. Failure to properly interconnect the DER 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 additional information about Portable Emergency or Standby Backup Generator see [Section 4.2](#).

**Distributed Energy Resource Installations – Including Small Renewable Systems**  
When installing a DER system that can operate in parallel with Dakota Electric’s distribution system, notification through filing an interconnection application and coordination with Dakota Electric is required. This is due to the possibility of the



DER system back-feeding the Dakota Electric distribution system and affecting the safety and reliability of the electrical distribution system. Interconnection applications are required for DER systems which temporarily parallel with DEA distribution system or for DER that operate in extended parallel, as with small renewable generation systems.

Dakota Electric will work with you to ensure a safe and reliable installation. Dakota Electric has adopted the State of Minnesota Distributed Energy Resources Interconnection Process and requirements which has been established by the State of Minnesota for all qualifying facilities. This includes solar, wind, biomass, diesel, natural gas, energy storage-batteries or other fuel sources.



For more information on the process and requirements of interconnecting a DER with the Dakota Electric distribution system, see [Section 4.3](#) Distributed Energy Resource (DER) Installations. If your Distributed Energy Resource is a qualified renewable resource, rated less than 40 kW and utilizes a UL 1741 certified grid tie inverter, see [Section 4.4](#) Small Renewable Energy Installations.

## 4.2 Portable Emergency or Standby Backup Generators

- **Use a Transfer Switch** – For a safe installation of portable or standby generators, a transfer switch must be installed to break the connection with the Dakota Electric electrical system before connecting the DER. This transfer switch will disconnect the DER before normal utility power is restored to the building. This transfer switch can be located between your buildings main service panel and the utility meter or between specific loads which require backup emergency power and the main service panel. For a typical home which is supplied with single phase 120/240 volt, this type of switch is referred to as a "double-pole, double-throw" open transition transfer switch. For more information on DER interconnection requirements see [Section 4.3](#)
- **Qualified Installer** - If you are not sure your DER is installed correctly, contact a qualified electrician or your local electrical inspector. Remember, you are responsible for any damage or injuries resulting from improper installation or operation of a DER.
- **Inspection** - Make sure your local electrical inspector examines all facility wiring changes or additions. Besides coordination with Dakota Electric, Minnesota State Statues require you have any wiring additions or changes inspected before energizing.

### 4.3 Distributed Energy Resource (DER) Installations

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

Dakota Electric uses an on-line system to handle all new interconnection applications. **All new DER interconnection applications will ONLY be accepted through the on-line portal.** The use of the on-line system ensures all applications receive equal treatment and are processed in the order that they are submitted.



You may access the DER Interconnection Application Portal, using the following link:  
<https://www.novapowerportal.com/Home/Index/22>

#### Energy Storage Systems (ESS)

Energy Storage Systems, which are typically comprised of batteries, may be required to apply for interconnection, depending on their mode of operation and size. An application to interconnect is required for storage systems designed to operate in parallel with the electrical system. Backup energy storage systems such as UPS and electric vehicles do not need to apply for interconnection. For more information about the interconnection requirements for Energy Storage Systems, refer to the [Technical Specifications Manual \(TSM\)](#)

#### Pre-Application Report Request Process

The Pre-Application Report Request process allows an Applicant to request information about the hosting capacity for interconnecting a Distributed Energy Resource at a specific location on the Dakota Electric distribution system. This process can be used by the Applicant to learn about any significant limitations on the existing Dakota Electric distribution system which may be costly to mitigate. The pre-application report has a \$300 fee for processing the request. This request is an optional way to learn about the existing distribution utility system supplying a specific location. This option is designed to be used by applicants before submitting and paying for the application fee of a very large DER interconnection. This is normally not used for interconnection of smaller DER systems.

**Pre-Application Request** – Utilize Dakota Electric’s on-line application portal at <https://www.novapowerportal.com/Home/Index/22> to submit and pay for the pre-application report.

## **Dakota Electric Interconnection Process**

Dakota Electric, along with the other electric utilities regulated by the Minnesota Public Utilities Commission (MN-PUC) are required to follow the Minnesota Distributed Energy Resource Interconnection Process (MN-DIP). The complete Dakota Electric interconnection process, [MN-DIP-DEA](#), provides the details for interconnection of all types of DER with the Dakota Electric Distribution system. The MN-DIP-DEA includes different “process tracks” for how Dakota Electric is required to process the applications based upon the size and type of the DER. The document also includes application forms and interconnection agreements which must be used for the interconnections. The documents and forms are available for viewing on the Interconnection Application Portal. <https://www.novapowerportal.com/Home/Index/22>

## **DER Interconnection Process Information**

The first step in the interconnection process is to submit your DER system information using the online application portal. The following links provide more information about the interconnection process and the technical requirements for all types of generation.

[Summary Letter](#) – The letter summarizes the most relevant information required for interconnection of smaller DER with Dakota Electric’s distribution system.

[Interconnection Process Flow Chart](#) – A high level flow chart showing the major steps in the interconnection process for most DER interconnections.

[Technical Requirements for DER Interconnection](#) – The technical requirements for interconnecting a DER in the State of Minnesota are regulated by the [Minnesota Interconnection & Interoperability Requirements \(TIIR\)](#) and [Dakota Electric Technical Specifications Manual \(TSM\)](#). These documents were approved in 2019 and 2020 by the Minnesota Public Utilities Commission (PUC).

## **Additional Information, Forms and Documents for the Interconnection of DER**

The following links provide copies of the other documents which are part of the interconnection process. These documents are automatically selected and generated for the Applicant when using the Dakota Electric on-line application portal.

[Uniform Statewide Contract for Cogeneration and Small Power Production Facilities](#) – This is the required power purchase and interconnection agreement between the DER owner and Dakota Electric. This contract is only for PURPA qualified generators, such as solar, wind, hydro, biomass, waste or geothermal resources.

[Interconnection Agreement](#) – MN-DIA-DEA - This is the agreement between the DER owner and Dakota Electric for the interconnection and operation of the DER with the Dakota Electric distribution system. This document outlines the terms of the interconnection, including operational terms and conditions. [This agreement is not](#)

required for PURPA qualified inverter based DER smaller than 40kW. For these systems, it is the choice of the Applicant if they want to enter into this additional agreement with Dakota Electric. Otherwise the Simplified Application Form, Exhibit A terms and conditions are applicable.

[Energy Storage Application](#) – This form provides required information about an Energy Storage System in addition to a completed interconnection Application. This form is required to be submitted when an Energy Storage system is part of the system being interconnected. An application to interconnect is required only for Energy Storage which can operate in parallel with the grid. Backup energy storage systems used as a UPS and electric vehicles that do not parallel with the electrical system do not need to apply.

[Certificate of Completion](#) – This form is required to be submitted to Dakota Electric when the DER is ready for inspection and final testing by Dakota Electric personnel. The form must be filled out and uploaded to the online application portal.

[Distribution System Impact Study Agreement](#) – This agreement is for the Interconnections Applications that did not pass the initial technical screens and require additional analysis of the impact of the interconnection. If a System Impact Study is required, Dakota Electric will notify the Applicant as part of the application review process and provide the study agreement document.

[Distribution Facilities Study Agreement](#) – This agreement is for Interconnections which during the system impact study, necessary modifications to the distribution system were identified. This is a detailed study, which provides the estimated cost of the equipment and engineering, procurement and construction work needed to physically and electrically connect the DER. If required Dakota Electric will provide this document to the applicant.

Transmission Facilities Studies – If the capacity of the proposed DER, combined with all other DER on a substation is greater than the minimum substation load, it is possible the energy output from the DER may back-feed the substation and supply power to the transmission system. If this is the case transmission studies may be required to review the possible impact on the transmission system. During the interconnection review process, Dakota Electric will identify if the proposed DER may cause back-feeding of the transmission system and will work with the proposed DER applicant and the transmission provider to coordinate any required studies.

#### **Modifications to Existing DER**

The DER owner/operator must receive written authorization from Dakota Electric before making any change to the Distributed Energy Resource that may have a material impact on the safety or reliability of the Distribution System. Material Modifications \*, including an increase nameplate rating or capacity, may require the DER owner/operator to



submit a new Interconnection Application as described in MN DIP Section 1.6.2. If the DER owner/operator makes such modification without Dakota Electric's prior written authorization, the latter shall have the right to temporarily disconnect the Distributed Energy Resource.

*\* A Material Modification shall include, but may not be limited to, a modification from the approved Interconnection Application that: (1) changes the physical location of the point of common coupling; such that it is likely to have an impact on technical review; (2) increases the nameplate rating or output characteristics of the Distributed Energy Resource; (3) changes or replaces generating equipment, such as generator(s), inverter(s), transformers, relaying, controls, etc., and substitutes equipment that is not like-kind substitution in certification, size, ratings, impedances, efficiencies or capabilities of the equipment; (4) changes transformer connection(s) or grounding; and/or (5) changes to a certified inverter with different specifications or different inverter control settings or configuration. For Energy Storage systems changes in the modes of operation to modes which are not included as approved modes in the interconnection agreement.*

**Contact Dakota Electric**

For questions about the process to interconnect Distributed Energy Resources (DER) contact the Dakota Electric DER Interconnection Coordinator, by emailing your questions to [DERinterconnections@dakotaelectric.com](mailto:DERinterconnections@dakotaelectric.com) or call the Dakota Electric office at 651 463-6212 and ask to talk with the DER Interconnection Coordinator.

#### 4.4 Small Renewable Energy Installations

Dakota Electric supports the interconnection of renewable generation systems such as wind or solar. As part of the interconnection process, small PURPA qualified renewable DER systems, with a DER capacity of 20kW or less, which utilize a certified inverter, qualify for the [Simplified Application](#) process. The simplified process includes a shorter application and shorter application review and processing times.

**All new DER interconnection applications must be submitted online through the on-line portal.**



[Summary Letter – Small Renewable](#) – The letter summarizes the most relevant information required for interconnection of small renewable DER with Dakota Electric’s distribution system.

[Uniform Statewide Contract for Cogeneration and Small Power Production Facilities](#) - This is the required power purchase and interconnection agreement between the DER owner and Dakota Electric. This contract is only for PURPA qualified generators, such as solar, wind, hydro, biomass, waste or geothermal resources.

[Dakota Electric’s Residential Solar Incentive Program](#) – This information describes the solar installation rebate available to qualified residential Members. Dakota Electric requires the installation production meter for the incentive payout. The installer or Member is responsible for supplying and installing the production meter socket. Dakota Electric will provide and install the meter at no additional cost to the Member.

[Qualifying Facility Rates](#) - This document describes the rate paid by Dakota Electric for excess energy generated by small qualified DER and injected back into the Dakota Electric distribution system.

It is important that all DER interconnection applicants, including smaller DER systems which are utilizing the simplified interconnection process, read and understand the interconnection process and the technical interconnection requirements described in Section 4.3 of this document.

#### **Contact Dakota Electric**

For questions about the process to interconnect Distributed Energy Resources (DER) contact the Dakota Electric DER Interconnection Coordinator, by emailing your questions to [DERinterconnections@dakotaelectric.com](mailto:DERinterconnections@dakotaelectric.com) or call the Dakota Electric office at 651 463-6212 and ask to talk with the Generation Interconnection Coordinator.

**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](#))