Owatonna Public Utility's 10 kW Demonstration Solar
Owatonna, MN

INTERCONNECTION PROCESS

Simplified Process

ABSTRACT

Information in addition to the "Process Overview" for interconnecting Distributed Energy Resources of up to 20 kilowatts in size to the utility distribution system.

Contents

1 Applicability 1

1.1. Capacity Limit 1

1.2. Certified Inverters 1

2 Application Submission 1

2.1. Simplified Process Application 1

2.2. Battery Storage 1

2.3. Site Control 2

3 Application Review 2

3.1. Timelines 2

3.2. Initial Review Screens 3

3.3. Notification of Approval of Application 4

3.4. Failure of Review Screens 4

4 Interconnection Agreement 5

4.1. Uniform Contract 5

4.2. Municipal Minnesota Interconnection Agreement 5

4.3. Completion of Agreement 5

5 Insurance 6

5.1. Insurance Requirements 6

5.2. Self-Insurance 6

5.3. Proof of Insurance 6

6 Timeline Extensions 7

6.1. Reasonable Efforts 7

6.2. Extensions 7

7 Modifications to Application 7

7.1. Procedures 7

7.2. Timelines 7

8 Interconnection 8

8.1. Metering 8

8.2. Construction 8

8.3. Inspection, Testing and Commissioning 8
8.4. Interconnection Costs 9
8.5. Authorization for Parallel Operation 10
8.6. Continual Compliance 10
8.7. Disconnection of DER 10

1 Applicability

1.1. Capacity Limit

The Simplified Process only is applicable to certified inverter-based Distributed Energy Resource (DER) systems with the capacity of 20 kW AC or less. The capacity is determined by the aggregated summation of the Nameplate Rating of the inverters that make up the DER system. Additional information regarding the capacity limits can be seen in Section 6 of the Process Overview document.

1.2. Certified Inverters

A certified inverter will have certification of meeting the current version of the IEEE standard 1547. A common inverter certification is UL 1741. Note that certified inverters may still need to have a setting adjusted to meet the technical requirements of the Area EPS Operator. Additional information regarding certified equipment is found in Section 14 and Section 15 of the Process Overview document.

2 Application Submission

2.1. Simplified Process Application

The Interconnection Customer shall complete the Simplified Interconnection Application and submit it to the Area EPS Operator to initialize the Interconnection Process. A completed Simplified Interconnection Application will include the following:

- A completed Simplified Interconnection Application signed by the Interconnection Customer,
- A non-refundable processing fee of $100,
- An aerial site layout drawing of the proposed DER system,
- A one-line diagram of the proposed DER system showing the point of common coupling, PCC, to the Area EPS Operator's Distribution System, and
- All certified equipment manufacturer specification sheets.

2.2. Battery Storage

An inverter-based DER system may include battery storage. DER systems that include battery storage must also complete the Energy Storage Application with the Simplified Interconnection Application.

2.3. Site Control

By signing the Simplified Interconnection Application, the Interconnection Customer is indicating that the proposed DER system is being located where the Interconnection Customer has site control. Site control includes ownership of, a leasehold interest in, or a right to develop a site for the purpose of construction of a DER. Additional information regarding Site Control can be reviewed in the Process Overview document in Section 4.8.

3 Application Review

3.1. Timelines

The Interconnection Application shall be date- and time-stamped upon initial, and if necessary, resubmission receipt. The Interconnection Customer shall be notified of receipt by the Area EPS Operator within ten (10) Business Days of receipt of the Interconnection Application.

The Area EPS Operator shall notify the Interconnection Customer if the Interconnection Application is deemed incomplete within ten (10) Business Days and provide a written list detailing all information that must be provided to complete the Interconnection Application. The Interconnection Customer has five (5) Business Days to provide the missing information unless additional time is requested with valid reasons. Failure to submit the requested information within the stated timeline will deem the Interconnection Application withdrawn. The Area EPS Operator has an additional five (5) Business Days to review the additionally provided information for completeness.

An Interconnection Application will be deemed complete upon submission to the Area EPS Operator provided all documents, fees and information required with the Interconnection Application adhering to Minnesota Technical Requirements is included. The time- and date- stamp of the completed Interconnection Application shall be accepted as the qualifying date for the purpose of establishing a queue position as described in Section 4.7 of the Overview Process document.

The Area EPS Operator has a total of twenty (20) Business Days to complete the Interconnection Application review from the receipt of a completed Interconnection Application and submit notice back to the Interconnection Customer stating the proposed DER system may proceed with the interconnection process or the proposed DER system has been moved into a different process track. The time during which the Interconnection Customer provides missing information is not included in the Area EPS Operator's twenty (20) Business Days review timeline.

3.2. Initial Review Screens

The Area EPS Operator shall determine if the DER can be interconnected safely and reliably using Initial Review Screens and without the construction of facilities by the Area EPS Operator. The Initial Review screens include the following engineering screens:

- The proposed DER's PCC must be on a portion of the Area EPS Operator's Distribution System.

- For interconnection of a proposed DER to a radial distribution circuit, the aggregated generation, including the proposed DER, on the circuit shall not exceed 15% of the line section annual peak load as most recently measured or 100% of the substation aggregated minimum load. A line section is that portion of an Area EPS Operator's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. The Area EPS Operator may consider 100% of applicable loading (i.e. daytime minimum load for solar), if available, instead of 15% of line section peak load.

- For interconnection of a proposed DER to the load side of network protectors, the proposed DER must utilize an inverter-based equipment package and, together with the aggregated other inverter-based DERs, shall not exceed the smaller of 5% of a network's maximum load or 50 kW.[1]

- The proposed DER, in aggregation with other DERs on the distribution circuit, shall not contribute more than 10% to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed PCC.

- The proposed DER, in aggregate with other Distributed Energy Resources on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Customer equipment on the system to exceed 87.5% of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5% of the short circuit interrupting capability.

[1] Network protectors are protective devices used on secondary networks (spot and grid networks) to automatically disconnect their associated transformers when reverse power flow occurs. Secondary networks are most often used in densely populated downtown areas.

- Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the Interconnecting Customer, including line configuration and the transformer connection to limit the potential for creating over-voltages on the Area EPS Operator's electric power system due to a loss of ground during the operating time of any anti-islanding function.

Primary Distribution Line Type	Type of Interconnection to Primary Distribution Line	Results
Three-Phase, three wire	Three-phase or single-phase, phase-to-phase	Pass Screen
Three-phase, four wire	Effectively-grounded three-phase or single-phase, line-to-neutral	Pass Screen

- If the proposed DER is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed DER, shall not exceed 20 kW or 65% of the transformer nameplate rating.

- If the proposed DER is single-phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20% of the nameplate rating of the service transformer.

The technical screens listed shall not preclude the Area EPS Operator from using tools that perform screening functions using different methodologies given the analysis is aimed at preventing the voltage, thermal and protection limitations as the listed screen.

3.3. Notification of Approval of Application

Provided the Simplified Interconnection Application passes the initial screens, or if the proposed interconnection fails the screens but the Area EPS Operator determines that the DER may never the less be interconnected consistent with safety, reliability and power quality standards, the Area EPS Operator shall provide notice to the Interconnection Customer that their Simplified Interconnection Application has been approved.

3.4. Failure of Review Screens

If the proposed interconnection fails the screens the Interconnection Customer will be notified by the Area EPS Operator that the Simplified Interconnection Application has

been moved to the Fast Track Process. The Area EPS Operator shall provide the Interconnection Customer the opportunity to attend a customer options meeting. Additional information regarding the customer options meeting is found in Section 3.5 of the Fast Track Process document. The Interconnection Customer will need to provide a completed Interconnection Application to the Area EPS Operator prior to, or at the customer options meeting.

The Area EPS Operator shall notify the Interconnection Customer of the determination and provide copies of all directly pertinent data and analyses underlying its conclusion, subjected to confidentiality provisions in Section 12.1 of the Overview Process document.

4 Interconnection Agreement

4.1. Uniform Contract

The Area EPS Operator shall provide the Interconnection Customer with an executable copy of the Area EPS Operator's Contract for Cogeneration and Small Power Production Facilities (Uniform Contract) within five (5) Business Days of notice of approval of the Simplified Interconnection Application.

4.2. Municipal Minnesota Interconnection Agreement

The Interconnection Customer may request on the Simplified Interconnection Application an executable copy of the Area EPS Operator's Municipal Minnesota Interconnection Agreement (MMIA) in lieu of signing the Uniform Contract. If the MMIA is requested, the Area EPS Operator shall provide an executable copy of the MMIA within five (5) Business Days of notice of approval of the Simplified Interconnection Application.

4.3. Completion of Agreement

The Interconnection Customer must return a signed Uniform Contract or MMIA at least thirty (30) Business Days prior to a requested in-service date of the propose DER. The Area EPS Operator shall sign and return a copy of the fully executed Uniform Contract or the MMIA back to the Interconnection Customer.

The Interconnection Customer may update the requested in-service date submitted on the Simplified Interconnection Application to a date thirty (30) Business Days or later from the date on which the Interconnection Customer submits a signed Uniform Contract or MMIA and payment, if required, unless the Area EPS Operator agrees to an earlier date.

Upon receipt of the signed Uniform Contract or MMIA, the Area EPS Operator may schedule appropriate metering replacements and construction of facilities, if necessary.

5 Insurance

5.1. Insurance Requirements

At minimum, the Interconnection Customer shall maintain, for the duration the DER system is interconnected to the Area EPS Operator's Distribution System, $300,000 of general liability insurance from a qualified insurance agency with a B+ or better rating by "Best." Such general liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Interconnection Customer's ownership and/or operation of the DER under this agreement. Evidence of the insurance shall state that coverage provided is primary and is not excess to or contributing with any insurance or self-insurance by the Area EPS Operator.

5.2. Self-Insurance

The Interconnection Customer may choose to be self-insured provided there is an established record of self-insurance. The Interconnection Customer shall supply the Area EPS Operator at least twenty (20) days prior to the date of initial operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required in Section 5.1. Failure of the Interconnection Customer or the Area EPS Operator to enforce the minimum levels of insurance does not relieve the Interconnection Customer from maintaining such levels of insurance or relieve the Interconnection Customer of any liability.

5.3. Proof of Insurance

Prior to initial operation of the DER, the Interconnection Customer shall furnish the Area EPS Operator with the Declarations page of the Homeowner's insurance policy documenting insurance of the DER, if applicable or other insurance certificates and endorsements documenting insurance. Thereafter, the Area EPS Operator shall have the right to periodically inspect or obtain a copy of the original policy or polices of insurance. Additionally, the Area EPS Operator may request to be additionally listed as an interested third party on the insurance certificates and endorsements to meet the right to periodically obtain a copy of the policy or policies of insurance.

6 Timeline Extensions

6.1. Reasonable Efforts

The Area EPS Operator shall make Reasonable Efforts to meet all time frames provided in these procedures. If the Area EPS Operator cannot meet a deadline provided herein, it must notify the Interconnection Customer in writing within three (3) Business Days after the deadline to explain the reason for the failure to meet the deadline and provide an estimated time by which it will complete the applicable interconnection procedure in the process.

6.2. Extensions

For applicable time frames described in these procedures, the Interconnection Customer may request in writing one extension equivalent to half of the time originally allotted (e.g., ten (10) Business Days for a twenty (20) Business Days original time frame) which the Area EPS Operator may not unreasonably refuse. No further extensions for the applicable time frame shall be granted absent a Force Majeure Event or other similarly extraordinary circumstance.

7 Modifications to Application

7.1. Procedures

At any time after the Interconnection Application is deemed complete, the Interconnection Customer or the Area EPS Operator may identify modifications to the proposed DER system that may improve costs and benefits (including reliability) of the proposed DER system and the ability for the Area EPS Operator to accommodate the proposed DER system. The Interconnection Customer shall submit to the Area EPS Operator in writing all proposed modifications to any information provided in the Interconnection Application. The Area EPS Operator cannot unilaterally modify the Interconnection Application.

7.2. Timelines

Within ten (10) Business Days of receipt of the proposed modification, the Area EPS Operator shall evaluate whether the proposed modification to the Interconnection Application constitutes a Material Modification. The definition in Section 13 Glossary of the Process Overview document includes examples of what does and does not constitute a Material Modification.

The Area EPS Operator shall notify the Interconnection Customer in writing of the final determination of the proposed modification. For proposed modifications that are

determined to be a Material Modification the Interconnection Customer may choose to either: 1) withdraw the proposed modification; or 2) proceed with a new Interconnection Application. The Interconnection Customer shall provide its determination in writing to the Area EPS Operator within ten (10) Business Days after being provided the Material Modification determination. If the Interconnection Customer does not provide its determination within the timeline, the Interconnection Application shall be considered withdrawn.

If the proposed modification is not determined to be a Material Modification, then the Area EPS Operator shall notify the Interconnection Customer in writing that the modification has been accepted and the Interconnection Customer shall retain its eligibility for interconnection, including its place in the queue.

8 Interconnection

8.1. Metering

Any metering requirements necessitated by the use of the DER system shall be installed at the Interconnection Customer's expense. The metering requirement costs will be included in the final invoice of interconnection costs to the Interconnection Customer. The Interconnection Customer is also responsible for metering replacement costs not covered in the Interconnection Customer's general customer charge. The Area EPS Operator may charge Interconnection Customers an ongoing metering-related charge for an estimate of ongoing metering-related costs specifically demonstrated.

8.2. Construction

The Interconnection Customer may proceed to construct (including operational testing not to exceed two hours) the DER system when the Area EPS Operator has approved the Simplified Interconnection Application. Upon receipt of a signed Uniform Contract or MMIA the Area EPS Operator shall schedule and execute appropriate construction of facilities, if necessary, which shall be completed prior to the Interconnection Customer returning the Certification of Completion. The Area EPS Operator will notify the Interconnection Customer when construction of the distribution facilities is completed.

8.3. Inspection, Testing and Commissioning

Upon completing construction of the DER system, the Interconnection Customer will cause the DER system to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction. The Interconnection Customer shall then arrange for the inspection and testing of the DER system and the Customer's Interconnection Facilities prior to interconnection pursuant to Minnesota Technical Requirements. Commissioning test of the Interconnection Customer's installed

equipment shall be performed pursuant to applicable codes and standards of Minnesota's Technical Requirements. The Interconnection Customer shall provide the Area EPS Operator with a Certificate of Completion after completion of the DER installation.

Prior to parallel operation, the Area EPS Operator may inspect the DER for compliance with standards, which may include a witness test, and schedule appropriate metering replacements, if necessary. The Area EPS Operator shall send qualified personnel to the DER site to inspect the interconnection and witness the testing but bears no liability for the results of the test.

The Area EPS Operator is obligated to complete the witness test, if required, within ten (10) Business Days of receipt of the Certification of Completion. If the Area EPS Operator does not inspect within ten (10) Business Days, the witness test is deemed waived unless upon mutual agreement of both Parties to extend the timeline for the witness test.

Within three (3) Business Days of satisfactory inspection or waiver of inspection, the Area EPS Operator shall provide the Interconnection Customer written acknowledgment that the DER has permission to operate. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Area EPS Operator of the safety, durability, suitability, or reliability of the DER or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the DER.

If the witness test is not satisfactory, the Area EPS Operator has the right to disconnect the DER. The Interconnection Customer has no right to operate in parallel, except for optional testing not to exceed two hours, until permission to operate is granted by the Area EPS Operator.

8.4. Interconnection Costs

The Interconnection Customer shall pay for the actual cost of the Interconnection Facilities and Distribution Upgrades along with the Area EPS Operator's cost to commission the proposed DER system. An estimate of the interconnection costs shall be stated in the Uniform Contract or MMIA. The Area EPS Operator shall render the final interconnection cost invoice to the Interconnection Customer within thirty (30) Business Days after the proposed DER system has been commissioned by the Area EPS Operator, or upon the commissioning being waived by the Area EPS Operator. The Interconnection Customer shall make payment to the Area EPS Operator within

twenty-one (21) Business Days of receipt, or as otherwise stated in the Uniform Contract.

The Area EPS Operator does not give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, operated, installed or maintained by the Interconnection Customer, including without limitation the DER and any structures, equipment, wires, appliances or devices not owned, operated or maintained by the Area EPS Operator.

8.5. Authorization for Parallel Operation

The Interconnection Customer shall not operate its DER system in parallel with the Area EPS Operator's Distribution System without prior written authorization from the Area EPS Operator. The Area EPS Operator shall provide such authorization within three (3) Business Days from when the Area EPS Operator receives the Certificate of Completion and notification the Interconnection Customer has complied with all applicable parallel operations requirements. Such authorization shall not be unreasonably withheld, conditioned or delayed.

8.6. Continual Compliance

The Interconnection Customer shall be fully responsible for operating, maintaining, and repairing the DER as required to ensure that it complies at all times with the interconnection standards to which it has been certified. The Interconnection Customer shall also operate its DER system in compliance with the Area EPS Operator's technical requirements as referred to in the executed Uniform Contract or MMIA. The Area EPS Operator may periodically inspect, at its own expense, the operation of DER system as it relates to power quality, thermal limits and reliability. Failure by the Interconnection Customer to remain in compliance with the technical requirements will result in the DER system's disconnection from the Area EPS Operator's Distribution System.

8.7. Disconnection of DER

The Area EPS Operator has the right to disconnect the DER in the event the Interconnection Customer:

- Does not continue to follow and maintain IEEE 1547 settings approved by the Area EPS Operator as indicated by the adopted technical requirements.

- Does not meet all the requirements of the Simplified Process.

- Refuses to sign either the Interconnection Agreement or the Area EPS Operator's Uniform Contract.

The Area EPS Operator may temporarily disconnect the DER upon the following conditions:

- For scheduled outages upon reasonable notice.
- For unscheduled outages or emergency conditions.

- If the DER does not operate in a manner consistent with the Simplified Process.

The Area EPS Operator shall inform the Interconnection Customer in advance of any scheduled disconnections, or as reasonable, after an unscheduled disconnection.