



Distributed Generation Workbook Distributed for Minnesota Members (DG Workbook - MN)



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CHAPTER 1

INTRODUCTION TO DISTRIBUTED GENERATION INTERCONNECTION WITH YOUR LOCAL PUBLIC POWER UTILITY IN MINNESOTA

Your Local Public Power Electric Utility and Missouri River Energy Services

Your local public power electric utility is owned by the citizens of the community and operated for the distribution of electric power and energy to the consumer. Wholesale electric power supply is provided to your community by Western Area Power Administration (Western) and Missouri River Energy Services (MRES).

The base power supply resource from Western for your community is the hydroelectric power produced from the dams on the Missouri River constructed by the U.S. Army Corps of Engineers and marketed as firm power through Western. In the early 1970s, all preference power customers were informed that the hydroelectric system could not continue to supply all firm power requirements beyond the 1977 power and energy levels and thus would have to look elsewhere to meet the load growth requirements.

MRES, a joint action agency, began in the early 1960s as an informal association of northwest Iowa municipalities with their own electric systems, which decided to coordinate their efforts in negotiating power supply. MRES began supplying supplemental power and energy above the levels received from Western to communities, like yours, after 1977. Your community has executed a Power Sale Agreement (S-1) with MRES, pursuant to which MRES has agreed, to supply to S-1 Members all Supplemental Power requirements above the power supplied by Western. Such a comprehensive and exclusive agreement was needed in order to provide financial security to bond holders that have advanced funds to construct facilities for MRES. The term of the S-1 Agreement was recently extended to January 1, 2057.

The Public Utility Regulatory Policies Act of 1978 (PURPA)

PURPA, as amended by the Energy Policy Act of 2005, requires your local utility (WMU) to buy power and sell power to any Qualifying Facility (QF) at nondiscriminatory rates. The Federal Energy Regulatory Commission (FERC) has since issued certain rules and regulations which encourage small power production and cogeneration. PURPA and the FERC rules and regulations are not entirely clear when dealing with local utilities which have entered into long-term arrangements with a power supplier like MRES.

In certain circumstances, PURPA may require a duplication of obligations to buy and sell power with QFs where, for example, cooperatives, joint action agencies, and their respective WMU each have statutory duties under PURPA to interconnect and exchange power with QFs. This means that both MRES and WMU could be required to buy generation output of

the QF and sell supplemental, backup, and maintenance power (Standby Services) to a QF located within the WMU service territory.

The WMU and MRES filed a Petition of Waiver with FERC under Section 210 of PURPA and have been granted such from FERC. This limited Waiver continues to protect a QF's legitimate interests under PURPA, while clearing up the confusion as to which entity (the WMU or MRES) is best situated to fulfill the PURPA obligations of buying and selling to a QF. This waiver also clears up any possible conflict with the S-1 Agreement that was signed by the WMU by providing that the obligation to purchase the output from a QF is an obligation of MRES (the power supplier) and the obligation to provide interconnection and standby services is an obligation of the WMU. As a condition of the waiver, FERC requires the WMU and MRES to abide by a set of Rules for Compliance to carry out these requirements. (See Chapter 2.) These rules represent general guidelines since the nature, size, and character of QFs can vary widely. Policies have been prepared based upon these Rules for Compliance.

Qualifying Facilities: Cogeneration and Small Power Production

The purpose of PURPA Sections 201 and 210 and the FERC rules is to encourage the use of cogeneration and small power production facilities where such facilities might utilize alternate fuels and thus might make a significant contribution to the nation's effort to conserve energy resources.

PURPA defines these customer-owned distributed generation facilities by dividing them into several categories: small power production facilities, cogeneration facilities, and hydroelectric small power production facilities. Small power production facilities rely on biomass, waste, or renewable resources, including wind, solar, and geothermal to produce electric power. Cogeneration facilities simultaneously produce two forms of useful energy such as electric power and steam. Cogeneration facilities use significantly less fuel to produce electricity and steam (or other forms of energy) than would be needed to produce the two separately. Hydroelectric small power production facilities include a generation facility that impounds or diverts the water of a natural watercourse by means of a new dam or diversion. Any customer-owned generation that meets one of the above descriptions as defined by PURPA and authorized by FERC will be defined as a QF.

Under the FERC regulations and Petition of Waiver, the WMU is generally obligated to interconnect with, and operate in parallel with, a QF. Parallel operation is the operation of on-site generation by a customer while the customer is connected to the WMU's system. The WMU is also required to sell electricity as Standby Service to generators who qualify under FERC standards, while MRES is required to purchase electricity from those QFs who qualify under FERC standards. All generation and transmission interconnections sought by QFs must comply with the requirements of the North American Electric Reliability Corporation

(NERC), Midcontinent Independent System Operator, Inc. (MISO), Southwest Power Pool, Inc. (SPP), and/or other regional transmission providers.

FERC regulations allow the WMU and MRES to establish interconnection standards to ensure electrical system safety and reliability. The regulations also make it clear that MRES, WMU and its retail customers are not to be detrimentally affected as a result of a customer interconnection. Thus, other customers should not have a higher cost of electricity or lower quality of service because of the QF's interconnection. MRES and the WMU are not required to make uncompensated investments to interconnect with QFs.

As stated by FERC, the purchase rate from QFs is based on the cost that can be avoided by MRES with such purchases. Avoided costs are classified in two basic components: energy related and capacity related. Energy related avoided costs are those associated with the cost of not burning or purchasing certain fuels. In the near-term, the only costs that can be avoided are those associated with energy, i.e., not burning coal, nuclear fuel, oil, etc. Capacity avoided costs are those associated with the capital cost of adding new generation, of a demand-side management (DSM)/energy efficiency option, or of the demand portion of a wholesale power purchase. If the QF has a reliable capacity value, then MRES will also include a capacity component as part of the purchase rate. Federal regulations require MRES to keep on file avoided cost data for five years and to update the data every two years. This can be requested from MRES at any time.

Any prospective customer who wishes to interconnect and operate in parallel with the WMU should contact the WMU and discuss the generation interconnect with WMU staff. A set of documents defines the policies and general requirements for interconnection and parallel operation.

The Interconnection Process for the WMU in Minnesota

The State of Minnesota currently has interconnection process standards in effect to address the interconnection of distributed energy resources (DER) to the distribution grid. Under Minnesota Statute §216B.1611, cooperatives and municipals shall adopt an interconnection process that addresses the same issues as the interconnection process approved by the Minnesota Public Utilities Commission. The MN Interconnection Process (Interconnection Process or MIP) was developed by the Minnesota Municipal Utilities Association, working with STAR Energy Service LLC, and modified for use by Missouri River Energy Services (MRES) and its member municipal utilities (WMU). The MIP applies to any DER no larger than 10-megawatt (MW) AC interconnecting to and operating in parallel with the WMU's distribution system. This interconnection process document, called the DG Workbook-MN, is designed to be customer-centric when explaining the steps and details to interconnect DER systems to the distribution grid. In addition, this process was designed to be consistent with the Rules for Compliance with the FERC that every WMU and MRES agreed to follow with respect to the WMU's and MRES respective responsibilities under PURPA.

Non-Qualifying Facilities: Standby Generation

The WMU is not required to allow customer-owned distributed generation to operate in parallel with the WMU electrical system if the generation does not satisfy qualifying status QF requirements. When a customer wishes to install non-qualifying generation, the WMU will review these requests on a case-by-case basis. These facilities will only be connected to a WMU by an approved transfer switch that will break the circuit connected to the WMU'S electrical system before making the circuit with the customer's generation or with a WMU-approved closed-transition switch.

Standby Services will be available to the non-QF generation based on the WMU's electric service rates, terms and conditions.

Disclaimer: This DG Workbook-MN was prepared, and is provided, by MRES to the WMU to assist the WMU in establishing distributed generation interconnection arrangements. The workbook does not constitute legal advice, and the WMU should consult with its attorney on legal issues relating to distributed generation interconnection arrangements. Portions of the DG Workbook-MN may not be appropriate for the WMU's specific system and other arrangements. The WMU should modify the workbook as necessary to fit the WMU's circumstances, but no modification may alter the rights or obligations of MRES with respect to distributed generation interconnection arrangements. In addition, the WMU may not modify the "Rules for Compliance" contained in Chapter 2 of the DG Workbook-MN, which are based on a "Petition of Waiver" filed with the Federal Energy Regulatory Commission.

CHAPTER 2

**RULES FOR COMPLIANCE
WITH
FEDERAL ENERGY REGULATORY COMMISSION ORDER NO. 69
COGENERATION AND SMALL POWER PRODUCTION**

1. Introduction
 - 1.1 The Public Utility Regulatory Policies Act of 1978 (PURPA), under Section 210, requires the Federal Energy Regulatory Commission (FERC) to develop rules which encourage Cogeneration and Small Power Production. Pursuant to Section 210, regulations have been prepared by FERC and published in the Federal Register (45 FR 12214, February 25, 1980). Missouri Basin Municipal Power Agency, d.b.a. Missouri River Energy Services ("Utility") and its member municipal utilities ("Member"), which are nonregulated electric utilities, will implement, to the extent possible, the procedures and requirements of FERC Order no. 69, pursuant to these rules.
 - 1.2 These rules apply to all entities willing and able to enter into an agreement with the Utility and its Members. Provisions of these rules shall not supersede existing contracts. Entities who have the status of "qualifying small power production facility" and/or "qualifying cogeneration facility" hereinafter referred to collectively as qualifying facility, pursuant to FERC Order No. 70 (45 FR 17959, March 20, 1980) are eligible to apply for service under these rules.
 - 1.3 These rules represent general guidelines since the nature, size, and character of qualifying facilities can vary widely. The Utility reserves the right to evaluate qualifying facilities on a case by case basis.
 - 1.4 The Utility is a wholesale supplier of power and energy to municipal Utilities; and as such, has no sales other than sales for resale. Qualifying facilities which seek to do business with the Utility shall interconnect with the Members, since the Utility has no sales for retail supplemental power, back-up power, maintenance power, and interruptible power.
2. Definitions: Terms as defined in Order No. 69 (18 CFR Part 292) shall have the same meaning for these rules unless further defined.
 - 2.1 Accredited Capacity: The electrical rating given to generating equipment that meets the Utility's criteria for uniform rating of generating equipment. This criteria includes, but is not limited to, reliability, availability, type of equipment, and the degree of coordination between the qualifying facility and the Utility.
 - 2.2 Capacity Costs: The costs associated with providing the capability to deliver energy. They consist of the capital costs of facilities used to generate and

transmit electricity or the cost to purchase such capacity from other utilities.

- 2.3 Demand: The average rate in kilowatts at which electric capacity is made available as determined at the point of measurement during any 30 minute period or any other period to be determined by the Utility.
 - 2.4 Energy: Electric energy as measured in kilowatt hours at the point of measurement.
 - 2.5 Energy Costs: The variable costs associated with the production of electric energy. They represent energy related cost only, or the average cost of purchased energy. Identifiable capacity charges included in purchased power agreements shall not be included in the calculation of the cost of purchased energy.
 - 2.6 Point of Measurement: The point or points where energy and/or demand are metered.
 - 2.7 Point of Interconnection: The point or points at which the qualifying facility is to receive and/or deliver energy or capacity and energy under normal operating conditions.
 - 2.8 Prudent Utility Practice: Any of the practices, methods, and acts engaged in, or approved by, a significant portion of the electrical utility industry consistent with reliability, safety, and expedition.
3. Conditions of Service: The conditions listed in this paragraph shall apply to all qualifying facilities served under these rules.
 - 3.1 The Utility shall purchase energy or capacity and energy from any qualifying facility who offers to sell energy or capacity and energy.
 - 3.2 The Member interconnected with the qualifying facility shall sell any capacity and energy that is required by the qualifying facility to the qualifying facility. The qualifying facility shall be billed under the applicable residential, general, industrial, or contractual service schedule.
 - 3.3 The Member shall offer to provide maintenance, interruptible, supplementary, and back-up power to qualifying facility if requested by the qualifying facility.
 - 3.4 The qualifying facility shall execute written agreements with the Utility and the Member to be interconnected. The Utility reserves the right to waive this requirement. The waiving of this requirement by the Utility does not relinquish the Utility's right to require the execution of a written agreement in the future.

- 3.5 The qualifying facility shall comply with all requirements of the National Electrical Safety Code, American National Standards Institute, Institute of Electrical and Electronic Engineers, American Society of Mechanical Engineers, and any other applicable local, state, or national code and operate its equipment according to prudent utility practice. In case of any conflict in the foregoing codes or standards, the Utility shall decide which shall govern.
- 3.6 The Member shall interconnect in parallel with the qualifying facility. The qualifying facility shall, to the point of interconnection; furnish, install, operate, and maintain in good order and repair and without cost to the Utility or the Member such relays, locks and seals, breakers, automatic synchronizers, and other control and protective equipment as shall be designated by the Member as being required as suitable for the operation of the qualifying facility in parallel with the Member's system. The qualifying facility shall take appropriate steps to insure that operating in parallel will not degrade in any fashion the quality of service that is normally maintained on the Utility's or Member's systems.
- 3.7 Switching equipment capable of isolating the qualifying facility from the Member's system shall be assessable to the Member or its agent at all times.
- 3.8 At its option, the Member may choose to operate, without notice or liability, the switching equipment described in 3.6 and 3.7 above if, in the opinion of the Member or its agent, continued operation of the qualifying facility in connection with the Member's system may create or contribute to a system emergency or safety hazard. The Utility's obligation to purchase from the qualifying facility ceases when the Member or its agent operates the switching equipment described in 3.6 and 3.7 above. The Utility and the Member shall endeavor to minimize any adverse effects of such operation on the qualifying facility.
- 3.9 The qualifying facility shall indemnify and hold harmless the Member and the Utility from any and all liability arising from the operation and interconnection of the customer's facilities. The qualifying facility shall bear full responsibility for the installation and safe operation of the equipment required to generate and deliver energy or capacity and energy to the point of interconnection.
- 3.10 The Utility shall provide, upon request, sufficient data to allow the customer to determine the cost effectiveness of the qualifying facility if it goes into operation pursuant to these rules. The data given will conform to the outline given in § 292.302 (Order no. 69 - 45 FR Part 292).
- 3.11 Any costs of interconnection incurred by the Utility or the Member due to the interconnection of the qualifying facility, which are over and above the interconnection costs that would be incurred due to the connection of a

comparable non-generating customer, shall be the responsibility of the qualifying facility. Interconnection cost may be amortized over a period of time not greater than the length of the contract between the Utility and the qualifying facility.

- 3.12 The Utility may discontinue purchase from the qualifying facility if the Utility determines that purchase from the qualifying facility would result in cost greater than those which the Utility would incur if it did not make such purchases.
 - 3.13 The Utility will give sufficient notice to the qualifying facility when it intends to invoke paragraph 3.12.
 - 3.14 The Member may discontinue sales to the qualifying facility during a system emergency, providing that such discontinuance is on a nondiscriminatory basis.
 - 3.15 By mutual agreement between the Utility and the qualifying facility, the Utility will transmit or arrange for the transmission of energy or capacity and energy to another utility for purchase by that utility. The Utility shall be fairly compensated for such transmission.
 - 3.16 The qualifying facility shall provide an advance payment to the Utility if in the opinion of the Utility or the Member, as appropriate, the costs of interconnection will be excessive and/or the amount of work that must be done by the Member to provide the interconnection facilities will be excessive.
 - 3.17 The Utility and the Member reserve the right to approve, inspect, and test the qualifying facility's generating equipment and all associated equipment.
4. Rates for Sales
- 4.1 The Utility shall purchase the surplus energy or surplus capacity and energy from qualifying facilities in which construction was commenced on or before November 8, 1978. The rate paid by the Utility to the qualifying facility for such surplus energy or surplus capacity and energy shall be a negotiated rate.
 - 4.2 Qualifying facilities of 100 kW or less shall be paid a standard rate, except as otherwise stated in 4.1, based on avoided cost as outlined in 4.4 and 4.5. The installation of metering equipment shall be according to Utility policy.
 - 4.3 For qualifying facilities of 100 kW or more, the qualifying facility may negotiate a contract with the Utility. For qualifying facilities who choose not to negotiate, or in the event of an impasse in negotiations between the Utility and the qualifying facility, avoided costs will be paid. Such avoided costs shall be determined as outlined in 4.4 and 4.5, except as otherwise stated in 4.1.

- 4.4 Avoided energy costs shall be the estimated or actual energy costs adjusted for the following items:
- A. The costs or savings to the Utility resulting from variations in line losses from those that would have existed in the absence of purchase from the qualifying facility, if the Utility generated or purchased an equivalent amount of energy.
 - B. Sanctions imposed for noncompliance with these rules and any contract between the Utility and the qualifying facility.
- 4.5 Capacity payments shall be made only in those periods of time in which the Utility is able to avoid capacity purchases and the qualifying facility enters into a legally enforceable contract to provide accredited capacity. The payment for the capacity purchase from the qualifying facility shall reflect the cost of the Utility's alternate source of capacity of similar capability. The capacity payments shall take into account the following items of information.
- A. Length of the contract term.
 - B. Reasonable scheduling of maintenance.
 - C. Willingness and ability of the customer to allow the Utility to dispatch the customer's generation.
 - D. The Utility's ability to defer a purchase from another source or to defer construction of a facility or a portion of a facility.
 - E. Sanctions imposed for noncompliance with these rules and any contract between the Utility and qualifying facility.
 - F. Availability and reliability of the qualifying facility.
- 4.6 In the event of the imposition of any tax or payment in lieu thereof on the Utility by any lawful authority on the production, transmission, sale, or purchase of energy or capacity and energy that would not occur due to a comparable non-generating customer, such tax or payment shall be the responsibility of the qualifying facility.

CHAPTER 3

AVOIDED COSTS AND CAPACITY PLANS

MISSOURI RIVER ENERGY SERVICES COMPLIANCE WITH FEDERAL ENERGY REGULATORY COMMISSION'S REGULATIONS ORDER 69, 18 CFR PART 292.302

FERC has adopted certain rules and regulations which require MRES to prepare and maintain for public inspection electric utility system cost and rate data as defined in the regulations Section 292.302(b)(1) through (d).

The purpose of this submittal is to make available to potential cogenerators and small power producers present and anticipated future avoided cost data of electric energy and capacity for MRES. This data is intended to help potential owners of such QFs to evaluate the financial feasibility of a cogeneration or small power production project.

This data is not intended to represent a rate for purchases from QFs, but rather the first step towards rate determination.

Rates for QF

1. 100 kW or less: Any QF 100 kW or less shall be paid a standard rate as per PURPA or as otherwise required by law. MRES Board of Directors sets PURPA Standard Rate each year for the following calendar year.
2. Greater than 100 kW: Rates to QFs in this category are negotiated and will also take into consideration those factors enumerated in Section 292.304 of the regulations.

PURPA AVOIDED ENERGY COST
Section 292.302 (b) (1)
Date of last update: 11/2020

Avoided Energy Cost

Seasonal Avoided Energy Costs
(cents /kWh):

		2020*		2021		2022	
		Summer	Winter	Summer	Winter	Summer	Winter
On- Peak Off- Peak	On- Peak	2.01	1.88	2.24	2.10	2.32	2.18
	Off- Peak	1.41	1.50	1.57	1.67	1.64	1.74

		2023		2024		2025	
		Summer	Winter	Summer	Winter	Summer	Winter
On- Peak Off- Peak	On- Peak	2.42	2.27	2.49	2.34	2.58	2.42
	Off- Peak	1.71	1.82	1.77	1.88	1.82	1.94

Annual Avoided Costs (All Hours)
(cents per kWh):

2020*	2021	2022	2023	2024	2025
1.71	1.91	1.98	2.06	2.13	2.20

Rates

For QF facilities 100 kW or less, the PURPA Standard Rate is 1.91 cents per kWh for 2021 adopted in October 2020 by the MRES Board of Directors.

Qualifying facilities greater than 100 kW will be treated on a case-by-case basis as allowed by federal regulations.

* Historic as of 8/17/20

**Electric Utility's Plan for Additions of Capacity
Per PURPA
292.302 (b) (2)**

<u>Year</u>	<u>Planned Capacity Additions</u>			<u>Planned Capacity Retirements</u>	<u>Planned Firm Purchases</u>
	<u>Unit Name</u>	<u>Size (MW)</u>	<u>Unit Type</u>		
2020	Red Rock	55	Hydro	None	None
2025	Wind Gen	30	Wind	None	None
2026	Wind Gen	10	Wind	None	None
2033	Wind Gen	20	Wind	None	None

**Estimated Capacity Costs
Per PURPA
292.302 (b) (3)**

Planned Unit Addition or Firm Purchase	Planned Capacity Cost (\$/kW)
Red Rock Hydro Project(2020)	\$7,286
Wind Generation Project (2025)	n/a - leased
Wind Generation Project (2026)	n/a – leased
Wind Generation Project (2033)	n/a – leased

CHAPTER 4

MN INTERCONNECTION PROCESS

Process Overview

SUMMARY

Interconnection Process for Distributed Energy Resources less than 10 megawatt (MW) interconnected to the Distribution System of a Municipal in the State of Minnesota.

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Foreword

The State of Minnesota currently has interconnection process standards in effect to address the interconnection of distributed energy resources (DER) to the distribution grid. Under Minnesota Statute §216B.1611, cooperatives and municipals shall adopt an interconnection process that addresses the same issues as the interconnection process approved by the Minnesota Public Utilities Commission. The MN Interconnection Process (Interconnection Process or MIP) was developed by the Minnesota Municipal Utilities Association, working with STAR Energy Service LLC, and modified for use by Missouri River Energy Services (MRES) and its member municipal utilities (WMU). The MIP applies to any DER no larger than 10-megawatt (MW) AC interconnecting to and operating in parallel with the WMU's Distribution System. This interconnection process document is designed to be customer-centric when explaining the steps and details to interconnect DER systems to the distribution grid. In addition, this process was designed to be consistent with the Rules for Compliance with the Federal Energy Regulatory Commission (FERC) that every WMU and MRES agreed to follow with respect to the WMU's and MRES respective responsibilities under the Public Utility Regulatory Policies Act of 1978 (PURPA).

The MIP is divided into three tracks: Simplified Process, Fast Track Process, and Study Process. But this first document, the Process Overview, generally describes the process along with terms and conditions that govern each of the three interconnection process tracks. For the majority of DER interconnections, only the Process Overview and the Simplified Process parts will apply. For larger and more complex DER interconnections, the Fast Track Process or the Study Process may apply.

As part of the Interconnection Process documents, the MN Interconnection Agreement(s) are to be executed prior to interconnecting a DER system to the utility distribution grid. For most DER interconnections, the WMU's MN Standard Agreement which is developed for 100 kW or less generation units will be used. For DER systems that do not fall under the terms of the MN Standard Agreement, the MN Interconnection Agreement will apply.

The process to interconnect a DER system to the distribution grid starts with the submission of an Interconnection Application. Each track has different information that is requested in the application and the non-refundable interconnection application fees will vary. Both the WMU and the interconnecting customer have timelines that are enforced to ensure a timely application review, contract execution and interconnection commissioning.

The key to a successful interconnection of a DER system is communication between all parties. Timely submission of the Interconnection Application prior to the purchase and installation of a DER system is strongly recommended. The WMU encourages customers to ask questions

throughout the interconnection process. Interconnecting a DER system to the distribution grid is not an effortless process, but it does not need to be a problematic process either.

1 Key Terminology

1.1. Distributed Energy Resource

Distributed Energy Resource (DER) is often referred to in interconnection processes as Distributed Generation (DG) and on occasion is also interchanged with the term Qualifying Facility (QF). This Interconnection Process uses the term DER to address all types of generation and energy resources that can be interconnected to the electric Distribution System. DER technologies can include photovoltaic solar systems, wind turbines, storage batteries or diesel generators and are not limited to renewable types of technologies.

1.2. Point of Common Coupling (PCC) / Point of DER Connection (POC)

DER systems often reside behind the WMU's revenue meter of a residence or business. The meter is normally the point of demarcation between the WMU-owned equipment and the customer-owned equipment. The term Point of Common Coupling (PCC) is the demarcation location between the WMU and the customer.

The Point of DER Connection (PoC) can be different from the PCC. The PoC is the location where a DER system would interconnect to the electrical system normally owned by the customer. For example, the PoC for a rooftop photovoltaic solar system may be the main electrical panel in a customer's home.

1.3. Capacity

Throughout the Interconnection Process will be references to the capacity of the DER system. In most cases, the capacity listed is referring to the Nameplate Capacity of the DER system. All capacity referenced in the Interconnection Process will be in alternating current (AC).

There can be multiple DER systems with different PoCs that all have the same PCC submitted on a single interconnection application. The capacity for this type of interconnection would be the aggregate Nameplate Capacity of all DER systems at the individual PoCs. Additional examples of DER system arrangements can be seen in Section 13 under the definition of Point of Common Coupling.

2 Roles

2.1. Overview

During the Interconnection Process for a proposed DER system, there may be multiple entities involved in the application, approval and commissioning processes. The main entities that are involved during the Interconnection Process for a proposed DER

system are the Interconnection Customer, the Application Agent and the DER Interconnection Coordinator. Official definitions of each entity are defined in the Glossary (Section 13). Additional details are explained in the subsections below.

2.2. DER Interconnection Coordinator

The WMU is referred to as the Area Electric Power Supply (Area EPS) Operator in this Interconnection Process. The Area EPS Operator shall designate a DER Interconnection Coordinator to serve as a single point of contact from which general information on the application process may be obtained. The DER Interconnection Coordinator shall be available to provide coordination assistance with the Interconnection Customer but is not responsible for directly answering or resolving all of the issues involved in review and implementation of the Interconnection Process and standards.

The contact information of the DER Interconnection Coordinator will be posted on the Area EPS Operator's website if feasible.

2.3. Interconnection Customer

The owner of the proposed DER system and the entity requesting interconnection to the distribution system.

2.4. Application Agent

The Interconnection Customer may designate, on the Interconnection Application or in writing after the application has been submitted, an Application Agent to serve as a single point of contact to coordinate with the DER Interconnection Coordinator on their behalf. Designation of an Application Agent does not absolve the Interconnection Customer from signing application documents and the responsibilities outlined in the Interconnection Process or in MN Interconnection Agreements. DER vendors, project managers or electricians are common entities that the Interconnection Customer may designate to perform this role.

2.5. Engineering Roles

Each party may designate a specific person to be a single point of contact to provide technical expertise during the Interconnection Process for themselves or their organization. The person to supply engineering expertise may be a third party such as an engineering consultant or manufacturer's engineer.

3 Processes

3.1. Overview

The Interconnection Process applies to any DER no larger than 10 MW AC interconnecting to and operating in parallel with an Area EPS Distribution System in Minnesota. Interested parties with plans to interconnect DER systems larger than 10 MW AC to the Distribution System should contact the Area EPS Operator for the specific interconnection process. The Federal Energy Regulatory Commission’s (FERC) interconnection rules will supersede any interconnection process the Area EPS Operator has for DER system interconnections.

The Interconnection Process for DER is broken into three different tracks: the Simplified Process, the Fast Track Process, and the Study Process. The general classification of each track is summarized in Table 3.1 below.

Table 3.1. Interconnection Process Tracks

Track	DER Technology	Size Limitations
Simplified Process	Certified Inverter only	20 kW AC
Fast Track Process	All types	5 MW AC
Study Process	All types	10 MW AC

If engineering screens are failed during the application process, a proposed DER interconnection may be moved into a different track. When a proposed DER interconnection is moved into a different track, additional information may be requested and additional fees may apply.

3.2. Importance of Process Timelines

It is very important to pay attention to timelines listed for each process track. The timelines exist for an orderly and efficient process to interconnect DER systems to the Distribution System. If a timeline is missed by an Interconnection Customer, without the Interconnection Customer requesting a timeline extension explained in Section 10, the Interconnection Application will be deemed withdrawn by the Area EPS Operator.

The Area EPS Operator also must abide by the timelines listed for each process track. The process for an Area EPS Operator to request timeline extensions is also addressed in Section 10.

Unless otherwise stated, all time frames are measured in Business Days. For purposes of measuring these time intervals, the time shall be computed so as to exclude the first

and include the last day of the prescribed duration of time. Any communication sent or received after 4:30 p.m. Central Prevailing Time or on a Saturday, Sunday or Holiday shall be considered to be sent on the next Business Day.

3.3. Simplified Process

An application to interconnect a certified¹, inverter-based DER system no larger than 20 kilowatts (kW) shall be evaluated under the Simplified Process. A common form of DER inverter certification is UL 1741. Proposed DER systems that require Area EPS system modifications to accommodate the interconnection do not qualify for the Simplified Process. A transformer change, fusing upgrades or line extensions are common examples of Area EPS system modification. Simplified Process eligibility does not imply or indicate the Interconnection Application will pass the initial review screens. Failure to pass the screens will route the Interconnection Application to the Fast Track Process.

3.4. Fast Track Process

An application to interconnect a DER shall be evaluated under the Fast Track Process if the eligibility requirements are not exceeded in Table 3.2 and the application does not qualify for the Simplified Process. Fast Track eligibility for DERs is determined based upon the generator type, the size of the generator, voltage of the line, and the location and type of line at the Point of Common Coupling (PCC). All synchronous and induction machines must be no larger than 2 MW to be eligible for Fast Track Process consideration.

Table 3.2. Fast Track Eligibility for DER

Line Voltage	Fast Track Eligibility² Regardless of Location	Fast Track Eligibility for certified, inverter-based DER on a Mainline³ and ≤ 2.5 Electrical Circuit Miles from Substation⁴
< 5 kV	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 1 MW	≤ 2 MW
≥ 15 kV and < 30 kV	≤ 2 MW	≤ 4 MW
≥ 30 kV and ≤ 69 kV	≤ 4 MW	≤ 5 MW

¹ Additional information regarding certified equipment is found in Sections 14 and 15.

² Synchronous and induction machine eligibility is limited to no more than 2 MW even when line voltage is greater than 15 kV.

³ For purposes of this table, a Mainline is the three-phase backbone of a circuit. It will typically constitute lines with wire sizes of 4/0 American wire gauge, 266 kcmil, 336.4 kcmil, 397.5 kcmil, 477 kcmil and 795 kcmil.

⁴ An Interconnection Customer can determine this information about its proposed interconnection location in advance by requesting a pre-application report described in Section 5.

In addition to the size threshold, the Interconnection Customer’s proposed DER must meet the codes, standards and certification requirements found in Section 14 and Section 15.

3.5. Study Process

An application to interconnect a DER that does not meet the Simplified Process or Fast Track Process eligibility requirements or does not pass the review as described in either process, shall be evaluated under the Study Process.

3.6. Process Assistance

Prior to submitting an Interconnection Application, the Interconnection Customer may ask the Area EPS Operator’s DER Interconnection Coordinator which process track a proposed interconnection is subject to and about additional details regarding each process track.

An Interconnection Customer can obtain, through an informal request, general information about the Interconnection Process and potentially Affected System(s) for a proposed interconnection at a specific location. The existing electric system information provided to the Interconnection Customer should include relevant system study results, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the Area EPS Operator’s System. Information will be provided to the extent such provision does not violate the privacy policies of the Area EPS Operator, confidentiality provisions of prior agreements or critical infrastructure requirements. The Area EPS Operator shall comply with reasonable requests for such information.

4 Interconnection Application

4.1. Overview

Each process track has different information that needs to be provided to the Area EPS Operator. Table 4.1 indicates which application is to be completed in its entirety and submitted to the Area EPS Operator to start the interconnection process for the proposed DER system.

Table 4.1. Interconnection Application

Process Track	Application
Simplified	Simplified Interconnection Application
Fast Track	Standard Interconnection Application
Study	Standard Interconnection Application

The Area EPS Operator will accept Interconnection Applications submitted electronically to an email address specified by the Area EPS Operator.

4.2. Availability of Information

The Area EPS Operator will attempt to provide all necessary Interconnection Applications, Interconnection Process documents and sample MN Interconnection Agreements on its website if possible. If a website is not available, the applicable documents will be readily available at the Area EPS Operator’s main office.

The Area EPS Operator will establish a public queue of active interconnection applications on its website once the Area EPS Operator has received at least 40 completed Interconnection Applications in a year. The public queue will be updated, at minimum, on a monthly basis.

4.3. Interconnection Application Process Fees

Each Interconnection Application submitted to the Area EPS Operator must include the appropriate interconnection application process fee prior to the Area EPS Operator reviewing the Interconnection Application. The required process fee for each process track is listed in Table 4.2.

Table 4.2. Interconnection Application Process Fee

Process Track		Process Fee
Simplified		\$100
Fast Track	Certified ⁵ System	\$100 + \$1/kW
	Non-Certified System	\$100 + \$2/kW
Study		\$1,000 + \$2/kW down payment. Additional study fees may apply.

4.4. Application Review Timelines

The Interconnection Application shall be date- and time-stamped upon initial, and if necessary, resubmission receipt. The Area EPS Operator shall notify the Interconnection Customer within ten (10) Business Days if the Interconnection Application is deemed incomplete. This notification shall include a written list detailing all information that must be provided to complete the Interconnection Application. Depending on the process track, the Interconnection Customer has between five (5) and ten (10) Business Days to provide the missing information unless the Interconnection Customer submits a valid request for a timeline extension. Failure to

⁵ Additional information regarding certified equipment is found in Sections 14 and 15.

submit the requested information within the stated timeline will result in the Interconnection Application being withdrawn.

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

Depending on the process track, the Area EPS Operator has either a total of twenty (20) Business Days or twenty-five (25) Business Days to complete the Interconnection Application review and notify the Interconnection Customer as to whether the proposed DER system may proceed with the Interconnection Process or requires additional engineering studies. The period of time when waiting for the Interconnection Customer to provide missing information is not included in the Area EPS Operator's twenty (20) Business Days or twenty-five (25) Business Days review timeline (See Exhibit A for summary of timelines).

4.5. Comparability

The Area EPS Operator shall receive, process and analyze all Interconnection Applications in a timely manner. The Area EPS Operator shall use the same Reasonable Efforts in processing and analyzing Interconnection Applications from all Interconnection Customers.

4.6. Changing Process Tracks

During the review of the initially submitted Interconnection Application for the proposed DER system, the Area EPS Operator may determine the proposed DER system should be in a different process track. For proposed DER systems that are moved into a different process track after submittal of the initial application, the difference between the originally submitted processing fee and the current process track's processing fee will be assessed. In addition, the Area EPS Operator may request the Interconnection Customer to provide additional information regarding the proposed DER system.

4.7. Queue Position

The Area EPS Operator shall maintain a single, administrative queue and may manage the queue by geographical region. The queue position of each completed Interconnection Application is used to determine the engineering review. The queue position is also used to determine the cost responsibility for system upgrades necessary to accommodate the interconnection.

An Interconnection Application will retain its queue number even when it is moved into a different process track. An Interconnection Application can lose its queue position if the Interconnection Customer misses timelines in the applicable process track. The Interconnection Customer and Area EPS Operator have the opportunity to request timeline extensions as explained in Section 10.

4.8. Site Control

Documentation of site control must be submitted with the Interconnection Application. Site control may be demonstrated by any of the following:

- Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the DER system.
- An option to purchase or acquire a leasehold site for constructing the DER system.
- An exclusivity or other business relationship between the Interconnection Customer and the entity having the right to sell, lease, or grant to the Interconnection Customer the right to possess or occupy a site for constructing the DER system.

For DER in the Simplified Process, proof of site control may be demonstrated by the site owner's signature on the Simplified Interconnection Application.

5 Pre-Application Report

5.1. Pre-Application Report Requests

The Interconnection Customer may submit a Pre-Application Report Request, including a non-refundable fee of \$300, for a Pre-Application Report on a proposed project at a specific site. The Interconnection Customer must fill out the Pre-Application Request form as completely as possible. The Area EPS Operator shall provide the readily available data listed in Section 5.3 within fifteen (15) Business Days of receipt of a completed request form and payment. The Pre-Application Report produced by the Area EPS Operator is non-binding, does not confer any rights, and does not preclude the Interconnection Customer from any interconnection process steps including submission of the Interconnection Application.

5.2. Information Provided

Using the information provided in the Pre-Application Report Request form, the Area EPS Operator will identify the substation/area bus, bank or circuit likely to serve the proposed PCC. This selection by the Area EPS Operator does not necessarily indicate,

after application of the screens and/or study, that this would be the circuit to which the project ultimately connects. The Interconnection Customer must request additional Pre-Application Reports if information about multiple PCCs is requested.

The Pre-Application Report will only include existing data. A request for a Pre-Application Report does not obligate the Area EPS Operator to conduct a study or other analysis of the proposed DER in the event that data is not readily available. The Area EPS Operator will provide the Interconnection Customer with the data that is available. The confidentiality provisions in Section 12.1 **Error! Reference source not found.** apply to Pre-Application Reports.

5.3. Pre-Application Report Components

The Pre-Application Report shall include the following information, provided the data currently exists and is readily available:

- Total capacity (in megawatts (MW)) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed PCC.
- Existing aggregate generation capacity (in MW) interconnected to a substation/area bus, bank or circuit (i.e. amount of generation online) likely to serve the proposed PCC.
- Aggregate queued generation capacity (in MW) for a substation/area bus, bank or circuit (i.e. amount of generation in the queue) likely to serve the proposed PCC.
- Available capacity (in MW) of substation/area bus or bank and circuit likely to serve the proposed PCC (i.e. total capacity less the sum of existing aggregate generation capacity and aggregate queued generation capacity).
- Substation nominal distribution voltage and/or transmission nominal voltage, if applicable.
- Nominal distribution circuit voltage at the proposed PCC.
- Approximate circuit distance between the proposed PCC and the substation.
- Relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load and absolute minimum load, when available.
- Whether the PCC is located behind a line voltage regulator.

- Number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed PCC and the substation/area. Identify whether the substation has a load tap changer.
- Number of phases available on the Area EPS medium voltage system at the proposed PCC. If a single phase, distance from the three-phase circuit.
- Limiting conductor ratings from the proposed PCC to the distribution substation.
- Whether the PCC is located on a spot network, grid network, or radial supply.
- Based on the proposed PCC, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.

6 Capacity of the Distributed Energy Resources

6.1. Existing DER System Expansion

If the Interconnection Application is for an increase in capacity to an existing DER system, the Interconnection Application shall be evaluated on the basis of the total new alternating current (AC) capacity of the DER. The maximum capacity for the DER shall be the aggregate maximum Nameplate Rating unless the conditions in Section 6.3 are met.

6.2. New DER Systems

An Interconnection Application for a DER that includes multiple energy production devices (i.e. solar and storage) at a site for which the Interconnection Customer seeks a simple Point of Common Coupling, shall be evaluated on the basis of the aggregated maximum Nameplate Rating unless the conditions in Section 6.3 are met.

6.3. Limited Capacity

A DER system may include devices (i.e. control systems, power relays or other similar device settings) that can limit the maximum capacity at which the DER system can generate into the Area EPS Operator's distribution system. For a DER system that include capacity limited devices, the Interconnection Customer must obtain the Area EPS Operator's agreement to consider the DER system with the Nameplate Rating as the limited capacity. The Area EPS Operator's agreement shall not be unreasonably withheld if proper documentation is provided showing the effective limit active power output will not adversely affect the safety and reliability of the Area EPS Operator's distribution system. If the Area EPS Operator does not agree, the Interconnection

Application must be withdrawn or revised to specify the maximum capacity that the DER system is capable of injecting into the Area EPS Operator's distribution system without such limitations. Nothing in this section shall prevent the Area EPS Operator from considering a higher output (i.e. aggregate Nameplate Rating), if the limitations do not provide adequate assurance, when evaluating the system impacts.

7 Modification to Interconnection Applications

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.

Additional information regarding modifications to interconnection applications is found in each process track document.

8 MN Interconnection Agreements

8.1. Timelines

After the Interconnection Application has been approved by the Area EPS Operator, the Area EPS Operator shall provide the Interconnection Customer with an executable MN Interconnection Agreement within five (5) Business Days. The Interconnection Customer shall have thirty (30) Business Days to sign and return the MN Interconnection Agreement to the Area EPS Operator. The Area EPS Operator shall sign the MN Interconnection Agreement within five (5) business days after receiving the signed MN Interconnection Agreement from the Interconnection Customer.

If the Interconnection Customer fails to return a signed MN Interconnection Agreement to the Area EPS Operator within thirty (30) Business Days and fails to request an extension as explained in Section 10, the Interconnection Application will be deemed withdrawn.

8.2. Types of Agreements

There are two main types of MN Interconnection Agreements that may be executed with an approved Interconnection Application. In general, Interconnection Customers with a proposed DER system that qualifies for the Simplified Process track will sign the

MN Standard Agreement. Proposed DER systems 100 kW or less that are under the Fast Track process may also sign the MN Standard Agreement. All other sized DER system will sign the MN Interconnection Agreement.

Table 8.1. MN Interconnection Agreements

Process Track		MN Interconnection Agreement
Simplified		MN Standard Agreement
Fast Track	Qualifies for Net Energy Billing	MN Standard Agreement
	100 kW or Less & Area EPS Agrees to Purchase Excess Generation	MN Standard Agreement
	All Other DER systems	MN Interconnection Agreement
Study		MN Interconnection Agreement

Interconnection Customers may choose to sign the MN Interconnection Agreement in lieu of the MN Standard Agreement. A separate power purchase agreement will also need to be executed if the MN Standard Agreement is not utilized. Interconnection of the proposed DER system will not occur until a signed MN Standard Agreement or the MN Interconnection Agreement is returned to the Area EPS Operator no later than five (5) days prior to scheduled testing and inspection of the DER system and the Customer’s Interconnection Facilities.

9 Interconnection

9.1. 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.

9.2. Inspection, Testing and Commissioning

The Interconnection Customer shall arrange for the inspection and testing of the DER system and the Customer’s Interconnection Facilities prior to interconnection pursuant to Minnesota Interconnection Technical Requirements. Commissioning tests of the Interconnection Customer’s installed equipment shall be performed pursuant to applicable codes and standards of Minnesota’s Technical Requirements and Section 15.

The Interconnection Customer shall notify the Area EPS Operator of testing and inspection no fewer than five (5) Business Days in advance, or as may be agreed to by the Parties. Depending on the process track, either a Certificate of Completion or a testing procedure shall be submitted to the Area EPS Operator prior to the testing and inspection date. The Area EPS Operator shall, and MRES may, send qualified personnel to the DER site to inspect the interconnection and witness the testing. Testing and inspection shall occur on a Business Day at a mutually agreed upon time and date. The Area EPS Operator and MRES may waive the right to witness the testing.

9.3. 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 MN Standard Agreement or MN Interconnection Agreement.

9.4. Technical Requirements

The Area EPS Operator shall use Reasonable Efforts to provide the Interconnection Customer the Minnesota Technical Requirements by providing the document with the notice of approval of the interconnection application or by providing a website link to the document. Additionally, the Area EPS Operator shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. Unless notified by the Area EPS Operator, the Interconnection Customer only needs to be in compliance with the current version of the Minnesota Technical Requirements at the time of interconnection.

9.5. Authorization for Parallel Operations

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 notification that all of the following have occurred: 1) the Interconnection Customer has complied with all applicable parallel operations requirements; 2) the completion of a successful testing and inspection of the DER system; and 3) all payments for issued bills related to the Interconnection Process that are past due have been paid in full. Such authorization shall not be unreasonably withheld, conditioned or delayed.

10 Extension of Timelines

10.1. 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.

10.2. 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.

11 Disputes

11.1. Procedures

The Parties agree to use good faith efforts to attempt to resolve all disputes arising out of the Interconnection Process and associated study and MN Interconnection Agreements. The Parties agree to follow the established dispute resolution policy adopted by the Area EPS Operator.

12 Clauses

12.1. Confidentiality

Confidential Information shall mean any confidential and/or proprietary information provided by one Party to the other Party that is clearly marked or otherwise designated "Confidential." For purposes of these procedures, design, operating specifications, and metering data provided by the Interconnection Customer may be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such. If requested by a Party, the other Party shall provide in writing the basis for asserting that the information warrants confidential treatment. Parties providing a Governmental Authority trade secret, privileged or otherwise not public or nonpublic data under Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13, shall identify such data consistent with the Commission's September 1, 1999 Revised Procedures for Handling Trade Secret and Privileged Data, available online at: <https://mn.gov/puc/puc-documents/#4>.

Confidential Information does not include information previously in the public domain with proper authorization, required to be publicly submitted or divulged by Governmental Authorities (after notice to the other Party and after exhausting any opportunity to oppose such publication or release), or necessary to be publicly divulged in an action to enforce these procedures. Each Party receiving Confidential Information shall hold such information in confidence and shall not disclose it to any third party nor to the public without prior written authorization from the Party providing that information, except to fulfill obligations under these procedures, or to fulfill legal or regulatory requirements that could not otherwise be fulfilled by not making the information public.

Each Party shall hold in confidence and shall not disclose Confidential Information, to any person (except employees, officers, representatives and agents, who agree to be bound by this section). Confidential Information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires any Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the provisions of this Interconnection Process and terms of the MN Interconnection Agreement. In the absence of a protective order or waiver the Party shall disclose such confidential information which, in the opinion of its counsel, the party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded to any confidential information furnished.

Critical infrastructure information or information that is deemed or otherwise designated by a Party as Critical Energy/Electric Infrastructure Information (CEII) pursuant to FERC regulation, [18 C.F.R. §388.133](#), as may be amended from time to time, may be subject to further protections for disclosure as required by FERC or FERC regulations or orders and the disclosing Party's CEII policies. Each Party shall employ at least the same standard of care to protect Confidential Information obtained from another Party as it employs to protect its own Confidential Information.

Each Party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of Confidential Information without bond or proof of damages and may seek other remedies available at law or in equity for breach of this provision.

12.2. Non-Warranty

The Area EPS Operator and MRES 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. The Area EPS Operator does not guarantee uninterrupted power supply to the DER and will operate the Distribution System with the same reliability standards for the entire customer base.

12.3. Indemnification

Each Party is protected from liability incurred to third parties as a result of carrying out the provisions of this Interconnection Process and associated MN Interconnection Agreement. The Parties shall at all times indemnify, defend, and save the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inactions of its obligations on behalf of the indemnifying Party under this Interconnection Process or the MN Interconnection Agreement, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

This indemnification obligation shall apply notwithstanding any negligent or intentional acts, errors or omissions of the indemnified Party, but the indemnifying Party's liability to indemnify the indemnified Party shall be reduced in proportion to the percentage by which the indemnified Party's negligent or intentional acts, errors or omissions caused the damages.

Neither Party shall be indemnified for its damages resulting from its sole negligence, intentional acts or willful misconduct. These indemnity provisions shall not be construed to relieve any insurer of its obligation to pay claims consistent with the provisions of a valid insurance policy.

If an indemnified person is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

If an indemnifying party is obligated to indemnify and hold any indemnified person harmless under this article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.

Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this article may apply, the indemnified person shall notify the indemnifying party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying party.

12.4. Limitation of Liability

Each Party's liability to the other Parties for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of its obligations under this Interconnection Process or the MN Interconnection Agreement shall be limited to the amount of direct damage actually incurred. In no event shall a party be liable to another party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under in Section 12.3. In addition, the Area EPS Operator's liability to Customer under this Interconnection Process or the MN Interconnection Agreement shall be further limited as set forth in the Area EPS Operator's tariffs and/or terms and conditions for electric service, which limitations are incorporated herein by this reference.

13 Glossary

Affected System – Another Area EPS Operator’s System, Transmission Owner’s Transmission System, or Transmission System connected generation which may be affected by the proposed interconnection.

Application Agent – A person designated in writing by the Interconnection Customer to represent or provide information to the Area EPS on the Interconnection Customer’s behalf throughout the interconnection process.

Area EPS – The electric power distribution system connected at the Point of Common Coupling.

Area EPS Operator – An entity that owns, controls, or operates the electric power distribution systems that are used for the provision of electric service in Minnesota. For this Interconnection Process the Area EPS Operator is **Willmar Municipal Utilities**.

Business Day – Monday through Friday, excluding Holidays as defined by Minn. Stat. §645.44, Subdivision 5. Any communication to have been sent or received after 4:30 p.m. Central Prevailing Time or on a Saturday, Sunday or holiday shall be considered to have been sent on the next Business Day.

Certified Equipment – Certified equipment is equipment that has been tested by a nationally recognized lab meeting a specific standard. For DER systems, a UL 1741 listing is a common form of DER inverter certification. Additional information is contained in Sections 14 and 15.

Confidential Information – Any confidential and/or proprietary information provided by one Party to another Party and is clearly marked or otherwise designated “Confidential.” All procedures, design, operating specifications, and metering data provided by the Interconnection Customer may be deemed Confidential Information. See Section 12.1 for further information.

DER Interconnection Coordinator – The person or persons designated by the AREA EPS Operator to provide a single point of coordination with the Interconnection Customer for the generation interconnection process.

Distributed Energy Resource (DER) – A source of electric power that is not directly connected to a bulk power system or central station service. DER includes both generators and energy storage technologies capable of exporting active power to an EPS. An interconnection system or a supplemental DER device that is necessary for compliance with this standard is part of a DER. For the purpose of the Interconnection Process and MN Interconnection Agreements, the DER includes the Interconnection Customer’s Interconnection Facilities but shall not include the Area EPS Operator’s Interconnection Facilities.

Distribution System – The Area EPS facilities which are not part of the Local EPS, Transmission System or any generation system.

Distribution Upgrades – The additions, modifications, and upgrades to the Distribution System at or beyond the Point of Common Coupling to facilitate interconnection of the DER and render the distribution service necessary to effect the Interconnection Customer’s connection to the Distribution System. Distribution Upgrades do not include Interconnection Facilities.

Electric Power System (EPS) – The facilities that deliver electric power to a load.

Fast Track Process – The procedure as described in the Interconnection Process - Fast Track Process for evaluating an Interconnection Application for a DER that meets the eligibility requirements of Section 3.4.

Force Majeure Event – An act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, an order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or another cause beyond a Party’s control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing.

Good Utility Practice – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and act which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Area EPS Operator, or any Affiliate thereof. The governing authority of the municipal Utility is the authority governing interconnection requirements unless otherwise provided for in the Minnesota Technical Requirements.

Interconnection and Power Purchase Agreement – 100 kW or Less (MN Standard Agreement)- The Area EPS Operator’s agreement for DER facilities that may be applied to all qualifying new and existing interconnections between the Area EPS Operator and a DER system having capacity 100 kilowatts or less. **MN Interconnection Agreement** – The terms and conditions between the Area EPS Operator and Interconnection Customer (Parties). See Section 8 for when the MN Standard Agreement or MN Interconnection Agreement applies.

Interconnection Application – The Simplified Application Form or Interconnection Application Form, as applicable, pursuant to Section 4.

Interconnection Customer – The person or entity, including the Area EPS Operator, who will be the owner of the DER and who proposes to interconnect a DER(s) with the Area EPS Operator’s Distribution System. The Interconnection Customer is responsible for ensuring the DER(s) is designed, operated and maintained in compliance with the Minnesota Technical Requirements.

Interconnection Facilities – The Area EPS Operator’s Interconnection Facilities and the Interconnection Customer’s Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the DER and the Point of Common Coupling, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the Area EPS Operator’s System. Some examples of Customer Interconnection Facilities include: supplemental DER devices, inverters, and associated wiring and cables up to the Point of DER Connection. Some examples of Area EPS Operator Interconnection Facilities include sole use facilities; such as, line extensions, controls, relays, switches, breakers, transformers and shall not include Distribution Upgrades or Network Upgrades.

Interconnection Process – The Area EPS Operator’s interconnection standards in this document.

Material Modification – A modification to machine data, equipment configuration or to the interconnection site of the DER at any time after receiving notification by the Area EPS Operator of a complete Interconnection Application that has a material impact on the cost, timing, or design of any Interconnection Facilities or Upgrades, or a material impact on the cost, timing or design of any Interconnection Application with a later Queue Position or the safety or reliability of the Area EPS.⁶

⁶ 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. A Material Modification shall not include a modification from the approved Interconnection Application that: (1) changes the ownership of a Distributed Energy Resource; (2) changes the address of the Distributed Energy Resource, so long as the physical point of common coupling remains the same; (3) changes or replaces generating equipment such as generator(s), inverter(s), solar panel(s), transformers, relaying, controls, etc. and substitutes equipment that is a like-kind substitution in certification, size, ratings, impedances, efficiencies or capabilities of the equipment; and/or (4) increases the DC/AC ratio but does not increase the maximum AC output capability of the Distributed Energy Resource in a way that is likely to have an impact on technical review.

Technical Requirements – The term including all of the DER technical interconnection requirement documents, including the Technical Requirements for Less than 40 kW and Technical Requirements for 40 kW through 10 MW.

Nameplate Rating – nominal voltage (V), current (A), maximum active power (kWac), apparent power (kVA), and reactive power (kVar) at which a DER is capable of sustained operation. For a Local EPS with multiple DER units, the aggregate nameplate rating is equal to the sum of all DERs nameplate rating in the Local EPS. As described in Section 6.3, the DER system’s capacity may, with the Area EPS’s agreement, be limited through use of control systems, power relays or similar device settings or adjustments as identified in IEEE 1547. The nameplate ratings referenced in the Interconnection Process are alternating current nameplate DER ratings at the Point of DER Connection.

Network Upgrades – Additions, modifications, and upgrades to the Transmission System required at or beyond the point at which the DER interconnects with the Area EPS Operator’s System to accommodate the interconnection with the DER to the Area EPS Operator’s System. Network Upgrades do not include Distribution Upgrades.

Operating Requirements – Any operating and technical requirements that may be applicable due to the Transmission Provider’s technical requirements or Minnesota Technical Requirements, including those set forth in the MN Interconnection Agreement.

Party or Parties – The Area EPS Operator and the Interconnection Customer. For purposes of the MN Standard Agreement, “Party or Parties” will also include Missouri River Energy Services.

Point of Common Coupling (PCC) – The point where the Interconnection Facilities connect with the Area EPS Operator’s Distribution System. See figure 1. Equivalent, in most cases, to “service point” as specified by the Area EPS Operator and described in the National Electrical Code and the National Electrical Safety Code.

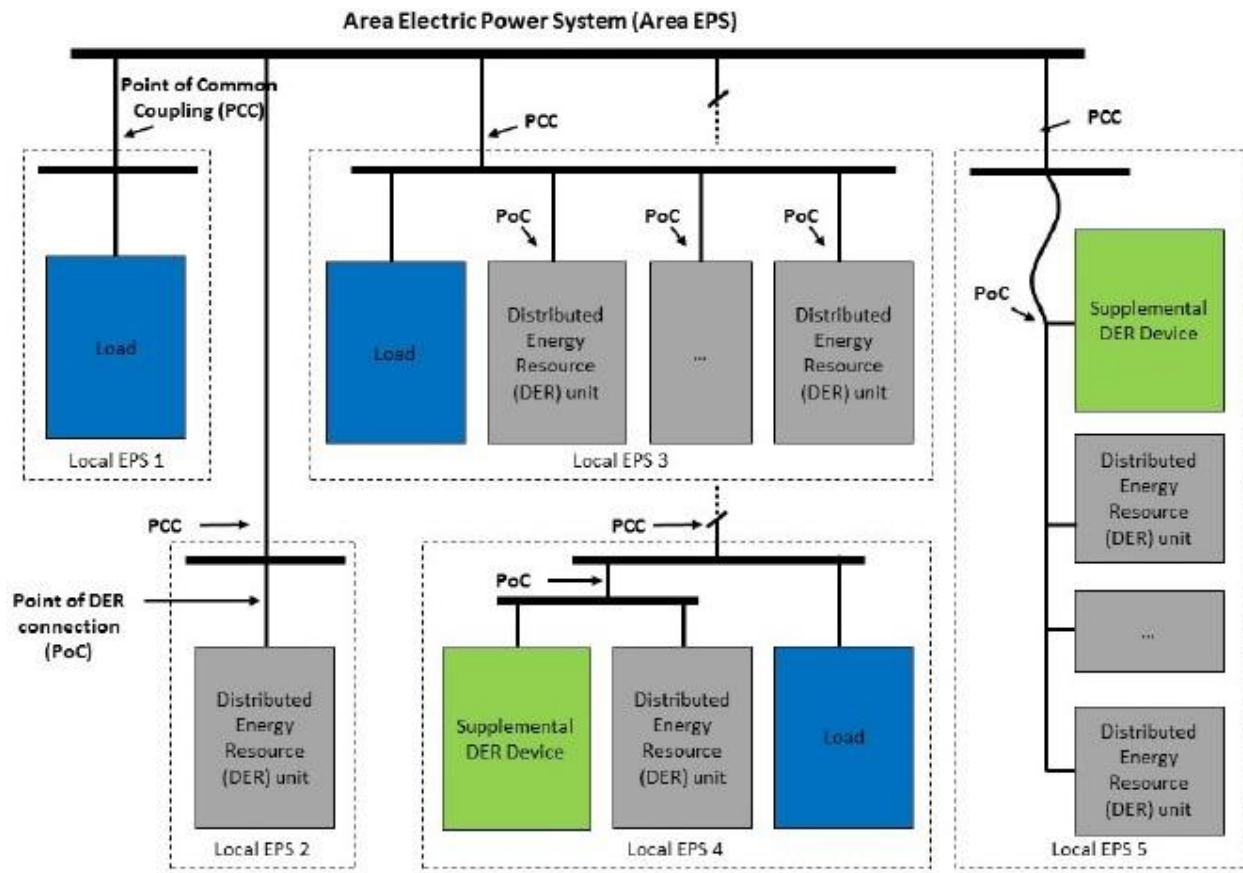


Figure 1: Point of Common Coupling and Point of DER Connection

(Source: IEEE 1547)

Point of DER Connection (PoC) – When identified as the Reference Point of Applicability, the point where an individual DER is electrically connected in a Local EPS and meets the requirements of this standard exclusive of any load present in the respective part of the Local EPS (e.g. terminals of the inverter when no supplemental DER device is required). For DER unit(s) that are not self-sufficient to meet the requirements without a supplemental DER device(s), the Point of DER Connection is the point where the requirements of this standard are met by DER in conjunction with a supplemental DER device(s) exclusive of any load present in the respective part of the Local EPS.

Queue Position – The order of a valid Interconnection Application, relative to all other pending valid Interconnection Applications, that is established based upon the date- and time- of receipt of the complete Interconnection Application as described in Section 4.7.

Reasonable Efforts – With respect to an action required to be attempted or taken by a Party under these procedures, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Reference Point of Applicability – The location, either the Point of Common Coupling or the Point of DER Connection, where the interconnection and interoperability performance requirements specified in IEEE 1547 apply. With mutual agreement, the Area EPS Operator and Customer may determine a point between the Point of Common Coupling and Point of DER Connection. See Minnesota Technical Requirements for more information.

Simplified Process – The procedure for evaluating an Interconnection Application for a certified inverter-based DER no larger than 20 kW that uses the screens described in the Interconnection Process – Simplified Process document. The Simplified Process includes simplified procedures.

Study Process – The procedure for evaluating an Interconnection Application that includes the scoping meeting, system impact study, and facilities study.

Transmission Owner – The entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System relevant to the Interconnection.

Transmission Provider – The entity (or its designated agent) that owns, leases, controls, or operates transmission facilities used for the transmission of electricity. The term Transmission Provider includes the Transmission Owner when the Transmission Owner is separate from the Transmission Provider. The Transmission Provider may include the Independent System Operator or Regional Transmission Operator.

Transmission System – The facilities owned, leased, controlled or operated by the Transmission Provider or the Transmission Owner that are used to provide transmission service. See the Minnesota Public Utilities Commission’s July 26, 2000 Order Adopting Boundary Guidelines for Distinguishing Transmission from Generation and Distribution Assets in Docket No. E-999/CI-99-1261.

Upgrades – The required additions and modifications to the Area EPS Operator’s Transmission or Distribution System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

14 Certification of DER Equipment

Distributed Energy Resource (DER) equipment proposed for use in an interconnection system shall be considered certified for interconnected operation if the following criteria is met:

- 1) It has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in the Process Overview,
- 2) It has been labeled and is publicly listed by such NRTL at the time of the interconnection application, and
- 3) Such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.

The Interconnection Customer must verify that the assembly and use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.

Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for a DER Design Evaluation or an on-site commissioning test by the parties to the interconnection as provided for in the Minnesota Technical Requirements.

If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.

Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL and does not violate the interface components' labeling and listing performed by the NRTL, no further type-test review, testing or additional equipment on the customer side of the Point of Common Coupling shall be required to be considered certified for the purposes of this interconnection procedure; however, nothing herein shall preclude the need for a DER design evaluation or an on-site

commissioning test by the parties to the interconnection as provided for in the Minnesota Technical Requirements.

An equipment package does not include equipment provided by the Area EPS.

15 Certification Codes and Standards

The existing Minnesota Technical Requirements and the following standards shall be used in conjunction with the Interconnection Process. The process has started to update the Technical Requirements to meet IEEE 1547-2018. Once that process is completed, the updated DER Technical Interconnection and Interoperability Requirements will supersede this section.

When the stated version of the following standards is superseded by an approved revision then that revision shall apply:

IEEE 1547-2003 IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems

IEEE 1547a-2014 IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems – Amendment 1

IEEE 1547.1-2005 IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

IEEE 1547.1a-2015 (Amendment to IEEE Std 1547.1-2005) IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems – Amendment 1

UL 1741 Inverters, Converters, Controllers, and Interconnection System Equipment for Use in Distributed Energy Resources (2010)

NFPA 70 (2017), National Electrical Code

IEEE Std C37.90.1 (2012) (Revision of IEEE Std C37.90.1-2002), IEEE Standard for Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems Associated with Electric Power Apparatus

IEEE Std C37.90.2 (2004) (Revision of IEEE Std C37.90.2-1995), IEEE Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C37.108-2002/1989 (Revision of C37.108-1989/2002), IEEE Guide for the Protection of Network Transformers

IEEE Std C57.12.44-2014 (Revision of IEEE Std C57.12.44-2005), IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002, IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits

IEEE Std C62.41.2-2002_Cor 1-2012 (Corrigendum to IEEE Std C62.41.2-2002) – IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std C62.45-2002 (Revision of IEEE Std C62.45-1992) – IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and less) AC Power Circuits

ANSI C84.1-(2016) Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

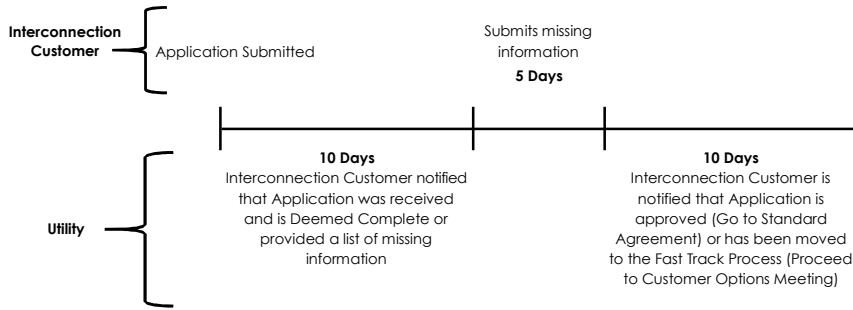
IEEE Standards Dictionary Online, [Online]

NEMA MG 1-2016, Motors and Generators

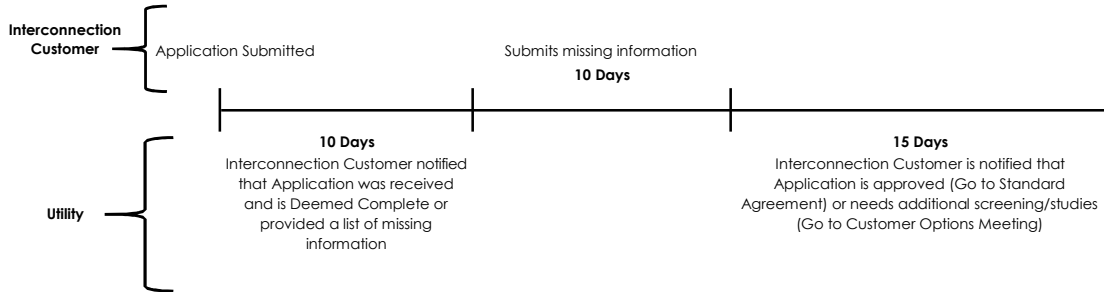
IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

Interconnection Process Timelines

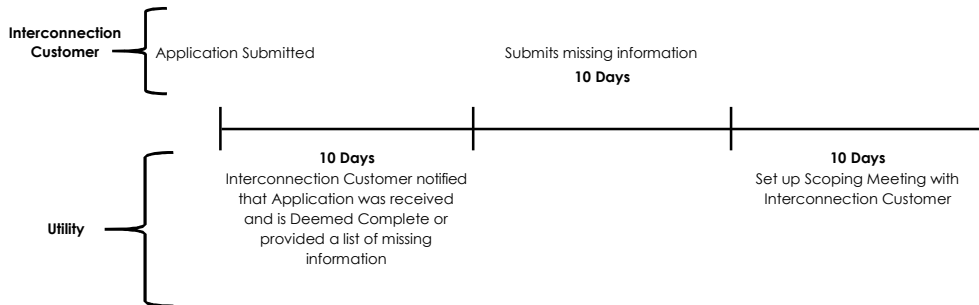
Review of Simplified Application



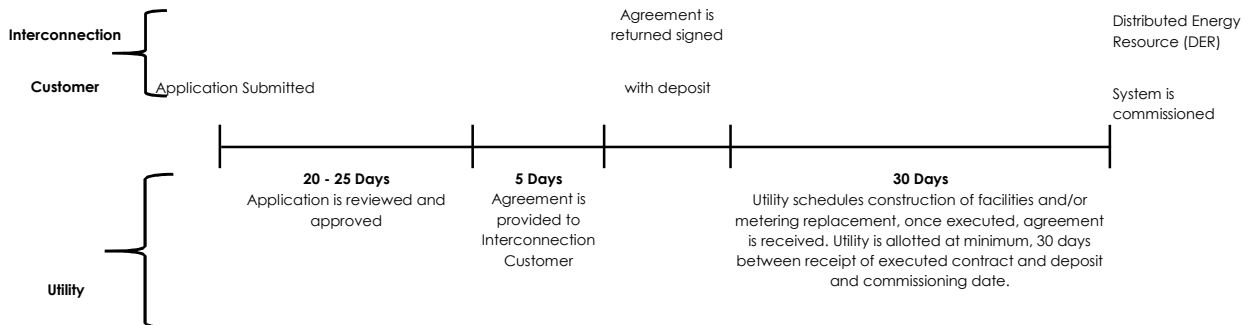
Review of Fast Track Application



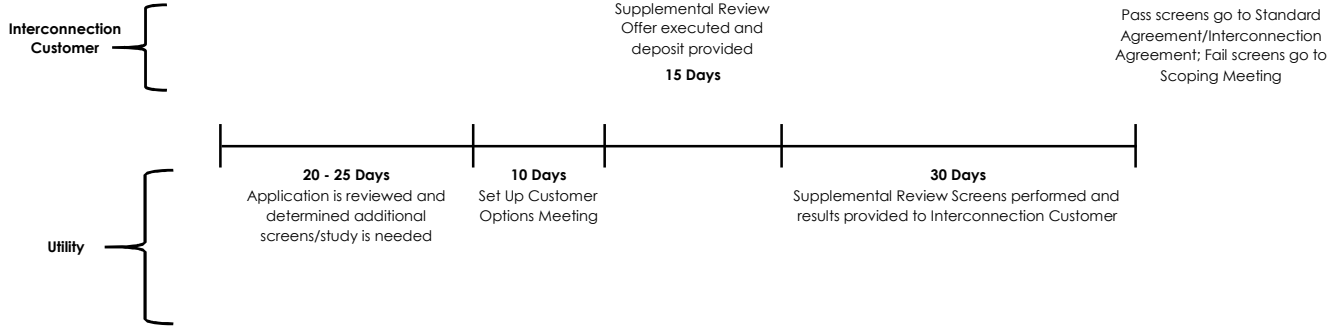
Review of Study Process Application



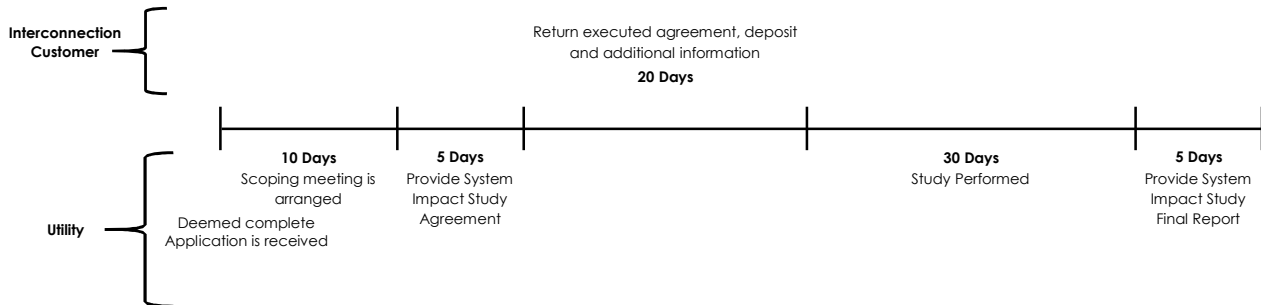
Standard Agreement or Interconnection Agreement



Customer Options Meeting and Supplemental Review Screens

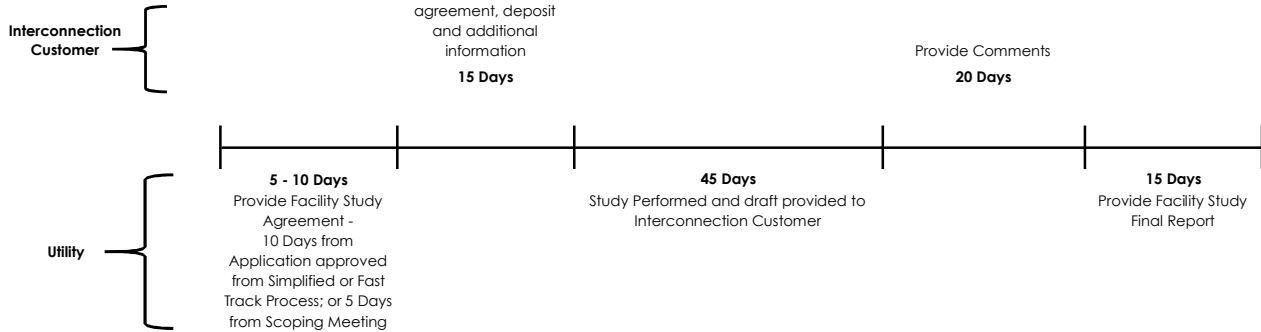


Scoping Meeting and System Impact Study



If at any time a Facility Study or Transmission System Impact Study is deemed necessary, those agreements can be started in parallel with the System Impact Study.

Facility Study



CHAPTER 5

INTERCONNECTION PROCESS

Simplified Process

SUMMARY

Information in addition to the "Process Overview" for interconnecting a Distributed Energy Resource of 20 kW or less to the utility distribution system.

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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 Chapter 4, the MN Interconnection 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 Sections 14 and 15 of the Interconnection 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 the Interconnection Customer submits a valid request for a timeline extension. 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 the MN Technical Requirements Less than 100 kW are 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

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

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.

- 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 Process Overview document.

4 MN Interconnection Agreement

4.1. MN Standard Agreement

The Area EPS Operator shall provide the Interconnection Customer with an executable copy of the MN Standard Agreement within five (5) Business Days of notice of approval of the Simplified Interconnection Application.

4.2. MN Interconnection Agreement

The Interconnection Customer may request on the Simplified Interconnection Application an executable copy of the Area EPS Operator's MN Interconnection Agreement in lieu of signing the MN Standard Agreement. If the MN Interconnection Agreement is requested, the Area EPS Operator shall provide an executable copy of the MN Interconnection Agreement 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 MN Standard Agreement or MN Interconnection Agreement thirty (30) Business Days prior to a requested in-service date of the proposed DER. The Area EPS Operator shall sign and return a copy of the fully executed MN Standard Agreement or the MN Interconnection Agreement 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 MN Standard

Agreement or MN Interconnection Agreement and payment if required unless the Area EPS Operator agrees to an earlier date.

Upon receipt of the signed MN Standard Agreement or MN Interconnection Agreement, 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. 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 policies 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 of Material Modification 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 a 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 MN Standard Agreement or MN Interconnection Agreement 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 the MN Technical Requirements Less than 100 kW. Commissioning tests 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 Certification 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 the Area EPS Operator 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 MN Standard Agreement or MN Interconnection Agreement. 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 MN Standard Agreement.

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 to operate, maintain, and repair 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 MN Standard Agreement or MN Interconnection Agreement. 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 of the following:

- The Interconnection Customer does not continue to follow and maintain IEEE 1547 settings or functions as required by the technical requirements.
- The DER does not meet all the requirements of the Simplified Process.
- The Interconnection Customer refuses to sign either the MN Interconnection Agreement or the Area EPS Operator's MN Standard Agreement.

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.

Simplified Interconnection Application

Persons interested in applying for the interconnection of a distributed energy resource (DER) to the WMU’s distribution system through the Simplified Process are to fill out this Simplified Interconnection Application. The Simplified Interconnection Application is to be used for inverter-based DER technologies with the capacity of 20 kW AC or less and is to be filled out completely by the Applicant. The Simplified Application shall be returned to the WMU with the requested material information and a non-refundable \$100 application fee.

Proposed DER interconnections to the WMU’s distribution system submitted under the Simplified Process may be moved into the Fast Track Process if engineering screens are failed during the Simplified Interconnection Application review. Timeline for review of the Simplified Application is as follows:

- Upon receipt of a Simplified Interconnection Application the WMU has 10 business days to review the application for completeness.
- If the application is deemed incomplete, the WMU shall notify the Applicant of what additional information material is required.
- The Applicant has 5 business days to return the missing information material or their application may lose its queue position and be deemed withdrawn.
- The WMU shall have a total of 20 business days to review the Simplified Interconnection Application, not including time waiting for additional information material to deem the application completed.
- The WMU will notify the Applicant if the proposed DER system is preliminary approved for interconnection or if the proposed DER system will need to be moved into the Fast Track Process.

Checklist for Submission to WMU	
<i>The items below shall be included with submittal of the Simplified Application to the WMU. Failure to include all items will deem the Simplified Application incomplete.</i>	
	Included
\$100 Non-Refundable Simplified Application Fee	<input type="checkbox"/> Yes
One-line diagram – Details required on one-line diagram specified at the end of the interconnection application.	<input type="checkbox"/> Yes
All Certified Equipment Manufacturer Specification Sheets	<input type="checkbox"/> Yes
Site Layout Drawing	<input type="checkbox"/> Yes
Copy of Insurance Declaration page or other acceptable proof of insurance	<input type="checkbox"/> Yes
<u>Possible Additional Documentation</u>	
<ul style="list-style-type: none"> • If an Application Agent is being used for this project, the Site Layout Drawing must be signed by the Interconnection Customer indicating Site Control of the DER interconnection location. • If the DER export capacity is limited, include information material explaining the limiting capabilities. • If Energy Storage is included with the proposed DER system include the Energy Storage Application. 	

Simplified Interconnection Application

Interconnection Customer		
Full Name (must match the name of the existing service account):		
Account Number:	Meter Number:	
Mailing Address:		
City:	State:	Zip Code:
Email:	Phone:	

Application Agent	
Is the Customer using an Application Agent for this application?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If Interconnection Customer is not using an Application Agent, please skip to the next section.</i>	
Application Agent:	
Company Name:	
Email:	Phone:

For Office Use Only	
Application ID:	Queue Number:
Date Received:	Application Fee Received: <input type="checkbox"/> Yes <input type="checkbox"/> No
Date Preliminary Approval Provided to Applicant:	

Interconnection Agreement

Proposed DER interconnections that are also deemed Qualifying Facilities under Minnesota Statutes § 216B.164 are eligible to sign the WMU’s Standard Agreement. Included in this agreement are payment terms for excess power generated by the proposed DER system the WMU may purchase. In lieu of the WMU’s Standard Agreement, the Interconnection Customer may choose to instead sign the WMU’s Interconnection Agreement.

The Interconnection Customer requests an Interconnection Agreement to be executed in lieu of the WMU’s Standard Agreement.	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Disclaimers – Must be completed by Interconnection Customer

	Initials
The Interconnection Customer has opportunities to request a timeline extension during the interconnection process. Failure by the Interconnection Customer to meet or request an extension for a timeline outlined in the Interconnection Process could result in a withdrawn queue position and the need to re-apply.	
Proposed DER interconnection to the WMU’s distribution system submitted under the Simplified Process may be moved into the Fast Track Process if engineering screens are failed during the Simplified Application review.	

Application Signature – Must be completed by Interconnection Customer

I designate the individual or company listed as my Application Agent to serve as my agent for the purpose of coordinating with the Area EPS Operators on my behalf throughout the interconnection process.

 Initials

I hereby certify that, to the best of my knowledge, the information provided in this Application is true, and that I have appropriate Site Control in conformance with the Interconnection Process. I agree to abide by the Minnesota Interconnection Process (MIP) and return the Certificate of Completion when the DER has been installed.

Applicant Signature:

Date:

*****Please print clearly or type and return completed along with any additional documentation*****

Information Required on One-Line Diagram

An Interconnection Application must include a site electrical one-line diagram showing the configuration of all Distributed Energy Resource equipment, current and potential circuits, and protection and control schemes. The one-line diagram shall include:

- Applicant name.
- Application ID.
- Installer name and contact information.
- Address where DER system will be installed - must match application address.
 - Be sure to list the address for the protective interface equipment if the protective interface equipment is located at a different address than the DER system.
- Correct positions of all equipment, including but not limited to panels, inverter, and DC/AC disconnect. Include distances between equipment, and any labeling found on equipment.

Certification of Completion

The Interconnection Customer should complete the Distributed Energy Resource Certification of Completion for a proposed DER interconnection in the Simplified Process Track. As a condition of interconnection, a completed copy of this form must be returned to the WMU.

Distributed Energy Resource Information		
Interconnection Customer:		
DER Project Address:		
City:	State:	Zip Code:
Application ID:	Meter Number:	
Is the DER system owner-installed?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If no, please complete Installer Information)	

Installer Information	
Contact Name:	
Name of Business:	
Email:	Phone:
Electrician Name	License #

Electrical Permitting Authority	
<i>The DER has been installed and inspected in compliance with the local electrical permitting authority as verified by the signature below or the additionally attached document.</i>	
Inspector Signature:	Date:
Inspector Name:	Authority Having Jurisdiction (city/county):

For Office Use Only
Date Received:

**INTERCONNECTION AND POWER PURCHASE AGREEMENT –
100 kW or Less (MN STANDARD AGREEMENT)**

This Interconnection and Power Purchase Agreement – 100 kW or Less (MN Standard Agreement) (the “Agreement”) is made and entered into _____, 20_, by and among Missouri Basin Municipal Power Agency, d/b/a Missouri River Energy Services, 3724 West Avera Drive, PO Box 88920, Sioux Falls, SD 57109-8920, a body politic and corporate and public agency organized in Iowa and existing under the laws of the States of Iowa, Minnesota, North Dakota and South Dakota (“MRES”), Willmar Municipal Utilities , 700 Litchfield Ave S.W., PO Box 937, Willmar, MN 56201 (“WMU”), and _____, with an address as set forth in Exhibit A hereto (“Customer”).

MRES, WMU and Customer are each individually referred to herein as a “Party” and collectively as the “Parties.”

RECITALS

A. Customer has installed, or plans to install, electric generating facilities rated at 100 kilowatts or less of electricity on certain real property owned or leased by Customer, which facilities and property are more particularly described in the MN Interconnection Application attached to this Agreement as Exhibit A. The generating facilities are hereinafter referred to as the “Qualifying Facility”.

B. WMU is a municipal utility that owns and operates an electrical distribution system (the “WMU System”) and provides retail electric power to Customer and other customers.

C. MRES is a joint action agency that supplies wholesale electric power supply to WMU pursuant to a long-term exclusive supply contract that requires WMU to purchase from MRES all electric power supply in excess of that provided by the Western Area Power Administration.

D. Pursuant to a waiver/agreement with the Federal Energy Regulatory Commission under the Public Utility Regulatory Policies Act (“PURPA”), MRES is required to purchase power from “qualifying facilities,” as defined by PURPA, and WMU is required to interconnect, supply power to, and allow qualifying facilities to operate in parallel with the WMU System. MRES and WMU are also permitted, but not required, to take such actions with respect to electric generating facilities which do not constitute “qualifying facilities” under PURPA.

E. Customer desires to interconnect and operate the Qualifying Facility in parallel with the WMU System and sell power generated by the Qualifying Facility to MRES, and WMU and MRES are willing to do so pursuant to the terms and conditions of this Agreement.

NOW, THEREFORE, the Parties hereby agree as follows:

1. Scope and Purpose. This Agreement sets forth the terms and conditions under which the Qualifying Facility may be interconnected to, and operated in parallel with, the Local

Utility System and under which MRES will purchase electrical energy generated by the Qualifying Facility. This Agreement does not constitute an agreement by MRES or WMU to deliver electrical energy generated by the Qualifying Facility or to provide any services to Customer except as described in this Agreement.

2. Interconnection Rules. The procedures and technical requirements governing the interconnection and operation of the Qualifying Facility are described in the documents of WMU entitled “MN Interconnection Process” (the “Procedures”) and “MN Technical Requirements for Inverter Connected Systems Rated 100 kW or Less” (the “Requirements”), each as may be amended by WMU from time to time (collectively, the “Interconnection Rules”). WMU shall have the right to amend the Interconnection Rules from time to time in its sole discretion. The Interconnection Rules are incorporated and made part of this Agreement by this reference. Customer acknowledges it has received a copy of the Interconnection Rules and agrees to comply with the terms of the Interconnection Rules. In the event any terms of this Agreement conflict with the terms of the Interconnection Rules, the terms of this Agreement shall govern. All capitalized terms used in this Agreement shall have the meanings given them in the Interconnection Rules, unless otherwise expressly provided herein.

3. Point of Common Coupling. The point where the Interconnection Facilities connect with the WMU System is the Point of Common Coupling (“PCC”) as shown on the diagram in Exhibit A. The diagram included in Exhibit A shall depict the PCC, the location of meter(s), the point of delivery, and such other detail as may be required by WMU. Customer and WMU shall interconnect the Qualifying Facility to the WMU System at the PCC in accordance with the Interconnection Rules and all applicable laws, regulations and prudent utility practices. WMU and Customer shall each own and be responsible for the installation, maintenance and repair of the lines, wires, switches and other equipment on their respective sides of the PCC. Unless otherwise specified in Exhibit B, Customer, at its cost, shall furnish, install, own, maintain and repair all interconnection equipment required at the PCC, in accordance with the Interconnection Rules and applicable laws, regulations and prudent utility practices. Final electrical connections between the WMU System and the Qualifying Facility shall be made by WMU.

4. Installation, Operation and Maintenance of Qualifying Facility. Customer shall install, operate and maintain the Qualifying Facility in accordance with the terms of this section.

a. Responsibility; Standards. Customer shall install, operate, maintain, repair and inspect the Qualifying Facility and shall be fully responsible for the Qualifying Facility, unless otherwise provided herein. Customer’s installation, operation, maintenance and repair of the Qualifying Facility shall be in accordance with this Agreement, the Interconnection Rules, all applicable laws, regulations, ordinances and building codes, and, as applicable, the National Electrical Safety Code (“NESC”), American National Standards Institute (“ANSI”), Institute of Electrical and Electronic Engineers (“IEEE”), National Electrical Code (“NEC”), and Underwriter’s Laboratory (“UL”). In addition, Customer shall maintain the Qualifying Facility in accordance with applicable manufacturers’ recommended maintenance schedules.

b. Costs. Unless otherwise specified in Exhibit B, Customer shall be responsible for all costs associated with the Qualifying Facility, including all costs of installation, operation, maintenance, inspection and repair. Customer shall pay for the actual cost of the Interconnection Facilities and Distribution Upgrades along with WMU's cost to commission the proposed DER system. An estimate of the interconnection costs are set forth in Exhibit B.

c. Permits. Prior to installation of the Qualifying Facility, Customer shall obtain all environmental and other permits required by any governmental authorities to install, own and operate the Qualifying Facility. Customer shall maintain and comply with the requirements of all such permits during the term of this Agreement.

d. Disruption to WMU System. Customer shall design, install, equip, maintain, operate and repair the Qualifying Facility to ensure that the WMU System and WMU's service to other customers are not adversely affected by the Qualifying Facility, either due to disruptions to the WMU System or power quality issues.

e. Alterations. Customer shall not alter, modify or add to the Qualifying Facility without receiving a prior written determination of WMU, in accordance with the Interconnection Rules, as to whether the proposed alteration, modification or addition constitutes a Material Modification to the Interconnection Application. Not less than twenty (20) days prior to the commencement of any proposed alteration, modification or addition to the Qualifying Facility, Customer shall notify WMU of the proposal and provide WMU with all information reasonably required by WMU to review such proposal, including any change in generation capacity of the Qualifying Facility and any alterations to applicable interconnection equipment. WMU shall have ten (10) days to notify Customer in writing of WMU's final determination of the proposed modification.

f. Operator in Charge. Customer shall identify an individual (by name or title) who will act as "Operator in Charge" of the Qualifying Facility. This individual must be familiar with the terms of this Agreement, the Interconnection Rules, and any other laws, regulations or agreements that may apply to the Qualifying Facility.

5. Electric Service. WMU shall provide electric service to Customer for the electricity requirements of Customer not supplied by the Qualifying Facility. Such electric service shall be supplied by WMU under the rules and rate schedules of WMU applicable to Customer's class of service, as revised from time to time by WMU in its sole discretion.

6. Metering.

a. Metering Equipment. WMU shall purchase, own, install and maintain such metering equipment as is necessary to meter all electrical energy of the Qualifying Facility delivered to the WMU System, consistent with the metering arrangement elected pursuant to subsection (b) below. The metering equipment and cost responsibilities associated with such equipment are set forth in Exhibit B. WMU shall test the metering equipment on a scheduled basis. If the metering equipment fails to

register proper amounts or the registration thereof becomes so erratic as to be meaningless, the energy delivered to the WMU System shall be determined by WMU from the best information available.

b. Metering Arrangement. The metering arrangement used to meter and record electrical energy delivered from the Qualifying Facility to the WMU System, and from the WMU to Customer, shall be as set forth in attached Exhibit B.

7. Testing. Customer shall test the Qualifying Facility and interconnection equipment and provide to WMU all records of testing in accordance with the Interconnection Rules. Such testing shall occur prior to commencement of operation of the Qualifying Facility and periodically thereafter, in accordance with the Interconnection Rules or as otherwise requested by WMU. WMU and MRES shall have the right to witness all field testing and review all records prior to allowing the Qualifying Facility to commence normal operations. Such tests are for purposes of assuring the protection and operation of the WMU System and in no way represent any assurance of protection and operation of the Qualifying Facility.

8. Right of Access; Inspection. WMU and MRES shall have the right to inspect the Qualifying Facility and observe the Qualifying Facility's installation, commissioning, startup, operation and maintenance. WMU and MRES shall have access to the Qualifying Facility for any reasonable purpose in connection with the interconnection described in this Agreement or the Interconnection Rules or to provide service to other customers.

9. Disconnection. The Qualifying Facility shall or may be disconnected from the WMU System at such times as described in, and in accordance with, the terms of this section.

a. Disconnection by Customer. Customer shall disconnect the Qualifying Facility from the WMU System upon the effective date of the termination of this Agreement as described in Section 15 below.

b. Disconnection by WMU. WMU shall have the right to disconnect, or cause Customer to disconnect, the Qualifying Facility from the WMU System for the following reasons: (i) to allow WMU to operate, construct, install, maintain, repair, replace or inspect any facilities of WMU; (ii) the disruption or potential disruption of the WMU System as described in Section 4(d) above; (iii) the presence of a condition which could cause injury or loss of life or damage to the WMU System or property of a third party; (iv) if WMU is required to disconnect by MRES or WMU's transmission provider; (v) Customer's noncompliance with the terms of this Agreement; (vi) the termination of this Agreement as provided in Section 15 below; or (vii) any other reason for disconnection as set forth in the Interconnection Rules. WMU shall use reasonable efforts to provide prior notice and coordination of any disconnection of the Qualifying Facility due to routine maintenance, repairs or modifications to the WMU System. Neither WMU nor MRES shall be liable to Customer for any damages, losses or other liabilities, including consequential damages, due to the disconnection of the Qualifying Facility as described in this section.

10. Interconnected Operation. Customer may operate interconnected with the WMU System only in accordance with this Agreement and the Interconnection Rules. WMU, MRES and Customer shall comply with all requirements of the transmission provider and any regulatory authorities having jurisdiction over distributed generation interconnected to the WMU System.

11. Energy Sales to MRES. MRES shall purchase all electrical energy generated by the Qualifying Facility which is received by the WMU System. The rate paid by MRES for such electrical energy shall be equal to the sum of: (a) the MRES PURPA rate for qualifying facilities of 100 kW or less, as adjusted from time to time by MRES in its discretion, and (b) the Loss Factor Adjustment, as adjusted from time to time by MRES and WMU in their discretion. The MRES PURPA rate and the Loss Factor Adjustment, along with their currently applicable amounts, are described in attached Exhibit B. Customer shall receive payment for electrical energy sales to MRES through a credit on Customer's monthly invoice from WMU, which credit may be one month in arrears. MRES, in turn, shall credit the monthly wholesale power supply bill submitted by MRES to WMU in an amount equal to the electrical energy purchases of MRES from the Qualifying Facility during the preceding month. WMU shall provide to MRES, as soon as available following the end of each month, data indicating the amount of electrical energy purchased by MRES from the Qualifying Facility during the preceding month.

12. Limitation of Liability. Each Party's liability to the other Parties for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of its obligations under this Agreement shall be limited to the amount of direct damage actually incurred. In no event shall a Party be liable to another party under this Agreement for any punitive, incidental, indirect, special or consequential damages, including for loss of business opportunity or profits. In addition, and notwithstanding any other provision in this Agreement, WMU's liability to Customer under this Agreement shall be further limited as set forth in WMU's tariffs and/or terms and conditions for electric service, which limitations are incorporated herein by this reference.

13. Insurance. Customer shall maintain general liability insurance in accordance with the terms of the Interconnection Rules.

14. Default; Remedies. A Party shall be in default under this Agreement if such Party fails to comply with, observe or perform, or defaults in the performance of, any covenant or obligation under this Agreement and fails to cure the failure within thirty (30) days after receiving written notice from another Party, which notice shall identify the basis of the default. If a default is not cured within the cure period, the non-defaulting Party or Parties shall have the right to terminate this Agreement by written notice to the defaulting Party, shall be relieved of any further obligation under this Agreement, and shall be entitled to pursue all other damages and remedies available under this Agreement or at law or in equity.

15. Term. This Agreement shall take effect upon execution by all Parties hereto and shall remain in effect unless terminated in accordance with this section. This Agreement may be terminated as follows: (a) any Party may terminate this Agreement at any time upon ninety (90) days' written notice to the other Parties; (b) WMU or MRES may terminate this Agreement

at any time upon thirty (30) days' written notice to the other Parties if the Qualifying Facility is not, or at any time ceases to be, a "qualifying facility" under PURPA; (c) any Party may terminate this Agreement after a default under Section 14 above; and (d) MRES may terminate this Agreement upon sixty (60) days' written notice to the other Parties in the event MRES determines that its purchase of electrical energy generated by the Qualifying Facility under Section 11 above would result in cost greater than those which MRES would incur if it did not make such purchases, as permitted by the PURPA waiver/agreement described in Recital D above. In the event this Agreement is terminated pursuant to subsection (d), WMU and Customer shall enter into a new agreement which defines their respective rights and obligations with respect to the interconnection and operation of the Qualifying Facility to and with the WMU System in accordance with PURPA.

16. Force Majeure. For purposes of this Agreement, a force majeure event is any event that is beyond the reasonable control of the affected Party and that the affected Party is unable to prevent by exercising reasonable diligence, including the following events or circumstances, but only to the extent they satisfy the preceding requirements: acts of war, terrorism, public disorder, rebellion or insurrection; floods, hurricanes, earthquakes, lightning, storms or other acts of God; explosions or fires; strikes, work stoppages or labor disputes; embargoes; and sabotage. If a force majeure event prevents a Party from fulfilling its duties under this Agreement, such Party shall promptly notify the other Party in writing and shall keep the other Party informed on a continuing basis of the scope and duration of the force majeure event. The affected Party shall specify the circumstances of the force majeure event, its expected duration, and the steps being taken to mitigate the effect of the event. The affected Party shall be entitled to suspend or modify its performance under this Agreement but will use reasonable efforts to resume its performance as soon as possible.

17. Non-Warranty. Neither by inspection, if any, nor by non-rejection or in any other way does WMU or MRES give or make any warranty, express or implied, as to the adequacy, safety or other characteristics of any lines, wires, switches, or other equipment or structures owned, installed or maintained by Customer.

18. Assignment. Customer may assign this Agreement to an entity or individual to whom Customer transfers ownership of the Qualifying Facility, so long as Customer obtains prior written consent of WMU and MRES, which consent shall not be unreasonably withheld, and such assignee agrees in writing to assume all obligations of Customer under this Agreement. WMU and/or MRES may assign this Agreement upon written notice to Customer.

19. No Waiver. The failure of a Party to insist, on any occasion, upon strict performance of any provision of this Agreement shall not be construed as a waiver or relinquishment of the obligations, rights or duties imposed upon the Parties.

20. Notices. Notices given under this Agreement shall be deemed to have been given when delivered in person or by mail, postage prepaid, to the respective addresses of the Parties set forth in the opening paragraph of this Agreement. Such addresses may be changed by written notification to the other Parties.

21. Severability. If any provision of this Agreement is adjudged by any court of competent jurisdiction to be illegal or unenforceable, such provision shall be deemed separate and independent, and the remainder of this Agreement shall remain in full force and effect.

22. Entire Agreement; Amendments. This Agreement, including the Interconnection Rules and all Exhibits hereto, constitutes the entire agreement and understanding between the Parties concerning the subject matter of this Agreement. The Parties are not bound by or liable for any statement, representation, promise, understanding or undertaking of any kind or nature, whether written or oral, with regard to the subject matter hereof not set forth or provided for herein. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for in this Agreement, which agreements are unaffected by this Agreement. This Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties.

23. Dispute Resolution. The city council or city-appointed body governing the WMU has authority to consider and determine disputes, if any, that arise under this Agreement. The Parties agree to use good faith efforts to resolve all disputes in accordance with the dispute resolution process adopted by the WMU's governing body pursuant to Minnesota Statutes §216B.164.

24. Governing Law; Jurisdiction. This Agreement and the rights and obligations of the Parties hereunder shall be construed in accordance with and shall be governed by the laws of the State of Minnesota.

[Signature Page Follows]

IN WITNESS WHEREOF, the Parties have caused this Interconnection and Power Purchase Agreement – 100 kW or Less (Standard Agreement) to be signed by their respective duly authorized representatives.

Willmar Municipal Utilities

[CUSTOMER NAME]

BY: _____
TITLE: _____
DATE: _____

BY: _____
TITLE: _____
DATE: _____

MISSOURI BASIN MUNICIPAL POWER AGENCY
d/b/a MISSOURI RIVER ENERGY SERVICES

BY: _____
TITLE: _____
DATE: _____

EXHIBIT A
INTERCONNECTION APPLICATION

EXHIBIT B
METERING ARRANGEMENT AND PURCHASE RATE

1. **MRES PURPA Rate.** The rate to be paid by MRES for electrical energy purchased from the Qualifying Facility under Section 11 of the Agreement shall be equal to the MRES PURPA rate for 100 kW or less, as established by MRES in its sole discretion each year or upon other intervals as determined by MRES. The MRES PURPA rate for 100 kW or less for 2019 is \$_____/kWh. MRES shall notify WMU, and WMU shall notify Customer, of any change in such rate adopted by MRES. Customer's right to payments under Section 11 is subject to Customer's compliance with the terms, covenants and conditions of the Agreement.

2. **Loss Factor Adjustment.** The MRES PURPA rate for 100 kW or less, as described in Section 1 above, shall be increased by a percentage factor to reflect the savings resulting from reduced WMU System losses associated with electrical energy purchased from the Qualifying Facility under Section 11 of the Agreement. For example, if the Loss Factor Adjustment was 5%, the Loss Factor Adjustment to the 2019 MRES PURPA rate, in dollars, would be \$_____

_____(\$_____
_____x 0.05), causing the total combined rate paid for power purchased from the Qualifying Facility to be \$_____/kWh. WMU and MRES shall establish the Loss Factor Adjustment each year or upon other intervals as they determine, and WMU shall notify Customer of any change in this factor. The Loss Factor Adjustment for 2019 is_%.

3. **Metering Arrangement.**

a. **Less than 40 kW QFs.** A customer with a Qualifying Facility with a capacity of less than 40 kW can elect one of the following metering arrangements to measure the electrical energy generated by the Qualifying Facility which is received by the WMU System for purchase by MRES (Customer to select one):

_____. **Net Metering.** The metering shall be such that power delivered to Customer by WMU shall be netted against power received by WMU from the Qualifying Facility, pursuant to Minnesota Rules § 7835.3300. WMU's monthly invoice to Customer will indicate: (a) a credit to Customer if the power received by WMU from the Qualifying Facility exceeds the power provided by WMU to Customer or (b) the payment due by Customer to WMU if the power delivered by WMU to Customer exceeds the power received by WMU from the Qualifying Facility. The rate to be used to determine payment under subsection (a) for any net excess power received by the WMU System shall be the rate described in Section 11 of the Agreement.

_____. **Dual Metering.** The metering shall be such that all power received by the WMU from the Qualifying Facility (net of Customer's own use) shall be measured separately from power delivered from WMU to Customer, pursuant to Minnesota Rules § 7835.3400. The meter measuring power delivered to Customer shall not permit

reduction of measured power already delivered to Customer during periods when the Qualifying Facility generation exceeds Customer demand (i.e. no netting allowed). WMU shall credit Customer's monthly bill for power received by the WMU System and purchased by MRES. The rate paid by MRES for electrical energy generated by the Qualifying Facility which is received by the WMU System shall be the rate described in Section 11 of the Agreement.

b. 40 kW to 100 kW QFs. If the capacity of Customer's Qualifying Facility is 40 kW or more and less than or equal to 100 kW, then the metering arrangement to measure the electrical energy generated by the Qualifying Facility which is received by the WMU System for purchase by MRES shall be such that all power received by the WMU from the Qualifying Facility (net of Customer's own use) shall be measured separately from power delivered from WMU to Customer, pursuant to Minnesota Rules § 7835.3400. The meter measuring power delivered to Customer shall not permit reduction of measured power already delivered to Customer during periods when the Qualifying Facility generation exceeds Customer demand (i.e. no netting allowed). WMU shall credit Customer's monthly bill for power received by the WMU System and purchased by MRES. The rate paid by MRES for electrical energy generated by the Qualifying Facility which is received by the WMU System shall be the rate described in Section 11 of the Agreement.

c. Customer acknowledges and agrees that time-of-day purchase rates under Minnesota Rules § 7835.3500 are not available under this Agreement due to metering and technology limitations of WMU and Customer.

4. Environmental Attributes. Power purchased by MRES from the Qualifying Facility does not include any environmental attributes (i.e., renewable energy credits), if any, associated with the environmental character of the Qualifying Facility, nor any federal income tax credits for renewable energy that are accruable to Customer with respect to the Qualifying Facility.

5. Interconnection Costs. The Qualifying Facility is responsible for the actual, reasonable costs of interconnection which are estimated to be \$_____. The Qualifying Facility will pay WMU as follows:

_____.

6. Metering Equipment. WMU is responsible for furnishing the following metering equipment, if any:_____.
WMU's cost responsibility, if any, associated with the metering equipment is as follows:

_____.

CHAPTER 6

INTERCONNECTION PROCESS

Fast Track Process

SUMMARY

Interconnection Process for Distributed
Energy Resources less than 4 MW

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1 Applicability

1.1. Capacity Limit

The Fast Track Process is available to an Interconnection Customer proposing to interconnect a Distributed Energy Resource (DER) with the Area EPS Operator’s Distribution System if the DER capacity does not exceed the size limits in Table 1.1 and does not qualify for the Simplified Process. The capacity is determined by the aggregated summation of the Nameplate Rating of all components that make up the DER system. Additional information regarding the capacity limits can be seen in Section 6 of the Process Overview document.

Table 1.1. Fast Track Eligibility for DER

Line Voltage	Fast Track Eligibility¹ Regardless of Location	Fast Track Eligibility for certified, inverter-based DER on a Mainline² and ≤ 2.5 Electrical Circuit Miles from Substation³
< 5 kV	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 1 MW	≤ 2 MW
≥ 15 kV and < 30 kV	≤ 3 MW	≤ 4 MW
≥ 30 kV and ≤ 69 kV	≤ 4 MW	≤ 5 MW

Fast Track eligibility for DERs is determined based upon the generator type, the size of the generator, voltage of the line, and the location of and the type of line at the Point of Common Coupling. All synchronous and induction machines must be no larger than 2 MW to be eligible for Fast Track Process consideration. Fast Track eligibility does not imply or indicate that a DER will pass the engineering screens or be exempt from the proposed DER Interconnection being placed into the Study Process.

1.2. Codes, Standards and Certification Requirements

The Interconnection Customer’s proposed DER must meet the codes, standards and certification requirements listed in Section 14 and Section 15 of the Overview Process document. The Area EPS Operator may allow DER systems that do not meet codes, standards and certification only if the DER system design is reviewed and tested and determined that it is safe to operate in parallel with the Distribution System.

¹Synchronous and induction machine eligibility is limited to no more than 2 MW even when line voltage is greater than 15 kV.

²For purposes of this table, a Mainline is the three-phase backbone of a circuit. It will typically constitute lines with wire sizes of 4/0 American wire gauge, 266 kcmil, 336.4 kcmil, 397.5 kcmil, 477 kcmil and 795 kcmil.

³An Interconnection Customer can determine this information about its proposed interconnection location in advance by requesting a pre-application report described in the Overview Process document.

2 Application Submission

2.1. Fast Track Process Application

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

- A completed Interconnection Application signed by the Interconnection Customer.
- A non-refundable processing fee indicated in Section 2.3.
- A site layout drawing of the proposed DER system.
- A one-line diagram of the proposed DER system showing the point of common coupling to the Area EPS Operator’s Distribution System.
- All equipment manufacturer specification sheets.
- Documentation of site control indicated in Section 2.5.

2.2. Professional Licensed Engineer Signature

The one-line diagram submitted with the Interconnection Application will require a signature from a professional engineer licensed in the State of Minnesota certifying the DER was designed in conformance to the Technical Requirements for the following conditions:

- Certified⁴ equipment is greater than 250 kW.
- Non-certified equipment is greater than 20 kW.

2.3. Processing Fee

The processing fee will differ for a Fast Track Interconnection Application depending on the type of equipment utilized, as set forth in Table 2.1.

Table 2.1. Interconnection Application Process Fee

Equipment Type	Process Fee
Certified System	\$100 + \$1/kW
Non-Certified System	\$100 + \$2/kW

⁴ Additional information regarding certified equipment is found in Section 14 and Section 15 of the Process Overview document.

2.4. Battery Storage

An inverter-based DER system may include battery storage. DER systems that include battery storage should complete the MN Energy Storage Application along with the Interconnection Application.

2.5. Site Control

Documentation of site control must be submitted with the Interconnection Application. Site control may be demonstrated by any of the following:

- Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the DER system.
- An option to purchase or acquire a leasehold site for constructing the DER system.
- An exclusivity or other business relationship between the Interconnection Customer and the entity having the right to sell, lease, or grant the Interconnection Customer the right to possess or occupy a site for constructing the DER system.

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 ten (10) Business Days to provide the missing information unless the Interconnection Customer submits a valid request for a timeline extension. Failure to submit the requested information within the stated timeline will result in the Interconnection Application being deemed 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 the MN 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 in the Process Overview document.

The Area EPS Operator has a total of twenty-five (25) Business Days to complete the Interconnection Application review and submit notice back to the Interconnection Customer stating the proposed DER system may proceed with the interconnection process or a supplemental review offer is to be made or the proposed DER system has been moved into a different process track. The period of time waiting for the Interconnection Customer to provide missing information is not included in the Area EPS Operator's twenty-five (25) Business Days review timeline.

3.2. Initial Review Screens

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

- The proposed DER's Point of Common Coupling 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.⁵
- 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

⁵ Network protectors are protective devices used on secondary networks (spot and grid networks) to automatically disconnect associated transformers when reverse power flow occurs. Secondary networks are most often used in densely populated downtown areas.

at the point on the high voltage (primary) level nearest the proposed Point of Common Coupling.

- 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.
- 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.

Table 3.1. Type of Primary Distribution Line Interconnections

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 provided the analysis is targeted to maintain the voltage, thermal and protection objectives as the listed screen.

3.3. Notification of Approval of Application

Provided the Interconnection Application passes the initial screens, or if the proposed interconnection fails the screens but the Area EPS Operator determines that the DER may nevertheless be interconnected consistent with safety, reliability and power quality standards, the Area EPS Operator shall provide notice to the Interconnection Customer that their Interconnection Application has been approved. The Area EPS Operator shall provide the Interconnection Customer with a MN Interconnection Agreement as outlined in Section **Error! Reference source not found.**

3.4. Failure of Review Screens

If the proposed interconnection fails the screens, and the Area EPS Operator does not or cannot determine from the Initial Review that the DER may nevertheless be interconnected consistent with safety, reliability, and power quality standards, unless the Interconnection Customer is willing to consider minor modifications or further study, the Area EPS Operator shall provide the Interconnection Customer the opportunity to attend a 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, subject to confidentiality provisions in Section 12.1 of the Process Overview document.

3.5. Customer Options Meeting

Within ten (10) Business Days of the Area EPS Operator's notification to the Interconnection Customer of the proposed interconnection's failure of the engineering screens, the Area EPS Operator and the Interconnection Customer shall schedule a customer options meeting to review possible facility modification, screen analysis and related results to determine what further steps are needed to permit the DER to be interconnected safely and reliably to the Distribution System. At the customer options meeting the Area EPS Operator shall:

- Offer to perform a supplemental review in accordance with Section 4 and provide a non-binding good faith estimate of the cost of such review; or
- Obtain the Interconnection Customer's agreement to continue evaluating the Interconnection Application under the Study Process track.

4 Supplemental Review

4.1. Acceptance of Supplemental Review

To accept the offer of a supplemental review, the Interconnection Customer shall agree in writing and submit a deposit for the estimated costs of the supplemental review in the amount of the Area EPS Operator's good faith estimate of the costs of such review within fifteen (15) Business Days once the supplemental review offer is made by the Area EPS Operator. If the written agreement and deposit have not been received by the Area EPS Operator within that timeframe, the Interconnection Application can only continue being evaluated under the Study Process or it can be withdrawn by the Interconnection Customer.

The Interconnection Customer may specify within the written agreement the order in which the Area EPS Operator will complete the supplemental review screens listed in Section 4.4.

4.2. Supplemental Review Costs

The Interconnection Customer shall be responsible for the Area EPS Operator's actual costs for conducting the supplemental review. The Interconnection Customer shall pay any review costs that exceed the deposit within twenty (20) Business Days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the Area EPS Operator will return such excess within twenty (20) Business Days of the invoice without interest.

4.3. Supplemental Review Timelines

Within thirty (30) Business Days following the receipt of the deposit for a supplemental review, the Area EPS Operator shall:

- Perform the supplemental review using the screens in Section 4.4.
- Notify the Interconnection Customer of the results in writing.
- Include copies of the Area EPS Operator's analysis under the screens with the written notification.

Unless the Interconnection Customer provides instruction for how to respond to a failure of any of the supplemental review screens in the written acceptance of supplemental review, the Area EPS Operator shall notify the Interconnection Customer within two (2) Business Days if a supplemental review screen is failed or if the Area EPS

Operator is unable to perform the supplemental review screen. The Area EPS Operator shall then obtain the Interconnection Customer's permission to either:

- Continue evaluating the proposed interconnection using the supplemental review screens in Section 4.4.
- Terminate the supplemental review and continue evaluating the Interconnection Application in the Study Process track.
- Terminate the supplemental review upon withdrawal of the Interconnection Application by the Interconnection Customer.

The Interconnection Customer shall respond with its choice within five (5) Business Days of notification from the Area EPS Operator.

4.4. Supplemental Review Screens

The three supplemental review screens are the Minimum Load screen, the Voltage and Power Quality screen and the Safety and Reliability screen.

4.4.1. Minimum Load Screen

The aggregate DER capacity on the line section is less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed DER. If minimum load data is not available, or cannot be calculated, estimated or determined, the Area EPS Operator shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under Section 4.3. The line section minimum load data shall include onsite load but not station service load served by the proposed DER in this screen.

The type of generation used by the proposed DER will be considered when calculating, estimating, or determining circuit or line section minimum load relevant for the application of this screen. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (i.e. 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems), while all other generation uses absolute minimum load.

When this screen is being applied to a DER that serves some station service load, only the net injection into the Area EPS Operator's electric system will be considered as part of the aggregate generation.

The Area EPS Operator will not consider as part of the aggregate generation for purposes of this screen DER capacity known to be already reflected in the minimum load data.

4.4.2. Voltage and Power Quality Screen

In aggregate with existing generation on the line section, the following conditions shall be met for the screen to be passed:

- The voltage regulation on the line section can be maintained in compliance with relevant requirements under all system conditions.
- The voltage fluctuation is within acceptable limits as defined by Institute of Electrical and Electronics Engineers (IEEE) Standard 1453, or utility practice similar to IEEE Standard 1453.
- The harmonic levels meet IEEE Standard 519 limits.

4.4.3. Safety and Reliability Screen

The location of the proposed DER and the aggregate generation capacity on the line section do not create impacts to safety or reliability that cannot be adequately addressed without application of the Study Process. The Area EPS Operator shall give due consideration to the following and other factors in determining potential impacts to safety and reliability in applying this screen.

- Whether the line section has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- Whether the loading along the line section is uniform or even.
- Whether the proposed DER is located in close proximity to the substation (i.e., less than 2.5 electrical circuit miles), and whether the line section from the substation to the Point of Common Coupling is a main line rated for normal and emergency ampacity.
- Whether the proposed DER incorporates a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time.

- Whether operational flexibility is reduced by the proposed DER, such that transfer of the line section(s) of the DER to a neighboring distribution circuit/substation may trigger overloads or voltage issues.
- Whether the proposed DER employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, or voltage quality.

4.5. Identification of Construction of Facilities

If the proposed interconnection requires the construction of any distribution or transmission facilities, the Area EPS Operator shall notify the Interconnection Customer of the requirement when it provides the supplemental review results. The Area EPS Operator may include a non-binding good faith estimate to construct the facilities included with the supplemental review results. In lieu of providing a non-binding good faith estimate to construct the necessary facilities, the Area EPS Operator may require the proposed interconnection to move to the Study Process for a facility study instead.

Upon being presented with either the non-binding good faith estimate or the requirement for a facility study, the Interconnection Customer has five (5) Business Days to inform the Area EPS Operator to proceed with the proposed interconnection or withdraw the Interconnection Application.

4.6. Supplemental Review Results

If the proposed interconnection passes the supplemental review screens in Section 4.4 and does not require construction of distribution or transmission facilities by the Area EPS on its own system, the Area EPS Operator shall provide an executable MN Interconnection Agreement within five (5) Business Days after the supplemental review screens are completed. Information regarding the MN Interconnection Agreement is detailed in Section **Error! Reference source not found.**

If the proposed interconnection passes the supplemental review screens in Section 4.4 and the Interconnection Customer agrees to the non-binding good faith estimate of construction of any distribution or transmission facilities by the Area EPS Operator, the Area EPS Operator shall provide an executable MN Interconnection Agreement within twenty (20) Business Days. Included with the MN Interconnection Agreement shall be non-binding good faith estimate of construction costs and a construction schedule for the facilities. Information regarding the MN Interconnection Agreement is detailed in Section **Error! Reference source not found.**

If the proposed interconnection does not pass the supplemental review screens in Section 4.4 the Area EPS Operator shall provide the Interconnection Customer with the option of commencing the Study Process. The Interconnection Customer shall notify the Area EPS Operator within fifteen (15) Business Days if they wish to proceed with the Study Process to retain their queue position or the Interconnection Application will be deemed withdrawn.

5 MN Interconnection Agreement

5.1. MN Standard Agreement

For a proposed interconnection that meets the conditions of being classified as a qualifying facility less than 40 kW, the Area EPS Operator shall provide the Interconnection Customer with an executable copy of the MN Standard Agreement.

5.2. MN Interconnection Agreement

For proposed interconnections that do not meet the conditions of being classified as a qualifying facility 100 kW or less, or if requested by the Interconnection Customer in lieu of signing the MN Standard Agreement, the Area EPS Operator shall provide an executable copy of the MN Interconnection Agreement.

5.3. Completion of Agreement

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

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

Upon receipt of the signed MN Standard Agreement or MN Interconnection Agreement, the Area EPS Operator may schedule appropriate metering replacements and construction of facilities, if necessary.

6 Insurance

6.1. 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, general liability insurance from a qualified insurance agency with a B+ or better rating by "Best" with a combined single limit of not less than described in Table 6.1. 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.

Table 6.1. Liability Insurance Requirements

DER System Size	Liability Insurance Requirement
< 40 kW AC	\$300,000
≥ 40 kW AC and < 250 kW AC	\$1,000,000
≥ 250 kW AC and < 5 MW AC	\$2,000,000
≥ 5 MW AC	\$3,000,000

For all proposed DER systems, except those that are qualifying systems less than 40 kW AC, the general liability insurance shall, by endorsement to the policy or policies:

- Include the Area EPS Operator as additionally insured.
- Contain a severability of interest clause or cross-liability clause.
- Provide that the Area EPS Operator shall not by reason incur liability to the insurance carrier for the payment of premiums for such insurance if the Area EPS Operator is included as an additionally insured.

6.2. Proof of Insurance

The Interconnection Customer shall furnish the required insurance certificates and endorsements to the Area EPS Operator prior to the initial operation of the DER. A copy of the Declaration page of the Homeowner's insurance policy is a common example of an insurance certificate. Thereafter, the Area EPS Operator shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance. Additionally, the Area EPS Operator may request to be additionally listed as an interested third party on the insurance certificates and endorsements for qualifying

facilities less than 40 kW AC to meet the right to periodically obtain a copy of the policy or policies of insurance.

7 Timeline Extensions

7.1. 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.

7.2. 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.

8 Modifications to Application

8.1. 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.

8.2. 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 of Material Modification in the 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.

9 Interconnection

9.1. Interconnection Milestones

For DER systems that are not a qualifying facility less than 40 kW AC, the Interconnection Customer and the Area EPS Operator shall agree on milestones for which each Party is responsible and list them in Attachment IV of the MN Interconnection Agreement. To the greatest extent possible, the Parties will identify all design, procurement, installation and construction requirements associated with the project, and clear associated timelines, at the beginning of the design, procurement, installation and construction phase, or as early within the process as possible.

A Party's obligation under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone, propose the earliest reasonable alternative date in which this and future milestones will be met, and request appropriate amendments to the MN Interconnection Agreement and its attachments. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless:

- The Party will suffer significant uncompensated economic or operational harm from the delay, or
- Attainment of the same milestone has previously been delayed, or

- The Party has reason to believe the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstance explained by the Party proposing the amendment.

If the Party affected by the failure to meet a milestone disputes the proposed extension, the affected Party may pursue dispute resolution as described in the Process Overview document.

9.2. 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 a 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.

9.3. 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 Interconnection Application. Upon receipt of a signed MN Standard Agreement or MN Interconnection Agreement the Area EPS Operator shall schedule and execute appropriate construction of facilities.

9.4. 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 the applicable MN Technical Requirements. Commissioning tests of the Interconnection Customer's installed equipment shall be performed pursuant to applicable codes and standards of the applicable MN Technical Requirements and Section 15 in the Process Overview.

The Interconnection Customer shall notify the Area EPS Operator of testing and inspection no fewer than five (5) Business Days in advance, or as may be agreed to by the Parties. The Interconnection Customer shall provide to the Area EPS Operator a testing procedure that will be followed on the day of testing and inspection no fewer than ten (10) Business Days prior to the testing and inspection date. The testing procedure should include tests and/or inspections to confirm the DER system will meet

the technical requirements of interconnection. The Area EPS Operator shall review the testing procedure for completeness and shall notify the Interconnection Customer if the testing procedure fails to address components of the technical requirements for interconnection.

The Area EPS Operator shall send qualified personnel to the DER site to inspect the interconnection and witness the testing, but the Area EPS Operator bears no liability for the results of the test. Testing and inspection shall occur on a Business Day at a mutually agreed upon date and time. The Area EPS Operator may waive the right to witness the testing.

9.5. Interconnection Costs

9.5.1 Estimation of 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 MN Standard Agreement or in the MN Interconnection Agreement as a detailed itemization of such costs. If Network Upgrades are required, the actual cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer pursuant to the Transmission Provider and associated agreements.

9.5.2 Progressive Payment of Interconnection Costs

The Area EPS Operator shall bill the Interconnection Customer for the design, engineering, construction and procurement costs of the Interconnection Facilities and Upgrades described in the MN Interconnection Agreement or MN Standard Agreement on a monthly basis or other basis agreed upon by both Parties in the MN Interconnection Agreement or as listed in the MN Standard Agreement. The Interconnection Customer shall pay each bill within twenty-one (21) Business Days or as agreed to in the MN Interconnection Agreement or MN Standard Agreement.

9.5.3 Final Accounting of Interconnection Facilities and Upgrade Costs

If distribution or transmission facilities required upgrades to accommodate the proposed DER system, the Area EPS Operator shall render the final interconnection cost invoice to the Interconnection Customer within eighty (80) Business Days (approximately four calendar months) of completing the construction and installation of the Area EPS Operator's Interconnection Facility and Upgrades. The Area EPS Operator shall provide the Interconnection Customer with a final accounting report identifying the

difference between the actual Interconnection Customer's cost responsibility and the Interconnection Customer's previous aggregate payments to the Area EPS Operator for the specific DER system interconnection. Upon the final accounting submitted to the Interconnection Customer, the balance between the actual cost and previously aggregated payments shall be paid to the Area EPS Operator within twenty (20) Business Days. If the balance between the actual cost and previously aggregated payments is a credit, the Area EPS Operator shall refund the Interconnection Customer within twenty (20) Business Days.

- 9.5.4 Final Interconnection Costs without Facilities and Upgrades Needed
Within thirty (30) Business Days the final invoice for the interconnection costs shall be rendered to the Interconnection Customer once 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 MN Standard Agreement or MN Interconnection Agreement.

9.6. Security of Payment

At the option of the Area EPS Operator, either the "Traditional Security" or the "Modified Security" method shall be used for assurance of payment of interconnection cost.

Under the Traditional Security method, the Interconnection Customer shall provide reasonable, adequate assurances of credit, including a letter of credit or personal guaranty of payment and performance from a creditworthy entity acceptable under the Area EPS Operator credit policy. The letter of credit shall also include procedures for the unpaid balance of the estimated amount shown in the MN Interconnection Agreement for the totality of all anticipated work or expense incurred by the Area EPS Operator associated with the Interconnection Application. The payment for these estimated costs shall be as follows:

- 1/3 of estimated costs shall be due no later than when the Interconnection Customer signs the MN Interconnection Agreement.
- An additional 1/3 of estimated costs shall be due prior to initial energization of the DER with the Area EPS Operator.

- Remainder of actual costs, incurred by Area EPS Operator, shall be due within thirty (30) Business Days from the date the bill is mailed by the Area EPS Operator after project completion.

Under the Modified Security method, at least twenty (20) Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of the Area EPS Operator's Interconnection Facilities and Upgrades, the Interconnection Customer shall provide the Area EPS Operator, at the Interconnection Customer's option, a guarantee, letter of credit or other form of security that is reasonably acceptable to the Area EPS Operator and is consistent with the Minnesota Uniform Commercial Code. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Area EPS Operator's Interconnection Facilities and Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to the Area EPS Operator under the MN Interconnection Agreement during its term.

The guarantee must be made by an entity that meets the creditworthiness requirements of the Area EPS Operator and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.

The letter of credit must be issued by a financial institution or insurer reasonably acceptable to the Area EPS Operator and must specify a reasonable expiration date not sooner than sixty (60) Business Days (three calendar months) after the due date of the final accounting report and bill described in Section 9.5

9.7. Non-Warranty

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. The Area EPS Operator does not guarantee uninterrupted power supply to the DER and will operate the Distribution System with the same reliability standards for the entire customer base.

9.8. 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 notification that the Interconnection Customer has complied with all applicable parallel operations requirements and commissioning has been successfully completed. Such authorization shall not be unreasonably withheld, conditioned or delayed.

9.9. Continual Compliance

The Interconnection Customer shall be fully responsible to operate, maintain, and repair 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 referred to in the executed MN Standard Agreement or MN Interconnection Agreement. The Area EPS Operator may periodically inspect, at its own expense, the operation of the DER system as it relates to power quality, thermal limits and reliability. Failure by the Interconnection Customer to remain in compliance with the applicable Technical Requirements will result in the disconnection of the DER system from the Area EPS Operator's Distribution System.

9.10. Disconnection of DER

The Area EPS Operator has the right to disconnect the DER in the event of the following:

- The Interconnection Customer does not continue to follow and maintain IEEE 1547 settings or functions as required by the adopted technical requirements.
- The DER does not meet all the requirements of the Fast Track Process.
- The Interconnection Customer refuses to sign either the MN Interconnection Agreement or the Area EPS Operator's MN Standard Agreement.

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 Fast Track Process.

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

Interconnection Application

Persons interested in applying for the interconnection of a distributed energy resource to the WMU’s distribution system through the Fast Track or Study Processes are to fill out this Interconnection Application. The Interconnection Application is to be filled out completely by the applicant or as noted in each section of the application. The WMU will contact the applicant within 10 business days once the Interconnection Application and the corresponding processing fee is submitted to the WMU. The WMU will then notify the applicant of the completeness of their application. If the application is deemed incomplete by the WMU, the WMU will provide the applicant with a list of missing material. The applicant will then have 10 business days to provide the WMU with this information or request an extension, otherwise the application will be deemed incomplete and the applicant will lose their place in the queue. Sections that are noted with * are required to be filled out.

Checklist for Submission to WMU	
<i>The items below shall be included with submittal of the Interconnection Application to the WMU. Failure to include all items will deem the Interconnection Application incomplete.</i>	
	Included
Non-Refundable Processing Fee Fast Track <ul style="list-style-type: none"> • \$100 + \$1/kW for Certified Systems • \$100 + \$2/kW for Non-Certified Systems Study Process <ul style="list-style-type: none"> • \$1,000 + \$2/kW down payment. Additional study fees may apply. 	<input type="checkbox"/> Yes
One-line diagram <ul style="list-style-type: none"> • This one-line diagram must be signed and stamped by a Professional Engineer licensed in Minnesota if the DER is uncertified greater than 20 kW AC or if certified system is over 250 kW. • Details required on one-line diagram specified at the end of the interconnection application. 	<input type="checkbox"/> Yes
Schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits	<input type="checkbox"/> Yes
Inverter Specification Sheet(s) (if applicable)	<input type="checkbox"/> Yes
Documentation that describes and details the operation of protection and control schemes	<input type="checkbox"/> Yes
Documentation showing site control	<input type="checkbox"/> Yes
Aerial map showing DER system layout including major roadways and true north	<input type="checkbox"/> Yes
<u>Possible Additional Documentation</u> <ul style="list-style-type: none"> • If the DER export capacity is limited, include information material explaining the limiting capabilities. • If Energy Storage is included with the proposed DER system, include the Energy Storage Application. 	

General *	
Select Review Process: <input type="checkbox"/> Fast Track Process <input type="checkbox"/> Study Process	
Application is for:	<input type="checkbox"/> New Distributed Energy Resource <input type="checkbox"/> Capacity Addition or Material Modification to Existing Distributed Energy Resource
If Capacity Addition or Material Modification to existing facility, please describe:	
Distributed Energy Resource will be used for what reason? (Check all that apply):	
<input type="checkbox"/> Net Metering <input type="checkbox"/> Supply Power to Interconnection Customer <input type="checkbox"/> Supply Power to Area EPS	
Installed DER System Cost (before incentives):	\$

Interconnection Customer *		
Full Name (must match the name of the existing service account):		
Account Number:	Meter Number:	
Mailing Address:		
City:	State:	Zip Code:
Email:	Phone:	

** Indicates section must be completed.*

Application Agent *	
Is the Customer using an Application Agent for this application?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If Interconnection Customer is not using an Application Agent, please skip to the next section.</i>	
Application Agent:	
Company Name:	
Email:	Phone:

Distributed Energy Resource Information *	
Estimated Installation Date:	
Location (if different from mailing address of Interconnection Customer):	
Will the Proposed DER system be interconnected to an existing electric service?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the Distributed Energy Resource a single generating unit or multiple?	<input type="checkbox"/> Single <input type="checkbox"/> Multiple
DER Type (<i>Check all that apply</i>):	
<input type="checkbox"/> Solar Photovoltaic	<input type="checkbox"/> Wind
<input type="checkbox"/> Combined Heat and Power	<input type="checkbox"/> Solar Thermal
	<input type="checkbox"/> Energy Storage
	<input type="checkbox"/> Other (please specify)
<i>DER systems with Energy Storage must also submit the Energy Storage Application to the WMU.</i>	
Total Number of Distributed Energy Resources to be interconnected pursuant to this Interconnection Application:	
Phase configuration of Distributed Energy Resource(s):	<input type="checkbox"/> Single Phase <input type="checkbox"/> Three Phase
Type of Generator:	<input type="checkbox"/> Inverter <input type="checkbox"/> Synchronous <input type="checkbox"/> Induction
Aggregate DER Capacity (the sum of nameplate capacity of all generation and storage devices at the PCC):	
kW_{ac}	kVA_{ac}

** Indicates section must be completed.*

Export Capacity Limitation *	
Is the export capability of the DER limited?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If the DER export capacity is limited, complete the following sections and include information material to explaining the limiting capabilities.</i>	
Maximum Physical Export Capacity Requested:	kW_{ac}
If Yes, please provide additional details describing method of export limitation:	

Load Information *	
Interconnection Customer's or Customer-sited Load:	kW_{ac}
Typical Reactive Load (if known):	

Equipment Certification *	
Is the DER equipment certified?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>Please list all IEEE 1547 certified equipment below. Include all certified equipment manufacturer specification sheets with the Interconnection Application submission.</i>	
Equipment Type	Certifying Entity
1	
2	
3	
4	

* Indicates section must be completed.

Prime Mover *		
Please indicate the prime mover:		
<input type="checkbox"/> Solar Photovoltaic	<input type="checkbox"/> Microturbine	<input type="checkbox"/> Fuel Cell
<input type="checkbox"/> Reciprocating Engine	<input type="checkbox"/> Gas Turbine	<input type="checkbox"/> Other (please specify)
Is the prime mover compatible with certified protection equipment package?		<input type="checkbox"/> Yes <input type="checkbox"/> No
DER Manufacturer:	Model Name & Number:	Version:
List of Adjustable Set Points for Protection Equipment or Software:		
Summer Name Plate Rating:	kW_{ac}	Summer Name Plate Rating: kW_{ac}
Winter Name Plate Rating:	kVA_{ac}	Winter Name Plate Rating: kVA_{ac}
Rated Power Factor:	Leading:	Lagging:
<i>A completed Power System Load Flow data sheet must be supplied with the Interconnection Application.</i>		

Only appropriate sections beyond this point until the signature page are to be completed.

Distributed Energy Resource Characteristic Data (for Inverter-based machines)	
Max design fault contribution current:	
Is your response to the previous field an Instantaneous or RMS measurement?	<input type="checkbox"/> Instantaneous <input type="checkbox"/> RMS
Harmonic Characteristics:	
Start-up Requirements:	

** Indicates section must be completed.*

Distributed Energy Resource Characteristic Data (for Synchronous machines)	
RPM Frequency:	Neutral Grounding Resistor:
Direct Axis Synchronous Reactance, X_d :	Zero Sequence Reactance, X_0 :
Direct Axis Transient Reactance, X_d^t :	KVA Base:
Direct Axis Subtransient Reactance, X_d^{tt} :	Field Volts:
Negative Sequence Reactance, X_2 :	Field Amperes:
Please provide the appropriate IEEE model block diagram of excitation system, governing system and power system stabilizer (PSS) in accordance with the regional reliability council criteria. A PSS may be determined to be required by applicable studies. A copy of the manufacturer's block diagram may not be submitted.	

Distributed Energy Resource Characteristic Data (for Induction machines)	
RPM Frequency:	Neutral Grounding Resistor:
Motoring Power (kW):	Exciting Current:
Heating Time Constant:	Temperature Rise:
Rotor Resistance, R_r :	Frame Size:
Stator Resistance, R_s :	Design Letter:
Stator Reactance, X_s :	Reactive Power Required In Vars (No Load):
Rotor Reactance, X_r :	Reactive Power Required In Vars (Full Load):
Magnetizing Reactance, X_m :	Total Rotating Inertia, H:
Short Circuit Reactance, X_d^{sc} :	

Interconnection Facilities Information			
Will a transformer be used between the DER and the Point of Common Coupling?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Will the transformer be provided by the Interconnection Customer? If yes, please fill in the fields below.		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Proposed location of protective interface equipment on property:			
Transformer Data (For Interconnection Customer-Owned Transformer)			
What is the phase configuration of the transformer?		<input type="checkbox"/> Single Phase <input type="checkbox"/> Three Phase	
Size (kVA):	Transformer Impedance (%):	On kVA Base:	
Transformer Volts: (Primary)	Delta:	Wye:	Wye Grounded:
Transformer Volts: (Secondary)	Delta:	Wye:	Wye Grounded:
Transformer Volts: (Tertiary)	Delta:	Wye:	Wye Grounded:
Transformer Fuse Data (For Interconnection Customer-Owned Fuse)			
Manufacturer:	Type:	Size:	Speed:
Interconnecting Circuit Breaker (For Interconnection Customer-Owned Circuit Breaker)			
Manufacturer:		Type:	
Load Rating (in Amps):	Interrupting Rating (In Amps):	Trip Speed (Cycles):	
Interconnection Protective Relays (For Microprocessor Controlled Relays)			
Setpoint Function		Minimum	Maximum

Interconnection Protective Relays (For Relays with Discrete Components)			
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Current Transformer Data:			
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:
Potential Transformer Data:			
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:

For Office Use Only	
Application ID:	
Date Received:	Application Fee Received: <input type="checkbox"/> Yes <input type="checkbox"/> No
Date Completed:	

Interconnection Agreement *

Proposed DER interconnections that are also deemed Qualifying Facilities less than 40 kW AC under Minnesota Statutes § 216B.164 are eligible to sign the WMU’s Standard Agreement for Cogeneration and Small Power Production Facilities. Included in this agreement are payment terms for excess power generated by the proposed DER system the WMU may purchase. In lieu of the WMU’s Standard Agreement for Cogeneration and Small Power Production Facilities, the Interconnection Customer may choose to instead sign the WMU’s Interconnection Agreement.

The Interconnection Customer requests an Interconnection Agreement to be executed in lieu of the WMU’s Standard Agreement for Cogeneration and Small Power Production Facilities.

Yes No

Disclaimers – Must be completed by Interconnection Customer *

Initials

The Interconnection Customer has opportunities to request a timeline extension during the interconnection process. Failure by the Interconnection Customer to meet or request an extension for a timeline outlined in the Interconnection Process could result in a withdrawn queue position and the need to re-apply.

Proposed DER interconnections to the WMU’s distribution system submitted under the Fast Track Process may be moved into the Study Process if engineering screens are failed during the Interconnection Application review.

Application Signature – Must be completed by Interconnection Customer *

I designate the individual or company listed as my Application Agent to serve as my agent for the purpose of coordinating with the Area EPS Operators on my behalf throughout the interconnection process.

 Initials

I hereby certify that, to the best of my knowledge, the information provided in this Application is true, and that I have appropriate Site Control in conformance with the Interconnection Process. I agree to abide by the Minnesota Interconnection Process (MIP) and will inform the WMU if the proposed DER system changes from the details listed in this Interconnection Application.

Applicant Signature:

Date:

*****Please print clearly or type and return completed along with any additional documentation*****

Information Required on One-Line Diagram

An Interconnection Application must include a site electrical one-line diagram showing the configuration of all Distributed Energy Resource equipment, current and potential circuits, and protection and control schemes. The one-line diagram shall include:

- Applicant name.
- Application ID.
- Installer name and contact information.
- Address where DER system will be installed - must match application address.
 - Be sure to list the address for the protective interface equipment if the protective interface equipment is located at a different address than the DER system.
- Correct positions of all equipment, including but not limited to panels, inverter, and DC/AC disconnect. Include distances between equipment, and any labeling found on equipment.

This one-line diagram must be signed and stamped by a Minnesota licensed Professional Engineer if the Distributed Energy Resource is larger than 20 kW (if uncertified) and 250 kW (if certified.)

**INTERCONNECTION AND POWER PURCHASE AGREEMENT –
100 kW or Less (MN STANDARD AGREEMENT)**

This Interconnection and Power Purchase Agreement – 100 kW or Less (MN Standard Agreement) (the “Agreement”) is made and entered into _____, 20_, by and among Missouri Basin Municipal Power Agency, d/b/a Missouri River Energy Services, 3724 West Avera Drive, PO Box 88920, Sioux Falls, SD 57109-8920, a body politic and corporate and public agency organized in Iowa and existing under the laws of the States of Iowa, Minnesota, North Dakota and South Dakota (“MRES”), Willmar Municipal Utilities, 700 Litchfield Avenue S.W., Willmar, MN 56201 (“WMU”), and _____, with an address as set forth in Exhibit A hereto (“Customer”).

MRES, WMU and Customer are each individually referred to herein as a “Party” and collectively as the “Parties.”

RECITALS

A. Customer has installed, or plans to install, electric generating facilities rated at 100 kilowatts or less of electricity on certain real property owned or leased by Customer, which facilities and property are more particularly described in the MN Interconnection Application attached to this Agreement as Exhibit A. The generating facilities are hereinafter referred to as the “Qualifying Facility”.

B. WMU is a municipal utility that owns and operates an electrical distribution system (the “WMU System”) and provides retail electric power to Customer and other customers.

C. MRES is a joint action agency that supplies wholesale electric power supply to WMU pursuant to a long-term exclusive supply contract that requires WMU to purchase from MRES all electric power supply in excess of that provided by the Western Area Power Administration.

D. Pursuant to a waiver/agreement with the Federal Energy Regulatory Commission under the Public Utility Regulatory Policies Act (“PURPA”), MRES is required to purchase power from “qualifying facilities,” as defined by PURPA, and WMU is required to interconnect, supply power to, and allow qualifying facilities to operate in parallel with the WMU System. MRES and WMU are also permitted, but not required, to take such actions with respect to electric generating facilities which do not constitute “qualifying facilities” under PURPA.

E. Customer desires to interconnect and operate the Qualifying Facility in parallel with the WMU System and sell power generated by the Qualifying Facility to MRES, and WMU and MRES are willing to do so pursuant to the terms and conditions of this Agreement.

NOW, THEREFORE, the Parties hereby agree as follows:

1. Scope and Purpose. This Agreement sets forth the terms and conditions under which the Qualifying Facility may be interconnected to, and operated in parallel with, the Local

Utility System and under which MRES will purchase electrical energy generated by the Qualifying Facility. This Agreement does not constitute an agreement by MRES or WMU to deliver electrical energy generated by the Qualifying Facility or to provide any services to Customer except as described in this Agreement.

2. Interconnection Rules. The procedures and technical requirements governing the interconnection and operation of the Qualifying Facility are described in the documents of WMU entitled “MN Interconnection Process” (the “Procedures”) and “MN Technical Requirements for Inverter Connected Systems Rated 100 kW or Less” (the “Requirements”), each as may be amended by WMU from time to time (collectively, the “Interconnection Rules”). WMU shall have the right to amend the Interconnection Rules from time to time in its sole discretion. The Interconnection Rules are incorporated and made part of this Agreement by this reference. Customer acknowledges it has received a copy of the Interconnection Rules and agrees to comply with the terms of the Interconnection Rules. In the event any terms of this Agreement conflict with the terms of the Interconnection Rules, the terms of this Agreement shall govern. All capitalized terms used in this Agreement shall have the meanings given them in the Interconnection Rules, unless otherwise expressly provided herein.

3. Point of Common Coupling. The point where the Interconnection Facilities connect with the WMU System is the Point of Common Coupling (“PCC”) as shown on the diagram in Exhibit A. The diagram included in Exhibit A shall depict the PCC, the location of meter(s), the point of delivery, and such other detail as may be required by WMU. Customer and WMU shall interconnect the Qualifying Facility to the WMU System at the PCC in accordance with the Interconnection Rules and all applicable laws, regulations and prudent utility practices. WMU and Customer shall each own and be responsible for the installation, maintenance and repair of the lines, wires, switches and other equipment on their respective sides of the PCC. Unless otherwise specified in Exhibit B, Customer, at its cost, shall furnish, install, own, maintain and repair all interconnection equipment required at the PCC, in accordance with the Interconnection Rules and applicable laws, regulations and prudent utility practices. Final electrical connections between the WMU System and the Qualifying Facility shall be made by WMU.

4. Installation, Operation and Maintenance of Qualifying Facility. Customer shall install, operate and maintain the Qualifying Facility in accordance with the terms of this section.

a. Responsibility; Standards. Customer shall install, operate, maintain, repair and inspect the Qualifying Facility and shall be fully responsible for the Qualifying Facility, unless otherwise provided herein. Customer’s installation, operation, maintenance and repair of the Qualifying Facility shall be in accordance with this Agreement, the Interconnection Rules, all applicable laws, regulations, ordinances and building codes, and, as applicable, the National Electrical Safety Code (“NESC”), American National Standards Institute (“ANSI”), Institute of Electrical and Electronic Engineers (“IEEE”), National Electrical Code (“NEC”), and Underwriter’s Laboratory (“UL”). In addition, Customer shall maintain the Qualifying Facility in accordance with applicable manufacturers’ recommended maintenance schedules.

b. Costs. Unless otherwise specified in Exhibit B, Customer shall be responsible for all costs associated with the Qualifying Facility, including all costs of installation, operation, maintenance, inspection and repair. Customer shall pay for the actual cost of the Interconnection Facilities and Distribution Upgrades along with WMU's cost to commission the proposed DER system. An estimate of the interconnection costs are set forth in Exhibit B.

c. Permits. Prior to installation of the Qualifying Facility, Customer shall obtain all environmental and other permits required by any governmental authorities to install, own and operate the Qualifying Facility. Customer shall maintain and comply with the requirements of all such permits during the term of this Agreement.

d. Disruption to WMU System. Customer shall design, install, equip, maintain, operate and repair the Qualifying Facility to ensure that the WMU System and WMU's service to other customers are not adversely affected by the Qualifying Facility, either due to disruptions to the WMU System or power quality issues.

e. Alterations. Customer shall not alter, modify or add to the Qualifying Facility without receiving a prior written determination of WMU, in accordance with the Interconnection Rules, as to whether the proposed alteration, modification or addition constitutes a Material Modification to the Interconnection Application. Not less than twenty (20) days prior to the commencement of any proposed alteration, modification or addition to the Qualifying Facility, Customer shall notify WMU of the proposal and provide WMU with all information reasonably required by WMU to review such proposal, including any change in generation capacity of the Qualifying Facility and any alterations to applicable interconnection equipment. WMU shall have ten (10) days to notify Customer in writing of WMU's final determination of the proposed modification.

f. Operator in Charge. Customer shall identify an individual (by name or title) who will act as "Operator in Charge" of the Qualifying Facility. This individual must be familiar with the terms of this Agreement, the Interconnection Rules, and any other laws, regulations or agreements that may apply to the Qualifying Facility.

5. Electric Service. WMU shall provide electric service to Customer for the electricity requirements of Customer not supplied by the Qualifying Facility. Such electric service shall be supplied by WMU under the rules and rate schedules of WMU applicable to Customer's class of service, as revised from time to time by WMU in its sole discretion.

6. Metering.

a. Metering Equipment. WMU shall purchase, own, install and maintain such metering equipment as is necessary to meter all electrical energy of the Qualifying Facility delivered to the WMU System, consistent with the metering arrangement elected pursuant to subsection (b) below. The metering equipment and cost responsibilities associated with such equipment are set forth in Exhibit B. WMU shall test the metering equipment on a scheduled basis. If the metering equipment fails to

register proper amounts or the registration thereof becomes so erratic as to be meaningless, the energy delivered to the WMU System shall be determined by WMU from the best information available.

b. Metering Arrangement. The metering arrangement used to meter and record electrical energy delivered from the Qualifying Facility to the WMU System, and from the WMU to Customer, shall be as set forth in attached Exhibit B.

7. Testing. Customer shall test the Qualifying Facility and interconnection equipment and provide to WMU all records of testing in accordance with the Interconnection Rules. Such testing shall occur prior to commencement of operation of the Qualifying Facility and periodically thereafter, in accordance with the Interconnection Rules or as otherwise requested by WMU. WMU and MRES shall have the right to witness all field testing and review all records prior to allowing the Qualifying Facility to commence normal operations. Such tests are for purposes of assuring the protection and operation of the WMU System and in no way represent any assurance of protection and operation of the Qualifying Facility.

8. Right of Access; Inspection. WMU and MRES shall have the right to inspect the Qualifying Facility and observe the Qualifying Facility's installation, commissioning, startup, operation and maintenance. WMU and MRES shall have access to the Qualifying Facility for any reasonable purpose in connection with the interconnection described in this Agreement or the Interconnection Rules or to provide service to other customers.

9. Disconnection. The Qualifying Facility shall or may be disconnected from the WMU System at such times as described in, and in accordance with, the terms of this section.

a. Disconnection by Customer. Customer shall disconnect the Qualifying Facility from the WMU System upon the effective date of the termination of this Agreement as described in Section 15 below.

b. Disconnection by WMU. WMU shall have the right to disconnect, or cause Customer to disconnect, the Qualifying Facility from the WMU System for the following reasons: (i) to allow WMU to operate, construct, install, maintain, repair, replace or inspect any facilities of WMU; (ii) the disruption or potential disruption of the WMU System as described in Section 4(d) above; (iii) the presence of a condition which could cause injury or loss of life or damage to the WMU System or property of a third party; (iv) if WMU is required to disconnect by MRES or WMU's transmission provider; (v) Customer's noncompliance with the terms of this Agreement; (vi) the termination of this Agreement as provided in Section 15 below; or (vii) any other reason for disconnection as set forth in the Interconnection Rules. WMU shall use reasonable efforts to provide prior notice and coordination of any disconnection of the Qualifying Facility due to routine maintenance, repairs or modifications to the WMU System. Neither WMU nor MRES shall be liable to Customer for any damages, losses or other liabilities, including consequential damages, due to the disconnection of the Qualifying Facility as described in this section.

10. Interconnected Operation. Customer may operate interconnected with the WMU System only in accordance with this Agreement and the Interconnection Rules. WMU, MRES and Customer shall comply with all requirements of the transmission provider and any regulatory authorities having jurisdiction over distributed generation interconnected to the WMU System.

11. Energy Sales to MRES. MRES shall purchase all electrical energy generated by the Qualifying Facility which is received by the WMU System. The rate paid by MRES for such electrical energy shall be equal to the sum of: (a) the MRES PURPA rate for qualifying facilities of 100 kW or less, as adjusted from time to time by MRES in its discretion, and (b) the Loss Factor Adjustment, as adjusted from time to time by MRES and WMU in their discretion. The MRES PURPA rate and the Loss Factor Adjustment, along with their currently applicable amounts, are described in attached Exhibit B. Customer shall receive payment for electrical energy sales to MRES through a credit on Customer's monthly invoice from WMU, which credit may be one month in arrears. MRES, in turn, shall credit the monthly wholesale power supply bill submitted by MRES to WMU in an amount equal to the electrical energy purchases of MRES from the Qualifying Facility during the preceding month. WMU shall provide to MRES, as soon as available following the end of each month, data indicating the amount of electrical energy purchased by MRES from the Qualifying Facility during the preceding month.

12. Limitation of Liability. Each Party's liability to the other Parties for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of its obligations under this Agreement shall be limited to the amount of direct damage actually incurred. In no event shall a Party be liable to another party under this Agreement for any punitive, incidental, indirect, special or consequential damages, including for loss of business opportunity or profits. In addition, and notwithstanding any other provision in this Agreement, WMU's liability to Customer under this Agreement shall be further limited as set forth in WMU's tariffs and/or terms and conditions for electric service, which limitations are incorporated herein by this reference.

13. Insurance. Customer shall maintain general liability insurance in accordance with the terms of the Interconnection Rules.

14. Default; Remedies. A Party shall be in default under this Agreement if such Party fails to comply with, observe or perform, or defaults in the performance of, any covenant or obligation under this Agreement and fails to cure the failure within thirty (30) days after receiving written notice from another Party, which notice shall identify the basis of the default. If a default is not cured within the cure period, the non-defaulting Party or Parties shall have the right to terminate this Agreement by written notice to the defaulting Party, shall be relieved of any further obligation under this Agreement, and shall be entitled to pursue all other damages and remedies available under this Agreement or at law or in equity.

15. Term. This Agreement shall take effect upon execution by all Parties hereto and shall remain in effect unless terminated in accordance with this section. This Agreement may be terminated as follows: (a) any Party may terminate this Agreement at any time upon ninety (90) days' written notice to the other Parties; (b) WMU or MRES may terminate this Agreement

at any time upon thirty (30) days' written notice to the other Parties if the Qualifying Facility is not, or at any time ceases to be, a "qualifying facility" under PURPA; (c) any Party may terminate this Agreement after a default under Section 14 above; and (d) MRES may terminate this Agreement upon sixty (60) days' written notice to the other Parties in the event MRES determines that its purchase of electrical energy generated by the Qualifying Facility under Section 11 above would result in cost greater than those which MRES would incur if it did not make such purchases, as permitted by the PURPA waiver/agreement described in Recital D above. In the event this Agreement is terminated pursuant to subsection (d), WMU and Customer shall enter into a new agreement which defines their respective rights and obligations with respect to the interconnection and operation of the Qualifying Facility to and with the WMU System in accordance with PURPA.

16. Force Majeure. For purposes of this Agreement, a force majeure event is any event that is beyond the reasonable control of the affected Party and that the affected Party is unable to prevent by exercising reasonable diligence, including the following events or circumstances, but only to the extent they satisfy the preceding requirements: acts of war, terrorism, public disorder, rebellion or insurrection; floods, hurricanes, earthquakes, lightning, storms or other acts of God; explosions or fires; strikes, work stoppages or labor disputes; embargoes; and sabotage. If a force majeure event prevents a Party from fulfilling its duties under this Agreement, such Party shall promptly notify the other Party in writing and shall keep the other Party informed on a continuing basis of the scope and duration of the force majeure event. The affected Party shall specify the circumstances of the force majeure event, its expected duration, and the steps being taken to mitigate the effect of the event. The affected Party shall be entitled to suspend or modify its performance under this Agreement but will use reasonable efforts to resume its performance as soon as possible.

17. Non-Warranty. Neither by inspection, if any, nor by non-rejection or in any other way does WMU or MRES give or make any warranty, express or implied, as to the adequacy, safety or other characteristics of any lines, wires, switches, or other equipment or structures owned, installed or maintained by Customer.

18. Assignment. Customer may assign this Agreement to an entity or individual to whom Customer transfers ownership of the Qualifying Facility, so long as Customer obtains prior written consent of WMU and MRES, which consent shall not be unreasonably withheld, and such assignee agrees in writing to assume all obligations of Customer under this Agreement. WMU and/or MRES may assign this Agreement upon written notice to Customer.

19. No Waiver. The failure of a Party to insist, on any occasion, upon strict performance of any provision of this Agreement shall not be construed as a waiver or relinquishment of the obligations, rights or duties imposed upon the Parties.

20. Notices. Notices given under this Agreement shall be deemed to have been given when delivered in person or by mail, postage prepaid, to the respective addresses of the Parties set forth in the opening paragraph of this Agreement. Such addresses may be changed by written notification to the other Parties.

21. Severability. If any provision of this Agreement is adjudged by any court of competent jurisdiction to be illegal or unenforceable, such provision shall be deemed separate and independent, and the remainder of this Agreement shall remain in full force and effect.

22. Entire Agreement; Amendments. This Agreement, including the Interconnection Rules and all Exhibits hereto, constitutes the entire agreement and understanding between the Parties concerning the subject matter of this Agreement. The Parties are not bound by or liable for any statement, representation, promise, understanding or undertaking of any kind or nature, whether written or oral, with regard to the subject matter hereof not set forth or provided for herein. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for in this Agreement, which agreements are unaffected by this Agreement. This Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties.

23. Dispute Resolution. The city council or city-appointed body governing the WMU has authority to consider and determine disputes, if any, that arise under this Agreement. The Parties agree to use good faith efforts to resolve all disputes in accordance with the dispute resolution process adopted by the WMU's governing body pursuant to Minnesota Statutes §216B.164.

24. Governing Law; Jurisdiction. This Agreement and the rights and obligations of the Parties hereunder shall be construed in accordance with and shall be governed by the laws of the State of Minnesota.

[Signature Page Follows]

IN WITNESS WHEREOF, the Parties have caused this Interconnection and Power Purchase Agreement – 100 kW or Less (Standard Agreement) to be signed by their respective duly authorized representatives.

Willmar Municipal Utilities

[CUSTOMER NAME]

BY: _____
TITLE: _____
DATE: _____

BY: _____
TITLE: _____
DATE: _____

MISSOURI BASIN MUNICIPAL POWER AGENCY
d/b/a MISSOURI RIVER ENERGY SERVICES

BY: _____
TITLE: _____
DATE: _____

EXHIBIT A
INTERCONNECTION APPLICATION

EXHIBIT B
METERING ARRANGEMENT AND PURCHASE RATE

1. **MRES PURPA Rate.** The rate to be paid by MRES for electrical energy purchased from the Qualifying Facility under Section 11 of the Agreement shall be equal to the MRES PURPA rate for 100 kW or less, as established by MRES in its sole discretion each year or upon other intervals as determined by MRES. The MRES PURPA rate for 100 kW or less for 2019 is \$_____/kWh. MRES shall notify WMU, and WMU shall notify Customer, of any change in such rate adopted by MRES. Customer's right to payments under Section 11 is subject to Customer's compliance with the terms, covenants and conditions of the Agreement.

2. **Loss Factor Adjustment.** The MRES PURPA rate for 100 kW or less, as described in Section 1 above, shall be increased by a percentage factor to reflect the savings resulting from reduced WMU System losses associated with electrical energy purchased from the Qualifying Facility under Section 11 of the Agreement. For example, if the Loss Factor Adjustment was 5%, the Loss Factor Adjustment to the 2019 MRES PURPA rate, in dollars, would be \$_____
_____\$_____ \times 0.05), causing the total combined rate paid for power purchased from the Qualifying Facility to be \$_____/kWh. WMU and MRES shall establish the Loss Factor Adjustment each year or upon other intervals as they determine, and WMU shall notify Customer of any change in this factor. The Loss Factor Adjustment for 2019 is_%.

3. **Metering Arrangement.**

a. **Less than 40 kW QFs.** A customer with a Qualifying Facility with a capacity of less than 40 kW can elect one of the following metering arrangements to measure the electrical energy generated by the Qualifying Facility which is received by the WMU System for purchase by MRES (Customer to select one):

_____. **Net Metering.** The metering shall be such that power delivered to Customer by WMU shall be netted against power received by WMU from the Qualifying Facility, pursuant to Minnesota Rules § 7835.3300. WMU's monthly invoice to Customer will indicate: (a) a credit to Customer if the power received by WMU from the Qualifying Facility exceeds the power provided by WMU to Customer or (b) the payment due by Customer to WMU if the power delivered by WMU to Customer exceeds the power received by WMU from the Qualifying Facility. The rate to be used to determine payment under subsection (a) for any net excess power received by the WMU System shall be the rate described in Section 11 of the Agreement.

_____. **Dual Metering.** The metering shall be such that all power received by the WMU from the Qualifying Facility (net of Customer's own use) shall be measured separately from power delivered from WMU to Customer, pursuant to Minnesota Rules § 7835.3400. The meter measuring power delivered to Customer shall not permit

reduction of measured power already delivered to Customer during periods when the Qualifying Facility generation exceeds Customer demand (i.e. no netting allowed). WMU shall credit Customer's monthly bill for power received by the WMU System and purchased by MRES. The rate paid by MRES for electrical energy generated by the Qualifying Facility which is received by the WMU System shall be the rate described in Section 11 of the Agreement.

b. 40 kW to 100 kW QFs. If the capacity of Customer's Qualifying Facility is 40 kW or more and less than or equal to 100 kW, then the metering arrangement to measure the electrical energy generated by the Qualifying Facility which is received by the WMU System for purchase by MRES shall be such that all power received by the WMU from the Qualifying Facility (net of Customer's own use) shall be measured separately from power delivered from WMU to Customer, pursuant to Minnesota Rules § 7835.3400. The meter measuring power delivered to Customer shall not permit reduction of measured power already delivered to Customer during periods when the Qualifying Facility generation exceeds Customer demand (i.e. no netting allowed). WMU shall credit Customer's monthly bill for power received by the WMU System and purchased by MRES. The rate paid by MRES for electrical energy generated by the Qualifying Facility which is received by the WMU System shall be the rate described in Section 11 of the Agreement.

c. Customer acknowledges and agrees that time-of-day purchase rates under Minnesota Rules § 7835.3500 are not available under this Agreement due to metering and technology limitations of WMU and Customer.

4. Environmental Attributes. Power purchased by MRES from the Qualifying Facility does not include any environmental attributes (i.e., renewable energy credits), if any, associated with the environmental character of the Qualifying Facility, nor any federal income tax credits for renewable energy that are accruable to Customer with respect to the Qualifying Facility.

5. Interconnection Costs. The Qualifying Facility is responsible for the actual, reasonable costs of interconnection which are estimated to be \$_____. The Qualifying Facility will pay WMU as follows:

_____.

6. Metering Equipment. WMU is responsible for furnishing the following metering equipment, if any:_____.
WMU's cost responsibility, if any, associated with the metering equipment is as follows:

_____.

INTERCONNECTION AGREEMENT

For use in lieu of the MN Standard
Agreement

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i. Contact Information

Contact information for each Party is listed below along with the basic information describing the Distributed Energy Resource (DER) system.

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

DER System Information

Application Number: _____
Type of DER System: _____
Capacity Rating of System (AC): _____
Limited Capacity Rating (AC): _____
Address of DER System: _____

This Interconnection Agreement (“Agreement”) is made and entered into this _____ day of _____, 20__ by and between _____ (“Interconnection Customer”), and Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota (“Area EPS Operator”).

Interconnection Customer and Area EPS Operator each may be referred to as a “Party” or collectively as the “Parties.”

In consideration of the mutual covenants set forth herein, the Parties agree as follows:

1 Scope and Limitations of Agreement

- 1.1. This Agreement is intended to provide for the Interconnection Customer to interconnect at the Point of Common Coupling and operate a Distributed Energy Resource with a Nameplate Rating of 10 Megawatts (MW) or less in parallel with the Area EPS at the location identified above and shown in the one-line diagram in Attachment 3.
- 1.2. This Agreement shall be used for all Interconnection Applications submitted under the Minnesota Interconnection Process (MIP) except for those Interconnection Applications that qualify and choose for the MN Standard Agreement to replace the need for this Agreement.
- 1.3. This Agreement governs the terms and conditions under which the Interconnection Customer’s Distributed Energy Resource will interconnect with, and operate in parallel with, the Area EPS Operator’s Distribution System.
- 1.4. Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1, the MIP, or the body of this Agreement.
- 1.5. This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer’s power. The purchase or delivery of power and other services that the Interconnection Customer may require from the Area EPS Operator, or others, may be covered under separate agreements.
- 1.6. To facilitate the operation of the Distributed Energy Resource, this Agreement also allows for the occasional and inadvertent export of energy to the Area EPS. The amount, metering, billing, and accounting of such inadvertent energy exporting shall be governed by the Operating Agreement in Attachment 5. This Agreement does not constitute an agreement by the Area EPS Operator to purchase or to pay for any energy, inadvertently or intentionally exported, unless expressly noted in Attachment 5 or under a separately executed power purchase agreement (PPA).

- 1.7. This Agreement does not constitute a request for the provision of any transmission delivery service or for any local distribution delivery service. If it is the Interconnection Customer's intent to sell to other parties, the Interconnection Customer shall be responsible for market related charges to the Area EPS Operator or its wholesale power supplier caused by the generator operation.
- 1.8. The Minnesota Technical Requirements for interconnection are covered in a separate document, a copy of which has been made available to the Interconnection Customer and is incorporated and made part of this Agreement by this reference.
- 1.9. Nothing in this Agreement is intended to affect any other agreement between the Area EPS Operator and the Interconnection Customer.

2 Responsibilities of the Parties

- 2.1. The Parties shall perform all obligations of this Agreement in accordance with the MIP, Minnesota Technical Requirements, all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.
- 2.2. The Interconnection Customer shall construct, interconnect, operate and maintain its Distributed Energy Resource and construct, operate, and maintain its Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, this Agreement, and Good Utility Practice. Prior to the construction of the Distributed Energy Resource, the Interconnection Customer shall obtain all environmental and other permits required by any governmental authorities. The Interconnection Customer shall also maintain and comply with the requirements of these permits during the term of this Agreement.
- 2.3. The Area EPS Operator shall construct, operate, and maintain its Distribution System and its Interconnection Facilities in accordance with this Agreement and Good Utility Practice.
- 2.4. The Parties agree to cause their facilities or systems to be constructed in accordance with the laws of the State of Minnesota and to meet or exceed applicable codes and standards provided by the National Electrical Safety Code, the American National Standards Institute, Institute of Electrical and Electronics Engineers (IEEE), Underwriter's Laboratory (UL), Minnesota Technical Requirements, Operating Requirements, and local building codes and other applicable ordinances in effect at the time of construction. The Interconnection Customer agrees to design, install, maintain, and operate its Distributed Energy Resource so as to reasonably minimize the

likelihood of a disturbance adversely affecting or impairing the system or equipment of the Area EPS Operator and any Affected Systems.

- 2.5. Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now owns or subsequently owns unless otherwise specified in the Attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of common coupling. The Area EPS Operator and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Area EPS Operator's Distribution System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Attachments to this Agreement.
- 2.6. The Area EPS Operator shall coordinate with all Affected Systems to support the interconnection.

3 Parallel Operation Obligations

- 3.1. Once the Distributed Energy Resource has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Distributed Energy Resource in the applicable control area, including, but not limited to: 1) the rules and procedures concerning the operation of generation set forth by the applicable system operator(s) for the Area EPS Operator's Distribution System provided or referenced in an attachment to this Agreement and; 2) the Operating Requirements set forth in Attachment 5 of this Agreement.

4 Metering

- 4.1. As described in MIP Process Overview Section 9.1, the Interconnection Customer shall be responsible for the Area EPS Operator's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Attachments 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements.

5 Distributed Energy Resource Capabilities and Grid Reliability

- 5.1. The Minnesota Technical Requirements outlines the Parties' responsibilities consistent with IEEE 1547 Standard for Interconnection and Interoperability of Distributed Energy

Resources with Associated Electric Power Systems Interfaces which provides requirements relevant to the interconnection and interoperability performance, operation and testing, and, to safety, maintenance and security considerations.

- 5.2. The Area EPS Operator may offer the Interconnection Customer the option to utilize required DER capabilities to mitigate Interconnection Customer costs related to Upgrades or Interconnection Facilities to address anticipated system impacts from the engineering review (i.e. Initial Review, Supplemental Review, or Study Process described in the MIP).

6 Equipment Testing and Inspection

- 6.1. As described in MIP Process Overview Section 9.2, the Interconnection Customer shall test and inspect its Distributed Energy Resource and Interconnection Facilities prior to interconnection pursuant to Minnesota Technical Requirements and this Agreement.

7 Authorization Required Prior to Parallel Operation

- 7.1. As described in MIP Process Overview Section 9.4, the Area EPS Operator shall use Reasonable Efforts to list applicable parallel operation requirements by providing the Minnesota Technical Requirements with the notice of approval of the Interconnection Application or by providing a website link to the document. Additionally, the Area EPS Operator shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. Pursuant to the MIP Process Overview Section 9.5, the Interconnection Customer shall not operate its Distributed Energy Resource in parallel with the Area EPS Operator's Distribution System without prior written authorization of the Area EPS Operator.

8 Right of Access

- 8.1. Upon reasonable notice, the Area EPS Operator may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Distributed Energy Resource first produces energy to inspect the interconnection, and observe the commissioning of the Distributed Energy Resource (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Area EPS Operator at least five (5) Business Days prior to conducting any on-site verification testing of the Distributed Energy Resource.
- 8.2. Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Area EPS Operator shall have access to the Interconnection

Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.

- 8.3. Each Party shall be responsible for its costs associated with the interconnection of the DER system as outlined in MIP Process Overview Section 9.3 and the Minnesota Technical Requirements.

9 Term and Termination

- 9.1. This Agreement shall become effective as of the date when both the Interconnection Customer and the Area EPS Operator have both signed this Agreement. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:
 - 9.1.1. The Parties agree in writing to terminate the Agreement;
 - 9.1.2. The Interconnection Customer may terminate this Agreement at any time by giving the Area EPS Operator twenty (20) Business Days written notice;
 - 9.1.3. The Area EPS Operator may terminate this Agreement if the Distributed Energy Resource is not interconnected to the Area EPS Operator's Distribution System within thirty-six (36) months of the effective date of this Agreement as set forth above in Section 9.1;
 - 9.1.4. Either Party may terminate this Agreement after default pursuant to Section 19.
- 9.2. No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.
- 9.3. Upon termination of this Agreement, the Distributed Energy Resource will be disconnected from the Area EPS Operator's Distribution System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's default of this Agreement or such non-terminating Party otherwise is responsible for these costs under this Agreement.
- 9.4. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing, at the time of the termination.

- 9.5. The provisions of this Section 9 shall survive termination or expiration of this Agreement.

10 Disconnection

- 10.1. Disconnection of Unit. The Area EPS Operator may disconnect the Distributed Energy Resource as reasonably necessary, including for the following conditions or situations: termination of this Agreement, non-compliance with this Agreement, a system emergency, imminent danger to the public or Area EPS personnel, or for routine maintenance, repairs, and modifications to the Area EPS. The Area EPS Operator shall use Reasonable Efforts to notify the Interconnection Customer promptly when it becomes aware of an event or condition that may reasonably be expected to affect the Interconnection Customer's operation of the Distributed Energy Resource. The Interconnection Customer shall use Reasonable Efforts to notify the Area EPS Operator promptly when it becomes aware of an event or condition that may reasonably be expected to affect the Area EPS Operator's Distribution System or any Affected Systems. To the extent information is known, the notification shall describe the event or condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action. It is agreed that the Area EPS Operator shall have no liability for any loss of sales or other damages including all consequential damages for the loss of business opportunity, profits or other losses, regardless of whether such damages were foreseeable, due to the disconnection of the Distributed Energy Resource.
- 10.2. Temporary Interruption. The Area EPS Operator may interrupt interconnection service or curtail the output of the Distributed Energy Resource and temporarily disconnect the Distributed Energy Resource from the Area EPS Operator's Distribution System when necessary for routine maintenance, construction, or repairs on the Area EPS Operator's Distribution System. The Area EPS Operator shall use Reasonable Efforts to provide the Interconnection Customer with three (3) Business Days' notice prior to such interruption. The Area EPS Operator shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer. Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.
- 10.3. Forced Outage. During any forced outage, the Area EPS Operator may suspend interconnection service to effect immediate repairs on the Area EPS Operator's Distribution System. The Area EPS Operator shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not reasonably possible, the Area EPS Operator shall, upon request, provide the Interconnection Customer

written documentation after the fact explaining the circumstances of the disconnection.

- 10.4. Adverse Operating Effects. The Area EPS Operator shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Distributed Energy Resource may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Distributed Energy Resource could cause damage to the Area EPS Operator's Distribution System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Area EPS Operator may disconnect the Distributed Energy Resource. The Area EPS Operator shall provide the Interconnection Customer with five (5) Business Days' notice of such disconnection, unless the provisions of Section 10.1 apply.
- 10.5. Modification of the Distributed Energy Resource. The Interconnection Customer must receive written authorization from the Area EPS Operator before making any change to the Distributed Energy Resource that may have a material impact on the safety or reliability of the Distribution System. Such authorization shall not be unreasonably withheld if the modification is not a Material Modification. Material Modifications, including an increase Nameplate Rating or capacity, may require the Interconnection Customer to submit a new Interconnection Application as described in Section 7 of the MIP Process Overview. If the Interconnection Customer makes such modification without the Area EPS Operator's prior written authorization, the Area EPS Operator shall have the right to temporarily disconnect the Distributed Energy Resource.
- 10.6. Reconnection. The Parties shall cooperate with each other to restore the Distributed Energy Resource, Interconnection Facilities, and the Area EPS Operator's Distribution System to their normal operating state as soon as reasonably practicable following a temporary disconnection.
- 10.7. Treatment Similar to Other Retail Customers. If the Interconnection Customer receives retail electrical service at the same site as the Distributed Energy Resource, it may also be disconnected consistent with the rules and practices for disconnecting other retail electrical customers.
- 10.8. Disconnection for Default. If the Interconnection Customer is in default of this Agreement, it may be disconnected after a sixty (60) day written notice is provided and the default is not cured during this sixty (60) day notice. This provision does not apply to disconnection based on Sections 10.1, 10.2, 10.3 or 10.4 of this Agreement.

11 Cost Responsibility for Interconnection Facilities and Distribution Upgrades

- 11.1 Interconnection Facilities. The Interconnection Customer shall pay for the actual cost of the Interconnection Facilities itemized in Attachment 2 of this Agreement. The Area EPS Operator shall provide a good faith estimate of the cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Area EPS Operator.
- 11.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Area EPS Operator's Interconnection Facilities.
- 11.3 Distribution Upgrades. The Area EPS Operator shall design, procure, construct, install, and own the Distribution Upgrades described in Attachment 7 of this Agreement. The Area EPS Operator shall provide a good faith estimate of the cost, including overheads, for the purchase and construction of the Distribution Upgrades and provide a detailed itemization of such costs. If the Area EPS Operator and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

12 Cost Responsibility for Network Upgrades

- 12.1. Applicability. No portion of Section 12 shall apply unless the interconnection of the Distributed Energy Resource requires Network Upgrades.
- 12.2. Network Upgrades. The Area EPS Operator or the Transmission Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment 7 of this Agreement. The Area EPS Operator shall provide a good faith estimate of the cost, including overheads, for the purchase and construction of the Network Upgrades and provide a detailed itemization of such costs. If the Area EPS Operator and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Area EPS Operator elects to pay for Network Upgrades, the actual cost of

the Network Upgrades, including overheads, shall be borne initially by the Interconnection Customer.

- 12.3. Repayment of Amounts Advanced for Network Upgrades. The Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Area EPS Operator and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Area EPS Operator's Tariff and Affected System's Tariff for transmission services with respect to the Distributed Energy Resource. Any repayment shall include interest calculated in accordance with the methodology set forth in the Federal Energy Regulatory Commission's (FERC) regulations at 18 C.F.R. § 35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person.
- 12.4. Notwithstanding the foregoing, the Interconnection Customer, the Area EPS Operator, and any applicable Affected System operators may adopt any alternative payment schedule that is mutually agreeable so long as the Area EPS Operator and said Affected System operators take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Area EPS Operator or any applicable Affected System operators will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond 20 years from the commercial operation date.
- 12.5. If the Distributed Energy Resource fails to achieve commercial operation, but it or another Distributed Energy Resource is later constructed and requires use of the Network Upgrades, the Area EPS Operator and Affected System operator shall at that time reimburse the Interconnection Customer for the amounts advanced for the Network Upgrades. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the Distributed Energy Resource, if different, is responsible for identifying the entity to which reimbursement must be made.

- 12.6. Special Provisions for Affected Systems. Unless the Area EPS Operator provides, under this Agreement, for the repayment of amounts advanced to any applicable Affected System operators for Network Upgrades, the Interconnection Customer and Affected System operator shall enter into an agreement that provides for such repayment. The agreement shall specify the terms governing payments to be made by the Interconnection Customer to Affected System operator as well as the repayment by Affected System Operator.
- 12.7. Rights under Other Agreements. Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Distributed Energy Resource.

13 Billing, Payment, Milestones, and Financial Security

- 13.1. Billing and Payment Procedures and Final Accounting. The Area EPS Operator shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of Interconnection Facilities and Upgrades contemplated by this Agreement, and the Interconnection Customer shall pay each bill, pursuant to the MIP Interconnection Process documents, or as otherwise agreed to by the Parties.
- 13.2. Within 80 Business Days (approximately 4 calendar months) of completing the construction and installation of the Area EPS Operator's Interconnection Facilities and/or Upgrades described in the Attachments to this Agreement, the Area EPS Operator shall provide the Interconnection Customer with a final accounting report, as described in the MIP Fast Track Process Section 9.5.3 and the Study Process Section 11.4.3.
- 13.3. Milestones. Pursuant to the MIP Fast Track Process Section 9.1 and the Study Process Section 11.1, the Parties shall agree on milestones for which each Party is responsible and list them in Attachment 4 of this Agreement.
- 13.4. Financial Security Arrangements. Pursuant to the MIP Fast Track Process Section 9.6 and the Study Process Section 11.5, the Interconnection Customer shall provide the Area EPS Operator, at the Interconnection Customer's option, a guarantee, letter of credit or other form of security that is reasonably acceptable to the Area EPS Operator and is consistent with the Minnesota Uniform Commercial Code. Such security for

payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Area EPS Operator's Interconnection Facilities and Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to the Area EPS Operator under this Agreement during its term. In addition:

- 13.4.1. The guarantee must be made by an entity that meets the creditworthiness requirements of the Area EPS Operator, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.
- 13.4.2. The letter of credit must be issued by a financial institution or insurer reasonably acceptable to the Area EPS Operator and must specify a reasonable expiration not sooner than sixty (60) Business Days (three calendar months) after the due date for the issuance of the final bill.

14 Assignment

- 14.1. The Interconnection Customer shall not assign its rights nor delegate its duties under this Agreement without the prior written consent of the Area EPS Operator. Any assignment or delegation made by the Interconnection Customer without the Area EPS Operator's written consent shall not be valid. The Area EPS Operator shall not unreasonably withhold its consent to the Interconnection Customer's assignment or delegation under this Agreement.

15 Limitations of Liability

- 15.1. Each Party's liability to the other Party for failure to perform its obligations under this Agreement shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages of any kind whatsoever, including for loss of business opportunity or profits, regardless of whether such damages were foreseen.
- 15.2. Notwithstanding any other provision in this Agreement, with respect to the Area EPS Operator's provision of electric service to any customer including the Interconnection Customer, the Area EPS Operator's liability to such customer shall be limited as set forth in the Area EPS Operator's tariffs and terms and conditions for electric service, and shall not be affected by the terms of this Agreement.

16 Non-Warranty

- 16.1. 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, installed or maintained by the Interconnection Customer or leased by the Interconnection Customer from third parties, including without limitation, the Distributed Energy Resource and any structures, equipment, wires, appliances or devices not owned, operated or maintained by the Area EPS Operator.

17 Indemnity

- 17.1. This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Section 15.
- 17.2. Each Party shall at all times indemnify, defend, and hold the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, reasonable attorney fees, and all other obligations by or to third parties, arising out of or resulting from the Party's action or failure to meet its obligations under this Agreement, except to the extent that such damages, losses or claims were caused by the negligence or intentional acts of the other Party.
- 17.3. If an indemnified Party is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified Party may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.
- 17.4. If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this article, the amount owing to the indemnified Party shall be the amount of such indemnified Party's actual loss, net of any insurance or other recovery.
- 17.5. Promptly after receipt by an indemnified Party of any claim or notice of the commencement of any action, administrative or legal proceeding, or investigation as to which the indemnity provided for in this article may apply, the indemnified Party shall notify the indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Party.

18 Force Majeure

18.1. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance of obligations under this Agreement as soon as possible.

19 Default

19.1. No default of any obligation under this Agreement shall exist where such failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a default, the non-defaulting Party shall give written notice of such default to the defaulting Party. Except as provided in Section 18, the defaulting Party shall have sixty (60) calendar days from receipt of the default notice within which to cure such default; provided however, if such default is not capable of cure within sixty (60) calendar days, the defaulting Party shall commence such cure within twenty (20) calendar days after notice and continuously and diligently complete such cure within six (6) months from receipt of the default notice; and, if cured within such time, the default specified in such notice shall cease to exist.

19.2. If a default is not cured as provided in this Section 19, or if a default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Section 19 will survive termination of this Agreement.

20 Insurance

20.1. An Area EPS Operator may only require an Interconnection Customer to purchase insurance covering damages pursuant to the applicable MIP process document to which the Distributed Energy Resource is subject to.

- 20.2. The Area EPS Operator agrees to maintain general liability insurance or self-insurance consistent with the Area EPS Operator's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Area EPS Operator's liabilities undertaken pursuant to this Agreement.
- 20.3. The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.
- 20.4. Failure of the Interconnection Customer or 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.

21 Confidential Information

- 21.1. Each Party shall treat and protect Confidential Information under this Agreement in accordance with the Confidentiality provisions in the MIP Process Overview document Section 12.1.

22 Disputes

- 22.1. The Parties agree to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner. The Parties agree to follow the established dispute resolution policy adopted by the Area EPS Operator.

23 Taxes

- 23.1. The Parties agree to follow all applicable tax laws and regulations, consistent with Internal Revenue Service and any other relevant local, state and federal requirements.
- 23.2. Each Party shall cooperate with the other to maintain the other Party's tax status. It is incumbent on the Party seeking to maintain its tax status to provide formal written notice to the other Party detailing what exact cooperation it is seeking from the other Party well prior to any deadlines by which any such action would need to be taken. Nothing in this Agreement is intended to adversely affect, if applicable, the Area EPS Operator's tax-exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

24 Miscellaneous

- 24.1. Governing Law, Regulatory Authority, and Rules. This Agreement shall be interpreted, governed, and construed under the laws of the State of Minnesota, without regard to

its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

- 24.2. Amendment. The Parties may amend this Agreement by a written instrument duly executed by both Parties, or under Section 24.11 of this Agreement.
- 24.3. No Third-Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.
- 24.4. Waiver. None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.
- 24.5. Entire Agreement. This Agreement, including all attachments, constitutes the entire agreement between the Parties with regard to the interconnection of the Distributed Energy Resource of the Parties at the Point(s) of Common Coupling expressly provided for in this Agreement and supersedes all prior agreements or understandings, whether verbal or written. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement. Each Party also represents that in entering into this Agreement, it has not relied on the promise, inducement, representation, warranty, agreement, or other statement not set forth in this Agreement or in the incorporated attachments.
- 24.6. Multiple Counterparts. This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.
- 24.7. No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

- 24.8. Severability. If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.
- 24.9. Environmental Releases. Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Distributed Energy Resource or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.
- 24.10. Subcontractors. Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement. Each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.
- 24.10.1. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made. In no event shall the Area EPS Operator be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.
- 24.10.2. The obligations under this Section 24 will not be limited in any way by any limitation of subcontractor's insurance.
- 24.11. Inclusion of Area EPS Operator Tariff and Rules. The interconnection services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the rate schedules and rules applicable to the electric service provided by the Area

EPS Operator, which rate schedules and rules are hereby incorporated into this Agreement by this reference. Notwithstanding any other provisions of this Agreement, the Area EPS Operator shall have the right to unilaterally change its rates, charges, classification, service, tariff, or rule, or any agreement relating thereto subject to standard municipal procedures as determined by the appropriate governing board.

25 Notices

25.1. General. Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement (“Notice”) shall be deemed properly given if delivered in person or sent by United States Mail, first class, postage prepaid, to the person specified as follows:

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.2. Billing and Payment. Billing and payments shall be sent to the addresses set out below:

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.3. Alternative Forms of Notice. Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone or email to the telephone numbers and e-mail addresses set out below:

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.4. Designated Operating Representative. The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party’s facilities.

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.5. Changes to Notification. Either Party may change this information by giving five Business Days written notice to the other Party prior to the effective date of the change.

26 Signatures

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

Willmar Municipal Utilities

[Insert name of Interconnection Customer]

Signed: _____ Signed: _____

Name (Printed):

Name (Printed):

Title: _____ Title: _____

Attachment I: Glossary of Terms

Affected System – Another Area EPS Operator’s System, Transmission Owner’s Transmission System, or Transmission System connected generation which may be affected by the proposed interconnection.

Applicant Agent – A person designated in writing by the Interconnection Customer to represent or provide information to the Area EPS on the Interconnection Customer’s behalf throughout the interconnection process.

Area EPS – The electric power distribution system connected at the Point of Common Coupling.

Area EPS Operator – An entity that owns, controls, or operates the electric power distribution systems that are used for the provision of electric service in Minnesota. For this Interconnection Process the Area EPS Operator is **WILLMAR MUNICIPAL UTILITIES**

Business Day – Monday through Friday, excluding Holidays as defined by Minn. Stat. §645.44, Subdivision 5. Any communication to have been sent or received after 4:30 p.m. Central Prevailing Time or on a Saturday, Sunday or holiday shall be considered to have been sent on the next Business Day.

Certified Equipment – Certified equipment is equipment that has been tested by a national recognized lab meeting a specific standard. For DER systems, UL 1741 listing is a common form of DER inverter certification. Additional information is seen in the Certification Codes and Standards document.

Confidential Information – Any confidential and/or proprietary information provided by one Party to the other Party and is clearly marked or otherwise designated “Confidential.” All procedures, design, operating specifications, and metering data provided by the Interconnection Customer may be deemed Confidential Information. See MIP Process Overview Section 12.1 for further information.

Distributed Energy Resource (DER) – A source of electric power that is not directly connected to a bulk power system or central station service. DER includes both generators and energy storage technologies capable of exporting active power to an EPS. An interconnection system or a supplemental DER device that is necessary for compliance with this standard is part of a DER. For the purpose of the Interconnection Process and interconnection agreements, the DER includes the Customer’s Interconnection Facilities but shall not include the Area EPS Operator’s Interconnection Facilities.

Distribution System – The Area EPS facilities which are not part of the Local EPS, Transmission System or any generation system.

Distribution Upgrades – The additions, modifications, and upgrades to the Distribution System at or beyond the Point of Common Coupling to facilitate interconnection of the DER and render

the distribution service necessary to affect the Interconnection Customer's connection to the Distribution System. Distribution Upgrades do not include Interconnection Facilities.

Electric Power System (EPS) – The facilities that deliver electric power to a load.

Fast Track Process – The procedure as described in the Interconnection Process - Fast Track Process for evaluating an Interconnection Application for a DER that meets the eligibility requirements in the MIP Process Overview Section 3.4.

Force Majeure Event – An act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, an order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or another cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing.

Good Utility Practice – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and act which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Area EPS Operator, or any Affiliate thereof. The utility's local governing body is the authority governing interconnection requirements unless otherwise provided for in the Minnesota Technical Requirements.

Interconnection Agreement – The terms and conditions between the Area EPS Operator and Interconnection Customer (Parties). See Section 8 in the MIP Process Overview for when the MN Standard Agreement or MN Interconnection Agreement applies.

Interconnection Application – The Interconnection Customer's request to interconnect a new or modified, as described in Section 4 of the MIP Process Overview, DER. See Simplified Application Form and Interconnection Application Form.

Interconnection Customer – The person or entity, including the Area EPS Operator, whom will be the owner of the DER that proposes to interconnect a DER(s) with the Area EPS Operator's

Distribution System. The Interconnection Customer is responsible for ensuring the DER(s) is designed, operated and maintained in compliance with the Minnesota Technical Requirements.

Interconnection Facilities – The Area EPS Operator’s Interconnection Facilities and the Interconnection Customer’s Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the DER and the Point of Common Coupling, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the Area EPS Operator’s System. Some examples of Customer Interconnection Facilities include: supplemental DER devices, inverters, and associated wiring and cables up to the Point of DER Connection. Some examples of Area EPS Operator Interconnection Facilities include sole use facilities; such as, line extensions, controls, relays, switches, breakers, transformers and shall not include Distribution Upgrades or Network Upgrades.

Interconnection Process – The Area EPS Operator’s interconnection standards as part of the DG Workbook - MN.

Material Modification – A modification to machine data, equipment configuration or to the interconnection site of the DER at any time after receiving notification by the Area EPS Operator of a complete Interconnection Application that has a material impact on the cost, timing, or design of any Interconnection Facilities or Upgrades, or a material impact on the cost, timing or design of any Interconnection Application with a later Queue Position or the safety or reliability of the Area EPS.¹

MN Technical Requirements – This term refers to Chapter 9: Technical Requirements: Greater than 100 kW through 10 MW of the DG Workbook - MN.

Nameplate Rating - nominal voltage (V), current (A), maximum active power (kWac), apparent power (kVA), and reactive power (kVar) at which a DER is capable of sustained operation. For a Local EPS with multiple DER units, the aggregate nameplate rating is equal to the sum of all DERs nameplate rating in the Local EPS. For purposes of Attachment V to the Interconnection

¹ 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. A Material Modification shall not include a modification from the approved Interconnection Application that: (1) changes the ownership of a Distributed Energy Resource; (2) changes the address of the Distributed Energy Resource, so long as the physical point of common coupling remains the same; (3) changes or replaces generating equipment such as generator(s), inverter(s), solar panel(s), transformers, relaying, controls, etc. and substitutes equipment that is a like-kind substitution in certification, size, ratings, impedances, efficiencies or capabilities of the equipment; and/or (4) increases the DC/AC ratio but does not increase the maximum AC output capability of the Distributed Energy Resource in a way that is likely to have an impact on technical review.

Agreement, the DER system’s capacity may, with the Area EPS’s agreement, be limited through use of control systems, power relays or similar device settings or adjustments as identified in IEEE 1547. The nameplate ratings referenced in the Interconnection Process are alternating current nameplate DER ratings at the Point of DER Coupling.

Network Upgrades – Additions, modifications, and upgrades to the Transmission System required at or beyond the point at which the DER interconnects with the Area EPS Operator’s System to accommodate the interconnection with the DER to the Area EPS Operator’s System. Network Upgrades do not include Distribution Upgrades.

Operating Requirements – Any operating and technical requirements that may be applicable due to the Transmission Provider’s technical requirements or Minnesota Technical Requirements, including those set forth in the Interconnection Agreement.

Party or Parties – The Area EPS Operator and the Interconnection Customer.

Point of Common Coupling (PCC) – The point where the Interconnection Facilities connect with the Area EPS Operator’s Distribution System. See figure 1. Equivalent, in most cases, to “service point” as specified by the Area EPS Operator and described in the National Electrical Code and the National Electrical Safety Code.

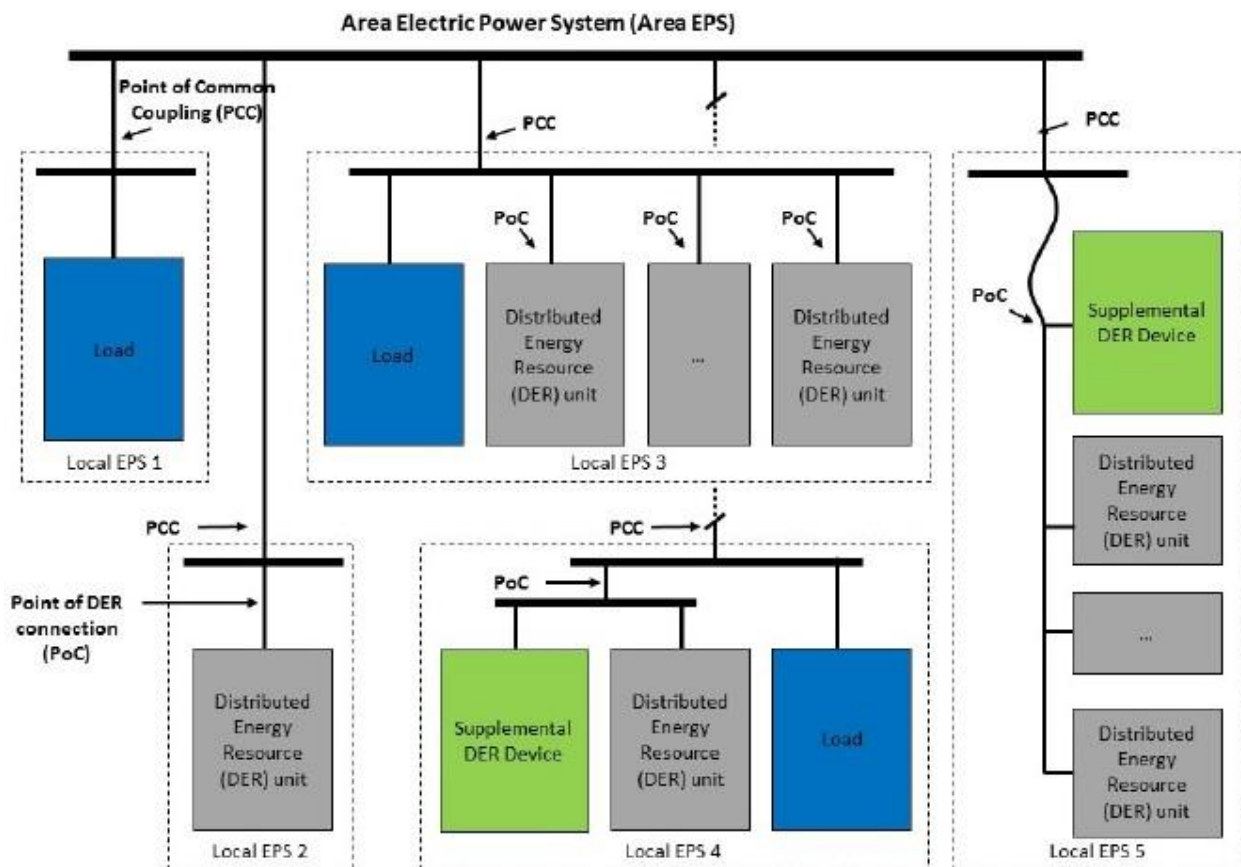


Figure 1: Point of Common Coupling and Point of DER Connection
 (Source: IEEE 1547)

Point of DER Connection (PoC) – When identified as the Reference Point of Applicability, the point where an individual DER is electrically connected in a Local EPS and meets the requirements of this standard exclusive of any load present in the respective part of the Local EPS (e.g. terminals of the inverter when no supplemental DER device is required.) For DER unit(s) that are not self-sufficient to meet the requirements without a supplemental DER device(s), the Point of DER Connection is the point where the requirements of this standard are met by DER in conjunction with a supplemental DER device(s) exclusive of any load present in the respective part of the Local EPS.

Queue Position – The order of a valid Interconnection Application, relative to all other pending valid Interconnection Applications, that is established based upon the date- and time- of receipt of the complete Interconnection Application as described in Section 4.7 of the MIP Process Overview.

Reasonable Efforts – With respect to an action required to be attempted or taken by a Party under these procedures, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Reference Point of Applicability – The location, either the Point of Common Coupling or the Point of DER Connection, where the interconnection and interoperability performance requirements specified in IEEE 1547 apply. With mutual agreement, the Area EPS Operator and Customer may determine a point between the Point of Common Coupling and Point of DER Connection. See Minnesota Technical Requirements for more information.

Simplified Process – The procedure for evaluating an Interconnection Application for a certified inverter-based DER no larger than 20 kW that uses the screens described in the Interconnection Process – Simplified Process document. The Simplified Process includes simplified procedures.

Study Process – The procedure for evaluating an Interconnection Application that includes the scoping meeting, system impact study, and facilities study.

Transmission Owner – The entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System relevant to the Interconnection.

Transmission Provider – The entity (or its designated agent) that owns, leases, controls, or operates transmission facilities used for the transmission of electricity. The term Transmission Provider includes the Transmission Owner when the Transmission Owner is separate from the Transmission Provider. The Transmission Provider may include the Independent System Operator or Regional Transmission Operator.

Transmission System – The facilities owned, leased, controlled or operated by the Transmission Provider or the Transmission Owner that are used to provide transmission service. See the Commission’s July 26, 2000 Order Adopting Boundary Guidelines for Distinguishing Transmission from Generation and Distribution Assets in Docket No. E-999/CI-99-1261.

MN Standard Agreement – the Area EPS Operator’s Interconnection and Power Purchase Agreement that may be applied to all qualifying new and existing interconnections between the Area EPS Operator and an DER system having capacity of 100 kW or less.

Upgrades – The required additions and modifications to the Area EPS Operator’s Transmission or Distribution System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

Attachment II: Description and Costs of the Distributed Energy Resource, Interconnection Facilities, and Metering Equipment

Equipment, including the Distribution Energy Resource, Interconnection Facilities, and metering equipment shall be itemized and identified as being owned by the Interconnection Customer or the Area EPS Operator. The Area EPS Operator will provide a good faith estimate itemized cost, including administrative overheads, of its Interconnection Facilities and metering equipment, and a good faith estimate itemized cost of the annual operation and maintenance expenses associated with the Interconnection Facilities and metering equipment.

Attachment III: One-line Diagram Depicting the Distributed Energy Resource, Interconnection Facilities, and Metering Equipment, and Upgrades

Attach the one-line diagram of the Distributed Energy Resource, Interconnection Facilities, Metering Equipment, and Upgrades to which this Agreement applies.

Attachment IV: Milestones

The Milestones in line (1) below may be a calendar date. All other dates in this Attachment IV may be the number of Business Days from the calendar date in line (1) or from the completion of a different Milestone described in a specific number line. Similarly, the anticipated In-Service Date may be based on the number of Business Days from the completion of a specified line number.

In-Service Date: _____

Critical milestones and responsibilities as agreed to by the Parties:

	Milestone/Anticipated Date	Responsible Party
(1)	_____	_____
(2)	_____	_____
(3)	_____	_____
(4)	_____	_____
(5)	_____	_____
(6)	_____	_____
(7)	_____	_____
(8)	_____	_____
(9)	_____	_____
(10)	_____	_____
(11)	_____	_____
(12)	_____	_____
(13)	_____	_____

Agreed to by:

Area EPS Operator _____ Date _____

Transmission Owner
(If Applicable) _____ Date _____

Interconnection
Customer _____ Date _____

Attachment V: Operating Agreement

The Area EPS Operator shall also provide requirements that must be met by the Interconnection Customer prior to initiating parallel operation with the Area EPS Operator's Distribution System. Each Distributed Energy Resource interconnection will be unique and will require a unique Operating Agreement. The following is a listing of some of the possible areas that will be covered in an operating agreement. The following has not been developed into a standard agreement due to the unique nature of each Distributed Energy Resource. It is envisioned that this Attachment will be tailored by the Area EPS Operator for each Distributed Energy Resource interconnection. It is also intended that this Operating Agreement Attachment will be reviewed and updated periodically to allow the operation of the Distributed Energy Resource to change to meet the needs of both the Area EPS Operator and the Interconnection Customer. There may also be operating changes required by outside parties or influences, such as changes in FERC and regional transmission organization requirements and/or policy changes which will require this Operating Agreement to be modified.

The following items are provided to show the general types of items that may be included in this Operating Agreement. The list of items is not all-inclusive and is not meant to preclude any other issues that may be addressed in the Operating Agreement.

- A. Applicable Area EPS Tariffs – Identify which tariffs are being applied for and how the tariffs would be applicable to this installation.
- B. Var Requirements – Sufficient power factor correction and control devices shall be furnished on the Distributed Energy Resource system such that a 98% power factor, minimum, is maintained across the point of interconnection at all times. Sufficient power factor correction and control devices shall be furnished on the Distributed Energy Resource system to provide the capability of unity power factor across the point of interconnection when operating at full generation output capacity. The Distributed Energy Resource shall be set up to attempt to maintain unity power factor at all times during operation.
- C. Metering Arrangement
 1. The project will be adequately metered, with metering that is approved by the Area EPS Operator. The meter will be a bi-directional meter capable of metering the energy and power coming from the Distributed Energy Resource or capable of being furnished to the generator. The project and the Interconnection Customer will comply with the standards set out in the MN Interconnection Process.
 2. The Area EPS Operator shall provide Missouri River Energy Services (MRES) metering data for inadvertent energy received by the Area EPS on the Area EPS Operator's monthly billing cycle. The metering data shall be made available to MRES no later than

ten days after the end of the monthly billing cycle. The Area EPS Operator shall test the metering equipment on a scheduled basis. If the metering equipment fails to register proper amounts or the registration thereof becomes so erratic as to be meaningless, the inadvertent energy shall be determined by the Area EPS Operator from the best information available.

- D. Inadvertent Energy – MRES shall purchase all inadvertent energy supplied by the Distributed Energy Resource which is received by the Area EPS. The rate paid by MRES for the inadvertent energy will be equal to the commensurate real-time hourly locational marginal price (LMP) as settled by the Midcontinent Independent System Operator (MISO) or Southwest Power Pool (SPP) for the commercial pricing node [*identify node*] located at or near to [*name of WMU*], for the hours during which inadvertent energy was received by the Area EPS, less any administrative costs charged by MISO, SPP or other utilities with respect to the sale or transfer of such energy. The Interconnection Customer acknowledges and agrees that the hourly LMP rate fluctuates based upon the supply and demand for energy within the MISO or SPP market as determined by MISO or SPP, and that it is possible that the LMP price at times may be negative, meaning that the Interconnection Customer may have to make (rather than receive) payment for inadvertent energy received by the Area EPS. The Interconnection Customer shall receive payment for the inadvertent energy to MRES through a credit on the Interconnection Customer's monthly invoice from the Area EPS Operator. MRES, in turn, shall credit the monthly wholesale power supply bill submitted by MRES to the Area EPS Operator in an amount equal to the purchases of inadvertent energy during the preceding month. The Area EPS Operator shall provide to MRES, as soon as available following the end of each month, data indicating the amount of inadvertent energy purchased by MRES from the Interconnection Customer's generation during the preceding month.
- E. Control Issues – Starting and stopping of the generation, including the remote starting and stopping, if applicable.
- F. Dispatch of Distributed Energy Resources – What are the dispatch requirements for the Distributed Energy Resource; can it only run during Peak Hours? Are there a limited number of hours that it can run? Is it required to meet an availability percentage? The answer to these questions will depend greatly upon the PPA and other requirements. Is the Interconnection Customer required to coordinate outages of the Distributed Energy Resource with the Area EPS? Prior to any planned outage and following an unplanned outage, the Area EPS and MRES shall be notified in a timely manner.
- G. Outages of Distribution System – How are emergency outages handled? How are other outages scheduled? If the Interconnection Customer requires the Area EPS Operator to schedule the outages during after-hours, who pays for the Area EPS Operator's overtime?

- H. Notification/Contacts – Who should be notified? How should they be notified? When should they be notified? For what reasons should the notification take place?
1. Starting of the generation
 2. Dispatching of generation
 3. Notification of failures (both Area EPS and Distributed Energy Resource failures)
- I. Documentation of Operational Settings – How much fuel will the generation system typically have on hand? How long can it run with this fuel capacity? How is the generation system set to operate for a power failure? These may be issues documented in the Operating Agreement. The following are examples of what may be documented:
1. The Distributed Energy Resource will monitor the Area EPS phase voltage and after 2 seconds of any phase voltage below 90%, the generation will be started and the load transferred to the generator, if the generation is not already running.
 2. The Distributed Energy Resource will wait for 30 minutes after it senses the return of the Area EPS frequency and voltage before it will automatically reconnect to the Area EPS.
- J. Cost of Testing for Future Failures – If a failure of a component of the Distributed Energy Resource affects the interconnection with the Area EPS, what is the process for retesting, and for replacement? Who pays for the additional costs of the Area EPS to work with the Interconnection Customer to resolve these problems and/or to complete retesting of the modified equipment?
- K. Right of Access – At all times, the Area EPS Operator shall have access to the disconnect switch of the Distributed Energy Resource for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement, to meet its obligation to operate the Area EPS safely, and to provide service to its customers. If necessary for the purpose of this Agreement, the Interconnection Customer shall allow the Area EPS Operator access to the Area EPS's equipment and facilities located on the premises.
- L. Power Quality – The installation shall be constructed and operated to ensure that the Area EPS Operator's Distribution System is not adversely affected by power quality issues which may be caused by the Distributed Energy Resource, including voltage flicker. The Distributed Energy Resource shall be equipped with devices which serve to minimize power quality disturbances, including soft starting controls to minimize inrush currents and control devices to prevent multiple units from starting simultaneously.

SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused three originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: _____

Title: _____

Date: _____

Willmar Municipal Utilities

By: _____

Name: _____

Title: _____

Date: _____

Missouri River Energy Services

By: _____

Name: _____

Title: _____

Date: _____

Attachment VI: Maintenance Agreement

Each Distributed Energy Resource interconnection will be unique and will require a unique Maintenance Agreement. This Maintenance Agreement will be tailored for each Distributed Energy Resource interconnection. It is also intended that this Maintenance Agreement will be reviewed and updated periodically to allow changes to meet the needs of both the Area EPS Operator and the Interconnection Customer (provided the change does not negatively affect the other Party). There may also be changes required by outside parties and influences such as changes in FERC or MISO/SPP requirements and/or policies which will require this Agreement to be modified.

- A. Routine Maintenance Requirements
 - 1. Who is providing maintenance – Contact information
 - 2. Periods of maintenance

- B. Modifications to the Distributed Energy Resource – The Interconnection Customer shall notify the Area EPS Operator, in writing, of plans for any modifications to the Distributed Energy Resource interconnection equipment at least twenty (20) business days prior to undertaking such modification. Modifications to any of the interconnection equipment, including all required protective systems, the generation control systems, the transfer switches/breakers, VTs & CTs, generating capacity, and associated wiring, shall be included in the notification to the Area EPS Operator. The Interconnection Customer agrees not to commence installation of any modifications to the Distributed Energy Resource until the Area EPS Operator has approved the modification in writing. The Area EPS shall have ten (10) business days to review and respond to the modification after receipt of the information required for review of the modifications.

SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

Willmar Municipal Utilities

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Attachment VII: Area EPS Operator's Description of Distribution and Network Upgrades and Good Faith Estimates of Upgrade Costs

The Area EPS Operator shall describe Distribution and Network Upgrades and provide an itemized good faith estimate of the costs, including administrative overheads, of the Upgrade and annual operations and maintenance expenses associated with such Upgrades. The Area EPS Operator shall functionalize Upgrade costs and annual expenses as either transmission or distribution related. Additional Distribution or Network Upgrades required for an Affected System may be addressed in a separate agreement as described in Section 12.6 of the MN Interconnection Agreement.

Attachment VIII: Assignment of Interconnection Agreement

This Assignment of Interconnection Agreement (“Assignment”) is made and entered into this ____ day of _____, ____ by and between Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota (“Area EPS Operator”), _____ (“Assignor”), and _____ (“Assignee”).

WHEREAS, the Area EPS Operator and Assignor previously entered into an Interconnection Agreement (“Agreement”) dated as of _____, ____ including any and all Attachments and amendments thereto, for a Distributed Energy Resource (DER) described as follows:

DER System Information

Type of DER System: _____
Capacity Rating of System (AC): _____
Limited Capacity Rating (AC): _____
Address of DER System: _____

WHEREAS, the Assignor intends to convey its interest in the above-referenced DER to the Assignee, and the Assignor intends to assign its rights and obligations under the Agreement to the Assignee.

NOW THEREFORE, in consideration of the mutual undertakings herein contained, the Assignor, the Assignee, and the Area EPS Operator agree as follows:

- 1. Capitalized Terms.** Capitalized terms used but not defined herein shall have the meanings set forth in the Agreement.
- 2. Consent to Assignment.** The Assignor hereby irrevocably assigns the Agreement in all respects to the Assignee and the Assignee accepts the assignment thereof in all respects.
- 3. Amendment to Agreement.** The Area EPS Operator consents to this assignment and, as assigned, the Agreement is hereby amended so that wherever the name of the Assignor

is used therein it shall mean the Assignee. It is further agreed that all terms and conditions of the Agreement, as amended by this Assignment, shall remain in full force and effect.

4. **Payments by Area EPS Operator.** Any and all payments made by Area EPS Operator under the Agreement to either the Assignor or the Assignee shall be deemed to have been made to both and shall discharge the Area EPS Operator from any further liability with regard to said payment.

5. **Financial Obligations of Assignor and Assignee.** Any and all financial liability, including but not limited to amounts due, from the Interconnection Customer to the Area EPS Operator, occurring or accruing under the Agreement on or before the date of the signature of the Area EPS Operator to this Assignment shall be deemed to be the obligation of both the Assignor and Assignee, and the Area EPS Operator may recover any such amounts jointly and severally from the Assignor and Assignee.

6. **Contact information.** The following information updates and replaces the designated information as set forth on page 1 of the Agreement, and in Section 25.1, 25.2, 25.3 and 25.4 of the Agreement.

Page 1 Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____

Email: _____

25.1 General Notices. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____

Email: _____

25.2 Billing and Payment Notices. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.3 Alternative Forms of Notices. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.4 Designated Operating Representative. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

7. Signatures. Facsimile or electronic signatures, or signatures to this Assignment sent electronically, shall have the same effect as original signatures. Photocopies, or electronically stored versions of this Assignment, shall have the same validity as the original.

The Area EPS Operator, Assignor, and Assignee have executed this Assignment as of the dates set forth below.

Assignor

[Insert legal name of Assignor]

Signed: _____

Name (Printed): _____

Title: _____

Date: _____

Assignee

[Insert legal name of Assignee]

Signed: _____

Name (Printed): _____

Title: _____

Date: _____

Area EPS Operator

Willmar Municipal Utilities

Signed: _____

Name (Printed): _____

Title: _____

Date: _____

CHAPTER 7

INTERCONNECTION PROCESS

MN Study Process

SUMMARY

Interconnection Process for Distributed Energy Resources greater than 4 MW or requiring additional studies to be interconnected to the Distribution System of a Municipal in the State of Minnesota.

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1 Applicability

1.1. Applicability

The MN Study Process is applicable to an Interconnection Customer proposing to interconnect a Distributed Energy Resource (DER) with the Area Electrical Power System (Area EPS) Operator's Distribution System if the DER capacity is larger than 4 MW or is identified through the engineering screening process to need additional studies.

The majority of proposed DER interconnections will initially apply for interconnection under the Simplified or Fast Track Processes. Initial and supplemental screening results are to be considered throughout the MN Study Process.

1.2. Codes, Standards and Certification Requirements

The Interconnection Customer's proposed DER must meet the codes, standards and certification requirements listed in Section 13, 14 and Section 15 of the MN Interconnection Process Overview document. The Area EPS Operator may allow DER systems that do not meet codes, standards and certification only if the DER system design is reviewed, tested and determined to be safe to operate in parallel with the Distribution System.

2 Application Submission

2.1. Initial Interconnection Application for the MN Study Process

For proposed DER interconnections that are not initially applied for under the Fast Track Process, the Interconnection Customer shall complete the Interconnection Application and submit it to the Area EPS Operator to initiate the Interconnection Process. A completed Interconnection Application will include the following:

- A completed Interconnection Application signed by the Interconnection Customer.
- A process fee not to exceed \$1,000, plus \$2.00 per kW, toward the deposit of the study(s) indicated in Section 4.
- A site layout drawing of the proposed DER system.
- A one-line diagram of the proposed DER system showing the Point of Common Coupling to the Area EPS Operator's Distribution System.
- All equipment manufacturer specification sheets.
- Documentation of site control as indicated in Section 2.4.

2.2. Professional Licensed Engineer Signature

The one-line diagram submitted with the Interconnection Application will require a signature from a professional engineer licensed in the State of Minnesota certifying the DER was designed in conformance to the MN Technical Requirements Greater than 100 kW to 10 MW for the following conditions:

- Certified¹ equipment is greater than 250 kW.
- Non-certified equipment is greater than 20 kW.

2.3. Battery Storage

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

2.4. Site Control

Documentation of site control must be submitted with the Interconnection Application. Site control may be demonstrated by any of the following:

- Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the DER system;
- An option to purchase or acquire a leasehold site for constructing the DER system;
- An exclusivity or other business relationship between the Interconnection Customer and the entity having the right to sell, lease, or grant the Interconnection Customer the right to possess or occupy a site for constructing the DER system.

2.5. Interconnection Applications from Other Processes

Some Interconnection Applications submitted under the MN Fast Track Process may be moved into the MN Study Process due to issues with the DER interconnection identified by engineering screens. An Area EPS Operator cannot request a new Interconnection Application submission if the Interconnection Application has already been submitted through the MN Fast Track Process. The Interconnection Customer who had already paid a processing fee for the MN Fast Track Process is still responsible to make a deposit

¹ Additional information regarding certified equipment is found in Sections 14 and 15 of the Process Overview document.

toward the applicable studies addressed in Sections 4, 5 and 6, but does not need to submit an additional processing fee.

3 Initial Steps

3.1. Completeness Review and Queue Position

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

The Area EPS Operator shall notify the Interconnection Customer, within ten (10) Business Days, if the Interconnection Application is deemed incomplete and provide a written list detailing all information that must be provided to complete the Interconnection Application. The Interconnection Customer has ten (10) Business Days, to provide the missing information, unless the Interconnection Customer submits a valid request for a timeline extension. Failure to submit the requested information, within the stated timeline, will result in the Interconnection Application being deemed 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 MN Technical Requirements Greater than 100 kW to 10 MW, is included. The date- and time-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 Process Overview document.

Interconnection Applications already screened in the MN Simplified Process or MN Fast Track Process shall retain their original queue position in the MN Study Process provided all applicable timelines were met.

3.2. Scoping Meeting

A scoping meeting shall be held within ten (10) Business Days after the Interconnection Application submitted under the MN Study Process is deemed complete. For Interconnection Applications that were submitted under or processed through the Fast Track Process, the scoping meeting will occur within ten (10) Business Days after the Interconnection Customer has elected to continue with the MN Study Process. The scoping meeting timeline may be extended upon mutual agreement of both Parties. The scoping meeting may also be omitted by mutual agreement.

The purpose of the scoping meeting is to discuss the Interconnection Application and review existing study results relevant to the Interconnection Application. The Parties shall further discuss whether the Area EPS Operator should perform a MN System Impact Study or Studies, or proceed directly to a MN Facilities Study or a MN Interconnection Agreement. If the Area EPS Operator determines there is no potential for Transmission System or Distribution System adverse system impacts, the Interconnection Application shall proceed directly to a MN Facilities Study or an executable MN Interconnection Agreement, as agreed to by the Parties.

4 System Impact Study

4.1. Electric System Impacts

A MN System Impact Study shall identify and detail the electric system impacts that would result if the proposed DER(s) were interconnected without project modifications or electric system modifications. The MN System Impact Study is also to study the potential impacts, including but not limited to, those identified in the scoping meeting. A MN System Impact Study shall evaluate the impacts of the proposed interconnection on the reliability of the electric system.

4.2. MN System Impact Study Agreement

If the Parties agree at the scoping meeting that a MN System Impact Study should be performed, the Area EPS Operator shall provide the Interconnection Customer a MN System Impact Study Agreement, not later than five (5) Business Days after the scoping meeting. If the scoping meeting was omitted by mutual agreement, the Area EPS Operator shall provide the Interconnection Customer a MN System Impact Study Agreement within ten (10) Business Days after the Interconnection Customer waives the scoping meeting.

The MN System Impact Study Agreement shall include an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study. If applicable, the MN System Impact Study Agreement shall list any additional and reasonable technical data on the DER needed to perform the study. The scope and cost responsibilities are to be described in the MN System Impact Study Agreement.

4.3. System Impact Study Costs

A deposit of the good faith estimated cost for each MN System Impact Study shall be provided by the Interconnection Customer with the return of a signed MN System Impact Study Agreement.

4.4. System Impact Study Timelines

Both the Area EPS Operator and the Interconnection Customer have timeline responsibilities under the MN System Impact Study.

4.4.1. Interconnection Customer Timelines

In order to remain in consideration for interconnection, an Interconnection Customer who has requested a MN System Impact Study shall meet the following conditions within twenty (20) Business Days of being provided a MN System Impact Study Agreement:

- Return a signed MN System Impact Study Agreement.
- Provide to the Area EPS Operator any requested additional and reasonable technical data on the DER needed to perform the MN System Impact Study.
- Pay the required study deposit.

Upon the Interconnection Customer's request, the Area EPS Operator shall grant a time frame extension as described in Section 9.29.2, if additional technical data is requested.

4.4.2. Area EPS Operator Timelines

A MN System Impact Study shall be completed within thirty (30) Business Days after the MN System Impact Study Agreement has been signed by both Parties and delivered with the deposit and requested technical information to the Area EPS Operator. The results of the MN System Impact Study shall be delivered to the Interconnection Customer within five (5) Business Days of completion of the MN System Impact Study. Upon request, the Area EPS Operator shall provide the Interconnection Customer supporting documentation developed in the preparation of the MN System Impact Study, subject to confidentiality arrangements consistent with Section 12.1 of the MN Interconnection Process Overview and terms of the MN System Impact Study Agreement.

5 Transmission System Impact Study

5.1. Transmission System Impacts

In instances where the System Impact Study shows potential for Transmission System adverse system impacts, the Area EPS Operator shall contact the appropriate

Transmission Provider within five (5) Business Days following the identification of such impacts. The Area EPS Operator shall coordinate with the Area EPS Operator's Transmission Provider to have the necessary studies to determine if the DER causes any adverse transmission impacts. The appropriate Transmission Provider shall provide a MN Transmission System Impact Study Agreement for the Interconnection Customer. Included in the MN Transmission System Impact Study Agreement will be a non-binding, good faith estimate of cost for the study, along with a scope outline of the study and any additional technical data required to complete the MN Transmission System Impact Study.

5.2. MN Transmission System Impact Study Timelines

In order to remain in consideration for interconnection, an Interconnection Customer must return the executed MN Transmission System Impact Study Agreement, along with the study deposit, within fifteen (15) Business Days. The MN Transmission System Impact Study shall be completed and the results provided to the Interconnection Customer in as timely a manner as possible, after the MN Transmission System Impact Study Agreement is signed by the Parties. The Area EPS Operator shall be responsible for coordination with the Transmission Provider, as needed. Affected Systems shall participate in the study and provide all information necessary to prepare the study.

5.3. Regional Transmission Operator Jurisdiction

In certain circumstances the Transmission Provider may not be able to study a proposed DER system if there is a possible impact to the bulk Transmission System. In these situations, the Area EPS Operator will coordinate with the Transmission Provider to inform the Interconnection Customer that the proposed DER system will need to follow the Regional Transmission Operator's interconnection process. For most of Minnesota, the Regional Transmission Operator is the Midcontinent Independent System Operator (MISO).

6 Facilities Study

6.1. Construction of Facilities

If construction of facilities is required, a MN Facility Study may be necessary to specify and estimate the cost of the equipment, engineering, procurement and construction work. A MN Facility Study is identified by an Initial Review, Supplemental Review or the MN Study Process to provide interconnection and interoperability of the DER with the Area EPS Operator's Distribution System as required by MN Technical Requirements Greater than 100 kW to 10 MW. At the determination of the Area EPS Operator, Interconnection Applications reviewed in the MN Simplified Process or the MN Fast Track Process that require construction of facilities may forgo a MN Facilities Study.

6.2. MN Facilities Study Agreement

The Area EPS Operator shall provide the Interconnection Customer a MN Facilities Study Agreement either:

- in tandem with the results of the Interconnection Customer's MN System Impact Study, or
- in tandem with a MN Transmission System Impact Study, or
- if no MN System Impact Study is required, within five (5) Business Days after the scoping meeting, or
- within ten (10) Business Days after the MN Interconnection Application is deemed complete and approved through the MN Simplified Process or MN Fast Track Process.

The MN Facilities Study Agreement shall be accompanied by an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the MN Facilities Study. The scope of and cost responsibilities for the MN Facilities Study are to be described in the MN Facilities Study Agreement. A deposit of the good faith estimated costs for the MN Facilities Study shall be provided by the Interconnection Customer at the time it returns the MN Facilities Study Agreement.

6.3. Facilities Study Timeline

In order to remain under consideration for interconnection, the Interconnection Customer must return the executed MN Facilities Study Agreement and pay the required study deposit within fifteen (15) Business Days.

6.4. Identification of Construction of Facilities

The MN Facilities Study shall specify and estimate the cost of the equipment, engineering, procurement and construction work (including overheads), needed to implement the conclusions of the MN System Impact Study(-ies). Design for any required Interconnection Facilities and/or Upgrades shall be performed under the MN Facilities Study Agreement unless the MN Facilities Study Agreement was deemed unnecessary by the Area EPS Operator. However, in the event that the Interconnection Customer did not provide the Area EPS Operator all required Conditional Use Permits at the time of entering into the MN Facilities Study Agreement, any such Design and/or Upgrades by the Area EPS Operator may be delayed until after the Interconnection Customer has provided to the Area EPS Operator all required Conditional Use Permits or

provides a final design. The information in the Conditional Use Permits, or changes to the design, may result in significant modifications to the planned design and/or Upgrades. The Interconnection Customer may send to the Area EPS Operator a redacted version of the Conditional Use Permit(s) to ensure confidentiality, but any and all information that the Area EPS Operator would reasonably need to perform an accurate MN Facilities Study shall not be redacted. If necessary to comply with these requirements, a confidential version of the Conditional Use Permit(s) may be provided to the Area EPS Operator, with the confidential information being clearly marked and subjected to Confidentiality provisions in the MN Interconnection Process Overview document Section 12.1.

The Area EPS Operator may contract with consultants to perform activities required under the MN Facilities Study Agreement. The Interconnection Customer and the Area EPS Operator may agree to allow the Interconnection Customer to separately arrange for the design of some of the Interconnection Facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the Area EPS Operator, under the provisions of the MN Facilities Study Agreement. The Area EPS Operator shall make sufficient information available to the Interconnection Customer, in accordance with confidentiality and critical infrastructure requirements, to permit the Interconnection Customer to obtain an independent design and cost estimate for any necessary facilities.

6.5. MN Facilities Study Report Timeline

In cases where Upgrades are required, the MN Facilities Study must be completed within forty-five (45) Business Days of the receipt of the executed MN Facilities Study Agreement and deposit. In cases where no Upgrades are necessary, and the required facilities are limited to Interconnection Facilities, the MN Facilities Study must be completed within thirty (30) Business Days of the receipt of the executed MN Facilities Study Agreement and deposit.

Once the MN Facilities Study is completed, a draft MN Facilities Study Report shall be prepared and transmitted to the Interconnection Customer. Upon request, the Area EPS Operator shall provide the Interconnection Customer supporting documentation developed in the preparation of the MN Interconnection Facilities Study, subject to confidentiality arrangements consistent with these procedures and the MN Facilities Study Agreement.

Within ten (10) Business Days of providing a draft MN Facilities Study Report to the Interconnection Customer, the Area EPS Operator and Interconnection Customer shall meet to discuss the results of the MN Facilities Study. This meeting may be omitted by

mutual agreement. The Interconnection Customer may, within twenty (20) Business Days after receipt of the draft report, provide written comments to the Area EPS Operator, which the Area EPS Operator shall address in the final report.

The Area EPS Operator shall issue the final Facilities Study Report within fifteen (15) Business Days of receiving the Interconnection Customer's comments, or promptly upon receiving the Interconnection Customer's statement that they will not provide comments. The Area EPS Operator may reasonably extend the time frame, upon notice to the Interconnection Customer, if the Interconnection Customer's comments require additional analyses or lead to significant modifications by the Area EPS Operator prior to issuance of the final Facilities Study Report.

7 Interconnection Agreement

7.1. MN Standard Agreement

For a proposed interconnection that meets the conditions of being classified as a qualifying facility less than 40 kW, the Area EPS Operator shall provide the Interconnection Customer with an executable copy of the Area EPS Operator's MN Standard Agreement, within five (5) Business Days after the completion of the applicable study(-ies).

7.2. MN Interconnection Agreement

For proposed interconnections that do not meet the conditions of being classified as a qualifying facility 100 kW or less, or if requested by the Interconnection Customer in lieu of signing the MN Standard Agreement, the Area EPS Operator shall provide the Interconnection Customer an executable MN Interconnection Agreement (MN Interconnection Agreement), within five (5) Business Days after the completion of the applicable study(-ies).

7.3. Completion of Agreement

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

The Interconnection Customer may update the requested in-service date submitted on the Interconnection Application to a date thirty (30) Business Days or later from the date on which the Interconnection Customer submits a signed MN Standard Agreement

or MN Interconnection Agreement and payment if required unless the Area EPS Operator agrees to an earlier date.

Upon receipt of the signed MN Standard Agreement or MN Interconnection Agreement, the Area EPS Operator may schedule appropriate metering replacements and construction of facilities, if necessary.

8 Insurance

8.1. 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, general liability insurance from a qualified insurance agency with a B+ or better rating by “Best,” with a combined single limit of not less than described in Table 8.1. 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.

Table 8.1 Liability Insurance Requirements

DER System Size	Liability Insurance Requirement
< 40 kW AC	\$300,000
≥ 40 kW AC and < 250 kW AC	\$1,000,000
≥ 250 kW AC and < 5 MW AC	\$2,000,000
≥ 5 MW AC	\$3,000,000

For all proposed DER systems, except those that are qualifying systems less than 40 kW AC, the general liability insurance shall, by endorsement to the policy or policies:

- Include the Area EPS Operator as additionally insured;
- Contain a severability of interest clause or cross-liability clause;
- Provide that the Area EPS Operator shall not by reason incur liability to the insurance carrier for the payment of premiums for such insurance if the Area EPS Operator is included as an additionally insured.

8.2. Proof of Insurance

The Interconnection Customer shall furnish the required insurance certificates and endorsements to the Area EPS Operator prior to the initial operation of the DER. A copy

of the Declaration page of the homeowner's insurance policy is a common example of an insurance certificate. Thereafter, the Area EPS Operator shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance. Additionally, the Area EPS Operator may request to be additionally listed as an interested third party on the insurance certificates and endorsements for qualifying facilities less than 40 kW AC, to meet the right to periodically obtain a copy of the policy or policies of insurance.

9 Timeline Extensions

9.1. Reasonable Efforts

The Area EPS Operator shall make Reasonable Efforts to meet all the 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, explaining the reason for the failure to meet the deadline and providing an estimated time by which it will complete the applicable interconnection procedure in the process.

9.2. 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.

10 Modifications to Application

10.1. 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.

10.2. 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 of Material Modification in the 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 choice 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 choice 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 position in the queue.

11 Interconnection

11.1. Interconnection Milestones

For DER systems that are not a qualifying facility less than 40 kW AC, the Interconnection Customer and the Area EPS Operator shall agree on milestones for which each Party is responsible and list them in Attachment IV in the MN Interconnection Agreement. To the greatest extent possible, the Parties will identify all design, procurement, installation and construction requirements associated with the project, and clear associated timelines, at the beginning, or as early within the process as possible, of the design, procurement, installation and construction phase.

A Party's obligation under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone, propose the earliest reasonable alternative date in which this and future milestones will be met, and request appropriate amendments to the MN Interconnection Agreement and its attachments. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment

unless:

- The Party will suffer significant uncompensated economic or operational harm from the delay, or
- Attainment of the same milestone has previously been delayed, or
- The Party has reason to believe the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstance explained by the Party proposing the amendment.

If the Party affected by the failure to meet a milestone disputes the proposed extension, the affected Party may pursue dispute resolution as described in the MN Interconnection Process Overview document.

11.2. Metering

Any metering requirements necessitated by the use of the DER system shall be installed at the Interconnection Customer's expense. The metering-related 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.

11.3. 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 MN Technical Requirements Greater than 100 kW to 10 MW. Commissioning tests of the Interconnection Customer's installed equipment shall be performed pursuant to applicable codes and standards of MN Technical Requirements Greater than 100 kW to 10 MW and Section 15 in the Interconnection Process Overview document.

The Interconnection Customer shall notify the Area EPS Operator of testing and inspection no fewer than five (5) Business Days in advance, or as may be agreed to by the Parties. The Interconnection Customer shall provide to the Area EPS Operator a testing procedure that will be followed on the day of testing and inspection no fewer than ten (10) Business Days prior to the testing and inspection date. The testing

procedure should include tests and/or inspections to confirm the DER system will meet the MN Technical Requirements Greater than 100 kW to 10 MW of interconnection. The Area EPS Operator shall review the testing procedure for completeness and shall notify the Interconnection Customer if the testing procedure fails to address components of the technical requirements for interconnection.

The Area EPS Operator shall send qualified personnel to the DER site to inspect the interconnection and witness the testing, but the Area EPS Operator bears no liability for the results of the test. Testing and inspection shall occur on a Business Day at a mutually agreed upon date and time. The Area EPS Operator may waive the right to witness the testing.

11.4. Interconnection Costs

11.4.1 Estimation of 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 MN Standard Agreement or in the MN Interconnection Agreement as a detailed itemization of such costs. If Network Upgrades are required, the actual cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer pursuant to the Transmission Provider and associated agreements.

11.4.2 Progressive Payment of Interconnection Costs

The Area EPS Operator shall invoice the Interconnection Customer for the design, engineering, construction and procurement costs of the Interconnection Facilities and Upgrades described in the MN Interconnection Agreement on a monthly basis or other basis agreed upon by both Parties in the MN Interconnection Agreement or as listed in the MN Standard Agreement. The Interconnection Customer shall pay each invoice within twenty-one (21) Business Days or as agreed to in the MN Interconnection Agreement or MN Standard Agreement.

11.4.3 Final Accounting of Interconnection Facilities and Upgrade Costs

If distribution or transmission facilities required upgrades to accommodate the proposed DER system, the Area EPS Operator shall render the final interconnection cost invoice to the Interconnection Customer within eighty (80) Business Days (approximately four calendar months) of completing the construction and installation of the Area EPS Operator's Interconnection Facility and Upgrades. The Area EPS Operator shall provide the Interconnection

Customer with a final accounting report identifying the difference between the actual Interconnection Customer's cost responsibility and the Interconnection Customer's previous aggregate payments to the Area EPS Operator for the specific DER system interconnection. Upon the final accounting submitted to the Interconnection Customer, the balance between the actual cost and previously aggregated payments shall be paid to the Area EPS Operator within twenty (20) Business Days. If the balance between the actual cost and previously aggregated payments is a credit, the Area EPS Operator shall refund the Interconnection Customer within twenty (20) Business Days.

11.4.4 Final Interconnection Costs without Facilities and Upgrades Needed

Within thirty (30) Business Days the final invoice for the interconnection costs shall be rendered to the Interconnection Customer once 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 MN Standard Agreement or MN Interconnection Agreement.

11.5. Security of Payment

At the option of the Area EPS Operator, either the "Traditional Security" or the "Modified Security" method shall be used for assurance of payment of interconnection cost.

Under the Traditional Security method, the Interconnection Customer shall provide reasonable, adequate assurances of credit, including a letter of credit or personal guaranty of payment and performance from a creditworthy entity acceptable under the Area EPS Operator credit policy. The letter of credit shall also include procedures for the unpaid balance of the estimated amount shown in the MN Interconnection Agreement for the totality of all anticipated work or expense incurred by the Area EPS Operator associated with the Interconnection Application. The payment for these estimated costs shall be as follows:

- One-third of estimated costs shall be due no later than when the Interconnection Customer signs the MN Interconnection Agreement.
- An additional one-third of estimated costs shall be due prior to initial energization of the DER with the Area EPS Operator.

- Remainder of actual costs, incurred by Area EPS Operator, shall be due within thirty (30) Business Days from the date the invoice is mailed by the Area EPS Operator after project completion.

Under the Modified Security method, at least twenty (20) Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of the Area EPS Operator's Interconnection Facilities and Upgrades, the Interconnection Customer shall provide the Area EPS Operator, at the Interconnection Customer's option, a guarantee, letter of credit or other form of security that is reasonably acceptable to the Area EPS Operator and is consistent with the Minnesota Uniform Commercial Code. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Area EPS Operator's Interconnection Facilities and Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to the Area EPS Operator under the MN Interconnection Agreement during its term.

The guarantee must be made by an entity that meets the creditworthiness requirements of the Area EPS Operator and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.

The letter of credit must be issued by a financial institution or insurer reasonably acceptable to the Area EPS Operator and must specify a reasonable expiration date not sooner than sixty (60) Business Days, (three calendar months), after the due date of the final accounting report and invoice described in Section 11.4.

11.6. Non-Warranty

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. The Area EPS Operator does not guarantee uninterrupted power supply to the DER and will operate the Distribution System with the same reliability standards for the entire customer base.

11.7. 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 notification that the Interconnection Customer has complied with all applicable parallel operations requirements and commissioning has been successfully completed. Such authorization shall not be unreasonably withheld, conditioned or delayed.

11.8. Continual Compliance

The Interconnection Customer shall operate its DER system in compliance with the Area EPS Operator's MN Technical Requirements Greater than 100 kW to 10 MW referred to in the executed MN Standard Agreement or MN Interconnection Agreement. 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 MN Technical Requirements Greater than 100 kW to 10 MW will result in the disconnection of the DER system from the Area EPS Operator's Distribution System.

11.9. Disconnection of DER

The Area EPS Operator has the right to disconnect the DER in the event of the following:

- The Interconnection Customer does not continue to follow and maintain IEEE 1547 settings or functions as required by the adopted MN Technical Requirements Greater than 100 kW to 10 MW.
- The DER does not meet all the requirements of the MN Study Process.
- The Interconnection Customer refuses to sign either the MN Interconnection Agreement or the Area EPS Operator's MN Standard Agreement.

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 MN Study Process.

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

Interconnection Application

Persons interested in applying for the interconnection of a distributed energy resource to the WMU’s distribution system through the Fast Track or Study Processes are to fill out this Interconnection Application. The Interconnection Application is to be filled out completely by the applicant or as noted in each section of the application. The WMU will contact the applicant within 10 business days once the Interconnection Application and the corresponding processing fee is submitted to the WMU. The WMU will then notify the applicant of the completeness of their application. If the application is deemed incomplete by the WMU, the WMU will provide the applicant with a list of missing material. The applicant will then have 10 business days to provide the WMU with this information or request an extension, otherwise the application will be deemed incomplete and the applicant will lose their place in the queue. Sections that are noted with * are required to be filled out.

Checklist for Submission to WMU	
<i>The items below shall be included with submittal of the Interconnection Application to the WMU. Failure to include all items will deem the Interconnection Application incomplete.</i>	
	Included
Non-Refundable Processing Fee Fast Track <ul style="list-style-type: none"> • \$100 + \$1/kW for Certified Systems • \$100 + \$2/kW for Non-Certified Systems Study Process <ul style="list-style-type: none"> • \$1,000 + \$2/kW down payment. Additional study fees may apply. 	<input type="checkbox"/> Yes
One-line diagram <ul style="list-style-type: none"> • This one-line diagram must be signed and stamped by a Professional Engineer licensed in Minnesota if the DER is uncertified greater than 20 kW AC or if certified system is over 250 kW. • Details required on one-line diagram specified at the end of the interconnection application. 	<input type="checkbox"/> Yes
Schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits	<input type="checkbox"/> Yes
Inverter Specification Sheet(s) (if applicable)	<input type="checkbox"/> Yes
Documentation that describes and details the operation of protection and control schemes	<input type="checkbox"/> Yes
Documentation showing site control	<input type="checkbox"/> Yes
Aerial map showing DER system layout including major roadways and true north	<input type="checkbox"/> Yes
<u>Possible Additional Documentation</u> <ul style="list-style-type: none"> • If the DER export capacity is limited, include information material explaining the limiting capabilities. • If Energy Storage is included with the proposed DER system, include the Energy Storage Application. 	

General *	
Select Review Process: <input type="checkbox"/> Fast Track Process <input type="checkbox"/> Study Process	
Application is for:	<input type="checkbox"/> New Distributed Energy Resource <input type="checkbox"/> Capacity Addition or Material Modification to Existing Distributed Energy Resource
If Capacity Addition or Material Modification to existing facility, please describe:	
Distributed Energy Resource will be used for what reason? (Check all that apply):	
<input type="checkbox"/> Net Metering <input type="checkbox"/> Supply Power to Interconnection Customer <input type="checkbox"/> Supply Power to Area EPS	
Installed DER System Cost (before incentives):	\$

Interconnection Customer *		
Full Name (must match the name of the existing service account):		
Account Number:	Meter Number:	
Mailing Address:		
City:	State:	Zip Code:
Email:	Phone:	

** Indicates section must be completed.*

Application Agent *	
Is the Customer using an Application Agent for this application?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If Interconnection Customer is not using an Application Agent, please skip to the next section.</i>	
Application Agent:	
Company Name:	
Email:	Phone:

Distributed Energy Resource Information *	
Estimated Installation Date:	
Location (if different from mailing address of Interconnection Customer):	
Will the Proposed DER system be interconnected to an existing electric service?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the Distributed Energy Resource a single generating unit or multiple?	<input type="checkbox"/> Single <input type="checkbox"/> Multiple
DER Type (<i>Check all that apply</i>):	
<input type="checkbox"/> Solar Photovoltaic	<input type="checkbox"/> Wind
<input type="checkbox"/> Combined Heat and Power	<input type="checkbox"/> Solar Thermal
	<input type="checkbox"/> Energy Storage
	<input type="checkbox"/> Other (please specify)
<i>DER systems with Energy Storage must also submit the Energy Storage Application to the WMU.</i>	
Total Number of Distributed Energy Resources to be interconnected pursuant to this Interconnection Application:	
Phase configuration of Distributed Energy Resource(s):	<input type="checkbox"/> Single Phase <input type="checkbox"/> Three Phase
Type of Generator:	<input type="checkbox"/> Inverter <input type="checkbox"/> Synchronous <input type="checkbox"/> Induction
Aggregate DER Capacity (the sum of nameplate capacity of all generation and storage devices at the PCC):	
kW_{ac}	kVA_{ac}

** Indicates section must be completed.*

Export Capacity Limitation *	
Is the export capability of the DER limited?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If the DER export capacity is limited, complete the following sections and include information material to explaining the limiting capabilities.</i>	
Maximum Physical Export Capacity Requested:	kW_{ac}
If Yes, please provide additional details describing method of export limitation:	

Load Information *	
Interconnection Customer's or Customer-sited Load:	kW_{ac}
Typical Reactive Load (if known):	

Equipment Certification *	
Is the DER equipment certified?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>Please list all IEEE 1547 certified equipment below. Include all certified equipment manufacturer specification sheets with the Interconnection Application submission.</i>	
Equipment Type	Certifying Entity
1	
2	
3	
4	

** Indicates section must be completed.*

Prime Mover *		
Please indicate the prime mover:		
<input type="checkbox"/> Solar Photovoltaic	<input type="checkbox"/> Microturbine	<input type="checkbox"/> Fuel Cell
<input type="checkbox"/> Reciprocating Engine	<input type="checkbox"/> Gas Turbine	<input type="checkbox"/> Other (please specify)
Is the prime mover compatible with certified protection equipment package?		<input type="checkbox"/> Yes <input type="checkbox"/> No
DER Manufacturer:	Model Name & Number:	Version:
List of Adjustable Set Points for Protection Equipment or Software:		
Summer Name Plate Rating:	kW_{ac}	Summer Name Plate Rating: kW_{ac}
Winter Name Plate Rating:	kVA_{ac}	Winter Name Plate Rating: kVA_{ac}
Rated Power Factor:	Leading:	Lagging:
<i>A completed Power System Load Flow data sheet must be supplied with the Interconnection Application.</i>		

Only appropriate sections beyond this point until the signature page are to be completed.

Distributed Energy Resource Characteristic Data (for Inverter-based machines)	
Max design fault contribution current:	
Is your response to the previous field an Instantaneous or RMS measurement?	<input type="checkbox"/> Instantaneous <input type="checkbox"/> RMS
Harmonic Characteristics:	
Start-up Requirements:	

** Indicates section must be completed.*

Distributed Energy Resource Characteristic Data (for Synchronous machines)	
RPM Frequency:	Neutral Grounding Resistor:
Direct Axis Synchronous Reactance, X_d :	Zero Sequence Reactance, X_0 :
Direct Axis Transient Reactance, X_d^t :	KVA Base:
Direct Axis Subtransient Reactance, X_d^{tt} :	Field Volts:
Negative Sequence Reactance, X_2 :	Field Amperes:
Please provide the appropriate IEEE model block diagram of excitation system, governing system and power system stabilizer (PSS) in accordance with the regional reliability council criteria. A PSS may be determined to be required by applicable studies. A copy of the manufacturer's block diagram may not be submitted.	

Distributed Energy Resource Characteristic Data (for Induction machines)	
RPM Frequency:	Neutral Grounding Resistor:
Motoring Power (kW):	Exciting Current:
Heating Time Constant:	Temperature Rise:
Rotor Resistance, R_r :	Frame Size:
Stator Resistance, R_s :	Design Letter:
Stator Reactance, X_s :	Reactive Power Required In Vars (No Load):
Rotor Reactance, X_r :	Reactive Power Required In Vars (Full Load):
Magnetizing Reactance, X_m :	Total Rotating Inertia, H:
Short Circuit Reactance, X_d^{sc} :	

Interconnection Facilities Information			
Will a transformer be used between the DER and the Point of Common Coupling?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Will the transformer be provided by the Interconnection Customer? If yes, please fill in the fields below.		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Proposed location of protective interface equipment on property:			
Transformer Data (For Interconnection Customer-Owned Transformer)			
What is the phase configuration of the transformer?		<input type="checkbox"/> Single Phase <input type="checkbox"/> Three Phase	
Size (kVA):	Transformer Impedance (%):	On kVA Base:	
Transformer Volts: (Primary)	Delta:	Wye:	Wye Grounded:
Transformer Volts: (Secondary)	Delta:	Wye:	Wye Grounded:
Transformer Volts: (Tertiary)	Delta:	Wye:	Wye Grounded:
Transformer Fuse Data (For Interconnection Customer-Owned Fuse)			
Manufacturer:	Type:	Size:	Speed:
Interconnecting Circuit Breaker (For Interconnection Customer-Owned Circuit Breaker)			
Manufacturer:		Type:	
Load Rating (in Amps):	Interrupting Rating (In Amps):	Trip Speed (Cycles):	
Interconnection Protective Relays (For Microprocessor Controlled Relays)			
Setpoint Function		Minimum	Maximum

Interconnection Protective Relays (For Relays with Discrete Components)			
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Current Transformer Data:			
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:
Potential Transformer Data:			
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:
Manufacturer:	Type:	Accuracy Class:	Proposed Ratio Connection:

For Office Use Only	
Application ID:	
Date Received:	Application Fee Received: <input type="checkbox"/> Yes <input type="checkbox"/> No
Date Completed:	

Interconnection Agreement *

Proposed DER interconnections that are also deemed Qualifying Facilities less than 40 kW AC under Minnesota Statutes § 216B.164 are eligible to sign the WMU’s Standard Agreement for Cogeneration and Small Power Production Facilities. Included in this agreement are payment terms for excess power generated by the proposed DER system the WMU may purchase. In lieu of the WMU’s Standard Agreement for Cogeneration and Small Power Production Facilities, the Interconnection Customer may choose to instead sign the WMU’s Interconnection Agreement.

The Interconnection Customer requests an Interconnection Agreement to be executed in lieu of the WMU’s Standard Agreement for Cogeneration and Small Power Production Facilities.

Yes No

Disclaimers – Must be completed by Interconnection Customer *

	Initials
The Interconnection Customer has opportunities to request a timeline extension during the interconnection process. Failure by the Interconnection Customer to meet or request an extension for a timeline outlined in the Interconnection Process could result in a withdrawn queue position and the need to re-apply.	
Proposed DER interconnections to the WMU’s distribution system submitted under the Fast Track Process may be moved into the Study Process if engineering screens are failed during the Interconnection Application review.	

Application Signature – Must be completed by Interconnection Customer *

I designate the individual or company listed as my Application Agent to serve as my agent for the purpose of coordinating with the Area EPS Operators on my behalf throughout the interconnection process.

 Initials

I hereby certify that, to the best of my knowledge, the information provided in this Application is true, and that I have appropriate Site Control in conformance with the Interconnection Process. I agree to abide by the Minnesota Interconnection Process (MIP) and will inform the WMU if the proposed DER system changes from the details listed in this Interconnection Application.

Applicant Signature:

Date:

*****Please print clearly or type and return completed along with any additional documentation*****

Information Required on One-Line Diagram

An Interconnection Application must include a site electrical one-line diagram showing the configuration of all Distributed Energy Resource equipment, current and potential circuits, and protection and control schemes. The one-line diagram shall include:

- Applicant name.
- Application ID.
- Installer name and contact information.
- Address where DER system will be installed - must match application address.
 - Be sure to list the address for the protective interface equipment if the protective interface equipment is located at a different address than the DER system.
- Correct positions of all equipment, including but not limited to panels, inverter, and DC/AC disconnect. Include distances between equipment, and any labeling found on equipment.

This one-line diagram must be signed and stamped by a Minnesota licensed Professional Engineer if the Distributed Energy Resource is larger than 20 kW (if uncertified) and 250 kW (if certified.)

INTERCONNECTION AGREEMENT

For use in lieu of the MN Standard
Agreement

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i. Contact Information

Contact information for each Party is listed below along with the basic information describing the Distributed Energy Resource (DER) system.

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

DER System Information

Application Number: _____
Type of DER System: _____
Capacity Rating of System (AC): _____
Limited Capacity Rating (AC): _____
Address of DER System: _____

This Interconnection Agreement (“Agreement”) is made and entered into this _____ day of _____, 20__ by and between _____ (“Interconnection Customer”), and Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota (“Area EPS Operator”).

Interconnection Customer and Area EPS Operator each may be referred to as a “Party” or collectively as the “Parties.”

In consideration of the mutual covenants set forth herein, the Parties agree as follows:

1 Scope and Limitations of Agreement

- 1.1. This Agreement is intended to provide for the Interconnection Customer to interconnect at the Point of Common Coupling and operate a Distributed Energy Resource with a Nameplate Rating of 10 Megawatts (MW) or less in parallel with the Area EPS at the location identified above and shown in the one-line diagram in Attachment 3.
- 1.2. This Agreement shall be used for all Interconnection Applications submitted under the Minnesota Interconnection Process (MIP) except for those Interconnection Applications that qualify and choose for the MN Standard Agreement to replace the need for this Agreement.
- 1.3. This Agreement governs the terms and conditions under which the Interconnection Customer’s Distributed Energy Resource will interconnect with, and operate in parallel with, the Area EPS Operator’s Distribution System.
- 1.4. Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1, the MIP, or the body of this Agreement.
- 1.5. This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer’s power. The purchase or delivery of power and other services that the Interconnection Customer may require from the Area EPS Operator, or others, may be covered under separate agreements.
- 1.6. To facilitate the operation of the Distributed Energy Resource, this Agreement also allows for the occasional and inadvertent export of energy to the Area EPS. The amount, metering, billing, and accounting of such inadvertent energy exporting shall be governed by the Operating Agreement in Attachment 5. This Agreement does not constitute an agreement by the Area EPS Operator to purchase or to pay for any energy, inadvertently or intentionally exported, unless expressly noted in Attachment 5 or under a separately executed power purchase agreement (PPA).

- 1.7. This Agreement does not constitute a request for the provision of any transmission delivery service or for any local distribution delivery service. If it is the Interconnection Customer's intent to sell to other parties, the Interconnection Customer shall be responsible for market related charges to the Area EPS Operator or its wholesale power supplier caused by the generator operation.
- 1.8. The Minnesota Technical Requirements for interconnection are covered in a separate document, a copy of which has been made available to the Interconnection Customer and is incorporated and made part of this Agreement by this reference.
- 1.9. Nothing in this Agreement is intended to affect any other agreement between the Area EPS Operator and the Interconnection Customer.

2 Responsibilities of the Parties

- 2.1. The Parties shall perform all obligations of this Agreement in accordance with the MIP, Minnesota Technical Requirements, all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.
- 2.2. The Interconnection Customer shall construct, interconnect, operate and maintain its Distributed Energy Resource and construct, operate, and maintain its Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, this Agreement, and Good Utility Practice. Prior to the construction of the Distributed Energy Resource, the Interconnection Customer shall obtain all environmental and other permits required by any governmental authorities. The Interconnection Customer shall also maintain and comply with the requirements of these permits during the term of this Agreement.
- 2.3. The Area EPS Operator shall construct, operate, and maintain its Distribution System and its Interconnection Facilities in accordance with this Agreement and Good Utility Practice.
- 2.4. The Parties agree to cause their facilities or systems to be constructed in accordance with the laws of the State of Minnesota and to meet or exceed applicable codes and standards provided by the National Electrical Safety Code, the American National Standards Institute, Institute of Electrical and Electronics Engineers (IEEE), Underwriter's Laboratory (UL), Minnesota Technical Requirements, Operating Requirements, and local building codes and other applicable ordinances in effect at the time of construction. The Interconnection Customer agrees to design, install, maintain, and operate its Distributed Energy Resource so as to reasonably minimize the

likelihood of a disturbance adversely affecting or impairing the system or equipment of the Area EPS Operator and any Affected Systems.

- 2.5. Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now owns or subsequently owns unless otherwise specified in the Attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of common coupling. The Area EPS Operator and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Area EPS Operator's Distribution System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Attachments to this Agreement.
- 2.6. The Area EPS Operator shall coordinate with all Affected Systems to support the interconnection.

3 Parallel Operation Obligations

- 3.1. Once the Distributed Energy Resource has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Distributed Energy Resource in the applicable control area, including, but not limited to: 1) the rules and procedures concerning the operation of generation set forth by the applicable system operator(s) for the Area EPS Operator's Distribution System provided or referenced in an attachment to this Agreement and; 2) the Operating Requirements set forth in Attachment 5 of this Agreement.

4 Metering

- 4.1. As described in MIP Process Overview Section 9.1, the Interconnection Customer shall be responsible for the Area EPS Operator's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Attachments 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements.

5 Distributed Energy Resource Capabilities and Grid Reliability

- 5.1. The Minnesota Technical Requirements outlines the Parties' responsibilities consistent with IEEE 1547 Standard for Interconnection and Interoperability of Distributed Energy

Resources with Associated Electric Power Systems Interfaces which provides requirements relevant to the interconnection and interoperability performance, operation and testing, and, to safety, maintenance and security considerations.

- 5.2. The Area EPS Operator may offer the Interconnection Customer the option to utilize required DER capabilities to mitigate Interconnection Customer costs related to Upgrades or Interconnection Facilities to address anticipated system impacts from the engineering review (i.e. Initial Review, Supplemental Review, or Study Process described in the MIP).

6 Equipment Testing and Inspection

- 6.1. As described in MIP Process Overview Section 9.2, the Interconnection Customer shall test and inspect its Distributed Energy Resource and Interconnection Facilities prior to interconnection pursuant to Minnesota Technical Requirements and this Agreement.

7 Authorization Required Prior to Parallel Operation

- 7.1. As described in MIP Process Overview Section 9.4, the Area EPS Operator shall use Reasonable Efforts to list applicable parallel operation requirements by providing the Minnesota Technical Requirements with the notice of approval of the Interconnection Application or by providing a website link to the document. Additionally, the Area EPS Operator shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. Pursuant to the MIP Process Overview Section 9.5, the Interconnection Customer shall not operate its Distributed Energy Resource in parallel with the Area EPS Operator's Distribution System without prior written authorization of the Area EPS Operator.

8 Right of Access

- 8.1. Upon reasonable notice, the Area EPS Operator may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Distributed Energy Resource first produces energy to inspect the interconnection, and observe the commissioning of the Distributed Energy Resource (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Area EPS Operator at least five (5) Business Days prior to conducting any on-site verification testing of the Distributed Energy Resource.
- 8.2. Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Area EPS Operator shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance

of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.

- 8.3. Each Party shall be responsible for its costs associated with the interconnection of the DER system as outlined in MIP Process Overview Section 9.3 and the Minnesota Technical Requirements.

9 Term and Termination

- 9.1. This Agreement shall become effective as of the date when both the Interconnection Customer and the Area EPS Operator have both signed this Agreement. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:
 - 9.1.1. The Parties agree in writing to terminate the Agreement;
 - 9.1.2. The Interconnection Customer may terminate this Agreement at any time by giving the Area EPS Operator twenty (20) Business Days written notice;
 - 9.1.3. The Area EPS Operator may terminate this Agreement if the Distributed Energy Resource is not interconnected to the Area EPS Operator's Distribution System within thirty-six (36) months of the effective date of this Agreement as set forth above in Section 9.1;
 - 9.1.4. Either Party may terminate this Agreement after default pursuant to Section 19.
- 9.2. No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.
- 9.3. Upon termination of this Agreement, the Distributed Energy Resource will be disconnected from the Area EPS Operator's Distribution System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's default of this Agreement or such non-terminating Party otherwise is responsible for these costs under this Agreement.
- 9.4. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing, at the time of the termination.
- 9.5. The provisions of this Section 9 shall survive termination or expiration of this Agreement.

10 Disconnection

- 10.1. Disconnection of Unit. The Area EPS Operator may disconnect the Distributed Energy Resource as reasonably necessary, including for the following conditions or situations: termination of this Agreement, non-compliance with this Agreement, a system emergency, imminent danger to the public or Area EPS personnel, or for routine maintenance, repairs, and modifications to the Area EPS. The Area EPS Operator shall use Reasonable Efforts to notify the Interconnection Customer promptly when it becomes aware of an event or condition that may reasonably be expected to affect the Interconnection Customer's operation of the Distributed Energy Resource. The Interconnection Customer shall use Reasonable Efforts to notify the Area EPS Operator promptly when it becomes aware of an event or condition that may reasonably be expected to affect the Area EPS Operator's Distribution System or any Affected Systems. To the extent information is known, the notification shall describe the event or condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action. It is agreed that the Area EPS Operator shall have no liability for any loss of sales or other damages including all consequential damages for the loss of business opportunity, profits or other losses, regardless of whether such damages were foreseeable, due to the disconnection of the Distributed Energy Resource.
- 10.2. Temporary Interruption. The Area EPS Operator may interrupt interconnection service or curtail the output of the Distributed Energy Resource and temporarily disconnect the Distributed Energy Resource from the Area EPS Operator's Distribution System when necessary for routine maintenance, construction, or repairs on the Area EPS Operator's Distribution System. The Area EPS Operator shall use Reasonable Efforts to provide the Interconnection Customer with three (3) Business Days' notice prior to such interruption. The Area EPS Operator shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer. Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.
- 10.3. Forced Outage. During any forced outage, the Area EPS Operator may suspend interconnection service to effect immediate repairs on the Area EPS Operator's Distribution System. The Area EPS Operator shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not reasonably possible, the Area EPS Operator shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

- 10.4. Adverse Operating Effects. The Area EPS Operator shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Distributed Energy Resource may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Distributed Energy Resource could cause damage to the Area EPS Operator's Distribution System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Area EPS Operator may disconnect the Distributed Energy Resource. The Area EPS Operator shall provide the Interconnection Customer with five (5) Business Days' notice of such disconnection, unless the provisions of Section 10.1 apply.
- 10.5. Modification of the Distributed Energy Resource. The Interconnection Customer must receive written authorization from the Area EPS Operator before making any change to the Distributed Energy Resource that may have a material impact on the safety or reliability of the Distribution System. Such authorization shall not be unreasonably withheld if the modification is not a Material Modification. Material Modifications, including an increase Nameplate Rating or capacity, may require the Interconnection Customer to submit a new Interconnection Application as described in Section 7 of the MIP Process Overview. If the Interconnection Customer makes such modification without the Area EPS Operator's prior written authorization, the Area EPS Operator shall have the right to temporarily disconnect the Distributed Energy Resource.
- 10.6. Reconnection. The Parties shall cooperate with each other to restore the Distributed Energy Resource, Interconnection Facilities, and the Area EPS Operator's Distribution System to their normal operating state as soon as reasonably practicable following a temporary disconnection.
- 10.7. Treatment Similar to Other Retail Customers. If the Interconnection Customer receives retail electrical service at the same site as the Distributed Energy Resource, it may also be disconnected consistent with the rules and practices for disconnecting other retail electrical customers.
- 10.8. Disconnection for Default. If the Interconnection Customer is in default of this Agreement, it may be disconnected after a sixty (60) day written notice is provided and the default is not cured during this sixty (60) day notice. This provision does not apply to disconnection based on Sections 10.1, 10.2, 10.3 or 10.4 of this Agreement.

11 Cost Responsibility for Interconnection Facilities and Distribution Upgrades

- 11.1 Interconnection Facilities. The Interconnection Customer shall pay for the actual cost of the Interconnection Facilities itemized in Attachment 2 of this Agreement. The Area EPS Operator shall provide a good faith estimate of the cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Area EPS Operator.
- 11.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Area EPS Operator's Interconnection Facilities.
- 11.3 Distribution Upgrades. The Area EPS Operator shall design, procure, construct, install, and own the Distribution Upgrades described in Attachment 7 of this Agreement. The Area EPS Operator shall provide a good faith estimate of the cost, including overheads, for the purchase and construction of the Distribution Upgrades and provide a detailed itemization of such costs. If the Area EPS Operator and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

12 Cost Responsibility for Network Upgrades

- 12.1. Applicability. No portion of Section 12 shall apply unless the interconnection of the Distributed Energy Resource requires Network Upgrades.
- 12.2. Network Upgrades. The Area EPS Operator or the Transmission Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment 7 of this Agreement. The Area EPS Operator shall provide a good faith estimate of the cost, including overheads, for the purchase and construction of the Network Upgrades and provide a detailed itemization of such costs. If the Area EPS Operator and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Area EPS Operator elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, shall be borne initially by the Interconnection Customer.

- 12.3. Repayment of Amounts Advanced for Network Upgrades. The Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Area EPS Operator and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Area EPS Operator's Tariff and Affected System's Tariff for transmission services with respect to the Distributed Energy Resource. Any repayment shall include interest calculated in accordance with the methodology set forth in the Federal Energy Regulatory Commission's (FERC) regulations at 18 C.F.R. § 35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person.
- 12.4. Notwithstanding the foregoing, the Interconnection Customer, the Area EPS Operator, and any applicable Affected System operators may adopt any alternative payment schedule that is mutually agreeable so long as the Area EPS Operator and said Affected System operators take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Area EPS Operator or any applicable Affected System operators will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond 20 years from the commercial operation date.
- 12.5. If the Distributed Energy Resource fails to achieve commercial operation, but it or another Distributed Energy Resource is later constructed and requires use of the Network Upgrades, the Area EPS Operator and Affected System operator shall at that time reimburse the Interconnection Customer for the amounts advanced for the Network Upgrades. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the Distributed Energy Resource, if different, is responsible for identifying the entity to which reimbursement must be made.
- 12.6. Special Provisions for Affected Systems. Unless the Area EPS Operator provides, under this Agreement, for the repayment of amounts advanced to any applicable Affected System operators for Network Upgrades, the Interconnection Customer and Affected

System operator shall enter into an agreement that provides for such repayment. The agreement shall specify the terms governing payments to be made by the Interconnection Customer to Affected System operator as well as the repayment by Affected System Operator.

- 12.7. Rights Under Other Agreements. Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Distributed Energy Resource.

13 Billing, Payment, Milestones, and Financial Security

- 13.1. Billing and Payment Procedures and Final Accounting. The Area EPS Operator shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of Interconnection Facilities and Upgrades contemplated by this Agreement, and the Interconnection Customer shall pay each bill, pursuant to the MIP Interconnection Process documents, or as otherwise agreed to by the Parties.
- 13.2. Within 80 Business Days (approximately 4 calendar months) of completing the construction and installation of the Area EPS Operator's Interconnection Facilities and/or Upgrades described in the Attachments to this Agreement, the Area EPS Operator shall provide the Interconnection Customer with a final accounting report, as described in the MIP Fast Track Process Section 9.5.3 and the Study Process Section 11.4.3.
- 13.3. Milestones. Pursuant to the MIP Fast Track Process Section 9.1 and the Study Process Section 11.1, the Parties shall agree on milestones for which each Party is responsible and list them in Attachment 4 of this Agreement.
- 13.4. Financial Security Arrangements. Pursuant to the MIP Fast Track Process Section 9.6 and the Study Process Section 11.5, the Interconnection Customer shall provide the Area EPS Operator, at the Interconnection Customer's option, a guarantee, letter of credit or other form of security that is reasonably acceptable to the Area EPS Operator and is consistent with the Minnesota Uniform Commercial Code. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Area EPS Operator's Interconnection Facilities and Upgrades and shall be reduced on a dollar-for-dollar

basis for payments made to the Area EPS Operator under this Agreement during its term. In addition:

- 13.4.1. The guarantee must be made by an entity that meets the creditworthiness requirements of the Area EPS Operator, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.
- 13.4.2. The letter of credit must be issued by a financial institution or insurer reasonably acceptable to the Area EPS Operator and must specify a reasonable expiration not sooner than sixty (60) Business Days (three calendar months) after the due date for the issuance of the final bill.

14 Assignment

- 14.1. The Interconnection Customer shall not assign its rights nor delegate its duties under this Agreement without the prior written consent of the Area EPS Operator. Any assignment or delegation made by the Interconnection Customer without the Area EPS Operator's written consent shall not be valid. The Area EPS Operator shall not unreasonably withhold its consent to the Interconnection Customer's assignment or delegation under this Agreement.

15 Limitations of Liability

- 15.1. Each Party's liability to the other Party for failure to perform its obligations under this Agreement shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages of any kind whatsoever, including for loss of business opportunity or profits, regardless of whether such damages were foreseen.
- 15.2. Notwithstanding any other provision in this Agreement, with respect to the Area EPS Operator's provision of electric service to any customer including the Interconnection Customer, the Area EPS Operator's liability to such customer shall be limited as set forth in the Area EPS Operator's tariffs and terms and conditions for electric service, and shall not be affected by the terms of this Agreement.

16 Non-Warranty

- 16.1. 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, installed or maintained by the Interconnection Customer or leased by the Interconnection Customer from third parties, including without

limitation, the Distributed Energy Resource and any structures, equipment, wires, appliances or devices not owned, operated or maintained by the Area EPS Operator.

17 Indemnity

- 17.1. This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Section 15.
- 17.2. Each Party shall at all times indemnify, defend, and hold the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, reasonable attorney fees, and all other obligations by or to third parties, arising out of or resulting from the Party's action or failure to meet its obligations under this Agreement, except to the extent that such damages, losses or claims were caused by the negligence or intentional acts of the other Party.
- 17.3. If an indemnified Party is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified Party may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.
- 17.4. If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this article, the amount owing to the indemnified Party shall be the amount of such indemnified Party's actual loss, net of any insurance or other recovery.
- 17.5. Promptly after receipt by an indemnified Party of any claim or notice of the commencement of any action, administrative or legal proceeding, or investigation as to which the indemnity provided for in this article may apply, the indemnified Party shall notify the indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Party.

18 Force Majeure

- 18.1. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The

Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance of obligations under this Agreement as soon as possible.

19 Default

- 19.1. No default of any obligation under this Agreement shall exist where such failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a default, the non-defaulting Party shall give written notice of such default to the defaulting Party. Except as provided in Section 18, the defaulting Party shall have sixty (60) calendar days from receipt of the default notice within which to cure such default; provided however, if such default is not capable of cure within sixty (60) calendar days, the defaulting Party shall commence such cure within twenty (20) calendar days after notice and continuously and diligently complete such cure within six (6) months from receipt of the default notice; and, if cured within such time, the default specified in such notice shall cease to exist.
- 19.2. If a default is not cured as provided in this Section 19, or if a default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Section 19 will survive termination of this Agreement.

20 Insurance

- 20.1. An Area EPS Operator may only require an Interconnection Customer to purchase insurance covering damages pursuant to the applicable MIP process document to which the Distributed Energy Resource is subject to.
- 20.2. The Area EPS Operator agrees to maintain general liability insurance or self-insurance consistent with the Area EPS Operator's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Area EPS Operator's liabilities undertaken pursuant to this Agreement.

- 20.3. The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.
- 20.4. Failure of the Interconnection Customer or 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.

21 Confidential Information

- 21.1. Each Party shall treat and protect Confidential Information under this Agreement in accordance with the Confidentiality provisions in the MIP Process Overview document Section 12.1.

22 Disputes

- 22.1. The Parties agree to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner. The Parties agree to follow the established dispute resolution policy adopted by the Area EPS Operator.

23 Taxes

- 23.1. The Parties agree to follow all applicable tax laws and regulations, consistent with Internal Revenue Service and any other relevant local, state and federal requirements.
- 23.2. Each Party shall cooperate with the other to maintain the other Party's tax status. It is incumbent on the Party seeking to maintain its tax status to provide formal written notice to the other Party detailing what exact cooperation it is seeking from the other Party well prior to any deadlines by which any such action would need to be taken. Nothing in this Agreement is intended to adversely affect, if applicable, the Area EPS Operator's tax-exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

24 Miscellaneous

- 24.1. Governing Law, Regulatory Authority, and Rules. This Agreement shall be interpreted, governed, and construed under the laws of the State of Minnesota, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.
- 24.2. Amendment. The Parties may amend this Agreement by a written instrument duly executed by both Parties, or under Section 24.11 of this Agreement.

- 24.3. No Third-Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.
- 24.4. Waiver. None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.
- 24.5. Entire Agreement. This Agreement, including all attachments, constitutes the entire agreement between the Parties with regard to the interconnection of the Distributed Energy Resource of the Parties at the Point(s) of Common Coupling expressly provided for in this Agreement and supersedes all prior agreements or understandings, whether verbal or written. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement. Each Party also represents that in entering into this Agreement, it has not relied on the promise, inducement, representation, warranty, agreement, or other statement not set forth in this Agreement or in the incorporated attachments.
- 24.6. Multiple Counterparts. This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.
- 24.7. No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.
- 24.8. Severability. If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

- 24.9. Environmental Releases. Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Distributed Energy Resource or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.
- 24.10. Subcontractors. Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement. Each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.
- 24.10.1. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made. In no event shall the Area EPS Operator be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.
- 24.10.2. The obligations under this Section 24 will not be limited in any way by any limitation of subcontractor's insurance.
- 24.11. Inclusion of Area EPS Operator Tariff and Rules. The interconnection services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the rate schedules and rules applicable to the electric service provided by the Area EPS Operator, which rate schedules and rules are hereby incorporated into this Agreement by this reference. Notwithstanding any other provisions of this Agreement, the Area EPS Operator shall have the right to unilaterally change its rates, charges, classification, service, tariff, or rule, or any agreement relating thereto subject to standard municipal procedures as determined by the appropriate governing board.

25 Notices

- 25.1. General. Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement (“Notice”) shall be deemed properly given if delivered in person or sent by United States Mail, first class, postage prepaid, to the person specified as follows:

Area EPS Operator Information

Area EPS Operator:

Attention:

Address:

Phone:

Email:

Interconnection Customer Information

Interconnection Customer:

Attention:

Address:

Phone:

Email:

- 25.2. Billing and Payment. Billing and payments shall be sent to the addresses set out below:

Area EPS Operator Information

Area EPS Operator:

Attention:

Address:

Phone:

Email:

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.3. Alternative Forms of Notice. Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone or email to the telephone numbers and e-mail addresses set out below:

Area EPS Operator Information

Area EPS Operator: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.4. Designated Operating Representative. The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Area EPS Operator Information

Area EPS Operator: _____

Attention: _____

Address: _____

Phone: _____

Email: _____

Interconnection Customer Information

Interconnection Customer: _____

Attention: _____

Address: _____

Phone: _____

Email: _____

25.5. Changes to Notification. Either Party may change this information by giving five Business Days written notice to the other Party prior to the effective date of the change.

26 Signatures

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Willmar Municipal Utilities]

[Insert name of Interconnection Customer]

Signed: _____

Signed: _____

Name (Printed):

Name (Printed):

Title: _____

Title: _____

Attachment I: Glossary of Terms

Affected System – Another Area EPS Operator’s System, Transmission Owner’s Transmission System, or Transmission System connected generation which may be affected by the proposed interconnection.

Applicant Agent – A person designated in writing by the Interconnection Customer to represent or provide information to the Area EPS on the Interconnection Customer’s behalf throughout the interconnection process.

Area EPS – The electric power distribution system connected at the Point of Common Coupling.

Area EPS Operator – An entity that owns, controls, or operates the electric power distribution systems that are used for the provision of electric service in Minnesota. For this Interconnection Process the Area EPS Operator is **WILLMAR MUNICIPAL UTILITIES**.

Business Day – Monday through Friday, excluding Holidays as defined by Minn. Stat. §645.44, Subdivision 5. Any communication to have been sent or received after 4:30 p.m. Central Prevailing Time or on a Saturday, Sunday or holiday shall be considered to have been sent on the next Business Day.

Certified Equipment – Certified equipment is equipment that has been tested by a national recognized lab meeting a specific standard. For DER systems, UL 1741 listing is a common form of DER inverter certification. Additional information is seen in the Certification Codes and Standards document.

Confidential Information – Any confidential and/or proprietary information provided by one Party to the other Party and is clearly marked or otherwise designated “Confidential.” All procedures, design, operating specifications, and metering data provided by the Interconnection Customer may be deemed Confidential Information. See MIP Process Overview Section 12.1 for further information.

Distributed Energy Resource (DER) – A source of electric power that is not directly connected to a bulk power system or central station service. DER includes both generators and energy storage technologies capable of exporting active power to an EPS. An interconnection system or a supplemental DER device that is necessary for compliance with this standard is part of a DER. For the purpose of the Interconnection Process and interconnection agreements, the DER includes the Customer’s Interconnection Facilities but shall not include the Area EPS Operator’s Interconnection Facilities.

Distribution System – The Area EPS facilities which are not part of the Local EPS, Transmission System or any generation system.

Distribution Upgrades – The additions, modifications, and upgrades to the Distribution System at or beyond the Point of Common Coupling to facilitate interconnection of the DER and render

the distribution service necessary to affect the Interconnection Customer's connection to the Distribution System. Distribution Upgrades do not include Interconnection Facilities.

Electric Power System (EPS) – The facilities that deliver electric power to a load.

Fast Track Process – The procedure as described in the Interconnection Process - Fast Track Process for evaluating an Interconnection Application for a DER that meets the eligibility requirements in the MIP Process Overview Section 3.4.

Force Majeure Event – An act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, an order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or another cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing.

Good Utility Practice – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and act which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Area EPS Operator, or any Affiliate thereof. The utility's local governing body is the authority governing interconnection requirements unless otherwise provided for in the Minnesota Technical Requirements.

Interconnection Agreement – The terms and conditions between the Area EPS Operator and Interconnection Customer (Parties). See Section 8 in the MIP Process Overview for when the MN Standard Agreement or MN Interconnection Agreement applies.

Interconnection Application – The Interconnection Customer's request to interconnect a new or modified, as described in Section 4 of the MIP Process Overview, DER. See Simplified Application Form and Interconnection Application Form.

Interconnection Customer – The person or entity, including the Area EPS Operator, whom will be the owner of the DER that proposes to interconnect a DER(s) with the Area EPS Operator's

Distribution System. The Interconnection Customer is responsible for ensuring the DER(s) is designed, operated and maintained in compliance with the Minnesota Technical Requirements.

Interconnection Facilities – The Area EPS Operator’s Interconnection Facilities and the Interconnection Customer’s Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the DER and the Point of Common Coupling, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the Area EPS Operator’s System. Some examples of Customer Interconnection Facilities include: supplemental DER devices, inverters, and associated wiring and cables up to the Point of DER Connection. Some examples of Area EPS Operator Interconnection Facilities include sole use facilities; such as, line extensions, controls, relays, switches, breakers, transformers and shall not include Distribution Upgrades or Network Upgrades.

Interconnection Process – The Area EPS Operator’s interconnection standards as part of the DG Workbook - MN.

Material Modification – A modification to machine data, equipment configuration or to the interconnection site of the DER at any time after receiving notification by the Area EPS Operator of a complete Interconnection Application that has a material impact on the cost, timing, or design of any Interconnection Facilities or Upgrades, or a material impact on the cost, timing or design of any Interconnection Application with a later Queue Position or the safety or reliability of the Area EPS.¹

MN Technical Requirements – This term refers to Chapter 9: Technical Requirements: Greater than 100 kW through 10 MW of the DG Workbook - MN.

Nameplate Rating - nominal voltage (V), current (A), maximum active power (kWac), apparent power (kVA), and reactive power (kVar) at which a DER is capable of sustained operation. For a Local EPS with multiple DER units, the aggregate nameplate rating is equal to the sum of all DERs nameplate rating in the Local EPS. For purposes of Attachment V to the Interconnection

¹ 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. A Material Modification shall not include a modification from the approved Interconnection Application that: (1) changes the ownership of a Distributed Energy Resource; (2) changes the address of the Distributed Energy Resource, so long as the physical point of common coupling remains the same; (3) changes or replaces generating equipment such as generator(s), inverter(s), solar panel(s), transformers, relaying, controls, etc. and substitutes equipment that is a like-kind substitution in certification, size, ratings, impedances, efficiencies or capabilities of the equipment; and/or (4) increases the DC/AC ratio but does not increase the maximum AC output capability of the Distributed Energy Resource in a way that is likely to have an impact on technical review.

Agreement, the DER system’s capacity may, with the Area EPS’s agreement, be limited through use of control systems, power relays or similar device settings or adjustments as identified in IEEE 1547. The nameplate ratings referenced in the Interconnection Process are alternating current nameplate DER ratings at the Point of DER Coupling.

Network Upgrades – Additions, modifications, and upgrades to the Transmission System required at or beyond the point at which the DER interconnects with the Area EPS Operator’s System to accommodate the interconnection with the DER to the Area EPS Operator’s System. Network Upgrades do not include Distribution Upgrades.

Operating Requirements – Any operating and technical requirements that may be applicable due to the Transmission Provider’s technical requirements or Minnesota Technical Requirements, including those set forth in the Interconnection Agreement.

Party or Parties – The Area EPS Operator and the Interconnection Customer.

Point of Common Coupling (PCC)– The point where the Interconnection Facilities connect with the Area EPS Operator’s Distribution System. See figure 1. Equivalent, in most cases, to “service point” as specified by the Area EPS Operator and described in the National Electrical Code and the National Electrical Safety Code.

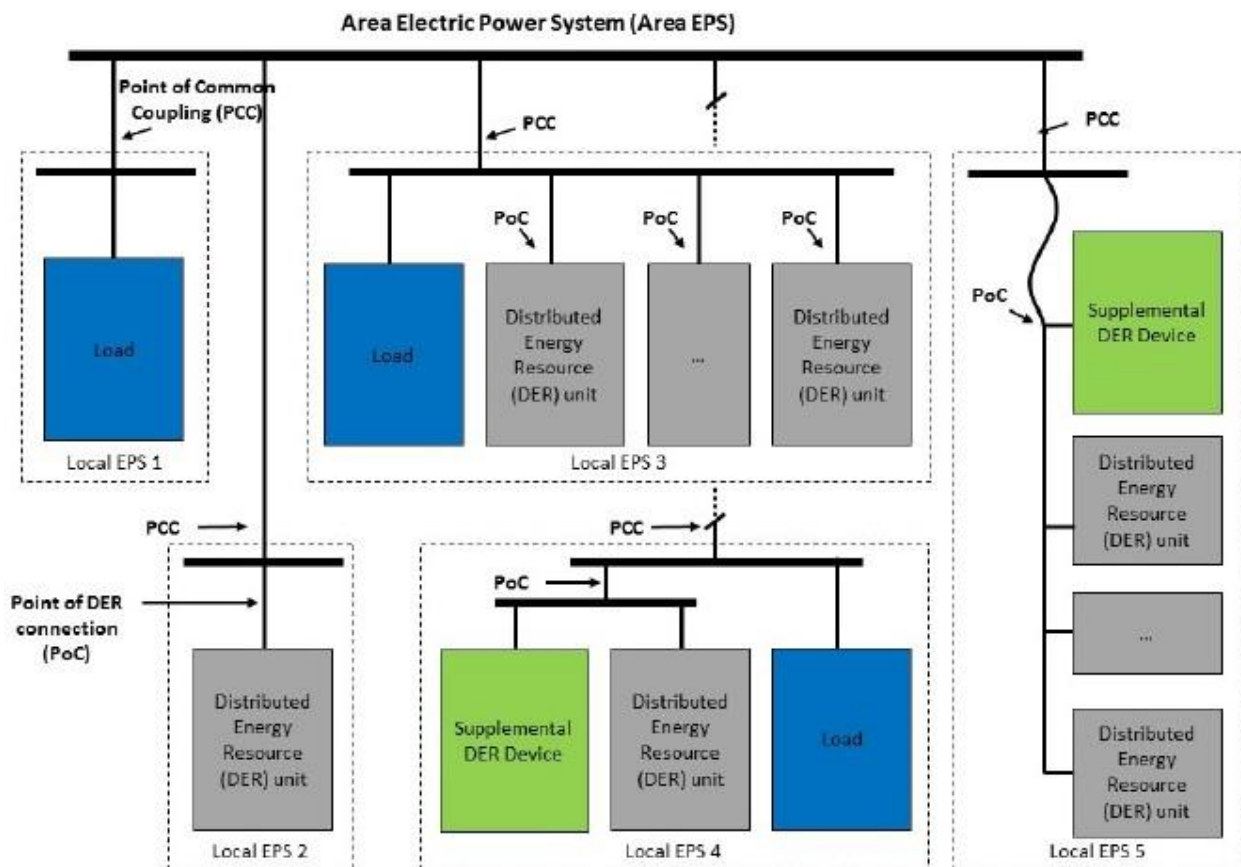


Figure 1: Point of Common Coupling and Point of DER Connection
(Source: IEEE 1547)

Point of DER Connection (PoC) – When identified as the Reference Point of Applicability, the point where an individual DER is electrically connected in a Local EPS and meets the requirements of this standard exclusive of any load present in the respective part of the Local EPS (e.g. terminals of the inverter when no supplemental DER device is required.) For DER unit(s) that are not self-sufficient to meet the requirements without a supplemental DER device(s), the Point of DER Connection is the point where the requirements of this standard are met by DER in conjunction with a supplemental DER device(s) exclusive of any load present in the respective part of the Local EPS.

Queue Position – The order of a valid Interconnection Application, relative to all other pending valid Interconnection Applications, that is established based upon the date- and time- of receipt of the complete Interconnection Application as described in Section 4.7 of the MIP Process Overview.

Reasonable Efforts – With respect to an action required to be attempted or taken by a Party under these procedures, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Reference Point of Applicability – The location, either the Point of Common Coupling or the Point of DER Connection, where the interconnection and interoperability performance requirements specified in IEEE 1547 apply. With mutual agreement, the Area EPS Operator and Customer may determine a point between the Point of Common Coupling and Point of DER Connection. See Minnesota Technical Requirements for more information.

Simplified Process – The procedure for evaluating an Interconnection Application for a certified inverter-based DER no larger than 20 kW that uses the screens described in the Interconnection Process – Simplified Process document. The Simplified Process includes simplified procedures.

Study Process – The procedure for evaluating an Interconnection Application that includes the scoping meeting, system impact study, and facilities study.

Transmission Owner – The entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System relevant to the Interconnection.

Transmission Provider – The entity (or its designated agent) that owns, leases, controls, or operates transmission facilities used for the transmission of electricity. The term Transmission Provider includes the Transmission Owner when the Transmission Owner is separate from the Transmission Provider. The Transmission Provider may include the Independent System Operator or Regional Transmission Operator.

Transmission System – The facilities owned, leased, controlled or operated by the Transmission Provider or the Transmission Owner that are used to provide transmission service. See the Commission’s July 26, 2000 Order Adopting Boundary Guidelines for Distinguishing Transmission from Generation and Distribution Assets in Docket No. E-999/CI-99-1261.

MN Standard Agreement – the Area EPS Operator’s Interconnection and Power Purchase Agreement that may be applied to all qualifying new and existing interconnections between the Area EPS Operator and an DER system having capacity of 100 kW or less.

Upgrades – The required additions and modifications to the Area EPS Operator’s Transmission or Distribution System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

Attachment II: Description and Costs of the Distributed Energy Resource, Interconnection Facilities, and Metering Equipment

Equipment, including the Distribution Energy Resource, Interconnection Facilities, and metering equipment shall be itemized and identified as being owned by the Interconnection Customer or the Area EPS Operator. The Area EPS Operator will provide a good faith estimate itemized cost, including administrative overheads, of its Interconnection Facilities and metering equipment, and a good faith estimate itemized cost of the annual operation and maintenance expenses associated with the Interconnection Facilities and metering equipment.

Attachment III: One-line Diagram Depicting the Distributed Energy Resource, Interconnection Facilities, and Metering Equipment, and Upgrades

Attach the one-line diagram of the Distributed Energy Resource, Interconnection Facilities, Metering Equipment, and Upgrades to which this Agreement applies.

Attachment IV: Milestones

The Milestones in line (1) below may be a calendar date. All other dates in this Attachment IV may be the number of Business Days from the calendar date in line (1) or from the completion of a different Milestone described in a specific number line. Similarly, the anticipated In-Service Date may be based on the number of Business Days from the completion of a specified line number.

In-Service Date: _____

Critical milestones and responsibilities as agreed to by the Parties:

	Milestone/Anticipated Date	Responsible Party
(1)	_____	_____
(2)	_____	_____
(3)	_____	_____
(4)	_____	_____
(5)	_____	_____
(6)	_____	_____
(7)	_____	_____
(8)	_____	_____
(9)	_____	_____
(10)	_____	_____
(11)	_____	_____
(12)	_____	_____
(13)	_____	_____

Agreed to by:

Area EPS Operator _____ Date _____

Transmission Owner
(If Applicable) _____ Date _____

Interconnection
Customer _____ Date _____

Attachment V: Operating Agreement

The Area EPS Operator shall also provide requirements that must be met by the Interconnection Customer prior to initiating parallel operation with the Area EPS Operator's Distribution System. Each Distributed Energy Resource interconnection will be unique and will require a unique Operating Agreement. The following is a listing of some of the possible areas that will be covered in an operating agreement. The following has not been developed into a standard agreement due to the unique nature of each Distributed Energy Resource. It is envisioned that this Attachment will be tailored by the Area EPS Operator for each Distributed Energy Resource interconnection. It is also intended that this Operating Agreement Attachment will be reviewed and updated periodically to allow the operation of the Distributed Energy Resource to change to meet the needs of both the Area EPS Operator and the Interconnection Customer. There may also be operating changes required by outside parties or influences, such as changes in FERC and regional transmission organization requirements and/or policy changes which will require this Operating Agreement to be modified.

The following items are provided to show the general types of items that may be included in this Operating Agreement. The list of items is not all-inclusive and is not meant to preclude any other issues that may be addressed in the Operating Agreement.

- A. Applicable Area EPS Tariffs – Identify which tariffs are being applied for and how the tariffs would be applicable to this installation.
- B. Var Requirements – Sufficient power factor correction and control devices shall be furnished on the Distributed Energy Resource system such that a 98% power factor, minimum, is maintained across the point of interconnection at all times. Sufficient power factor correction and control devices shall be furnished on the Distributed Energy Resource system to provide the capability of unity power factor across the point of interconnection when operating at full generation output capacity. The Distributed Energy Resource shall be set up to attempt to maintain unity power factor at all times during operation.
- C. Metering Arrangement
 - 1. The project will be adequately metered, with metering that is approved by the Area EPS Operator. The meter will be a bi-directional meter capable of metering the energy and power coming from the Distributed Energy Resource or capable of being furnished to the generator. The project and the Interconnection Customer will comply with the standards set out in the MN Interconnection Process.
 - 2. The Area EPS Operator shall provide Missouri River Energy Services (MRES) metering data for inadvertent energy received by the Area EPS on the Area EPS Operator's monthly billing cycle. The metering data shall be made available to MRES no later than ten days after the end of the monthly billing cycle. The Area EPS Operator shall test the

metering equipment on a scheduled basis. If the metering equipment fails to register proper amounts or the registration thereof becomes so erratic as to be meaningless, the inadvertent energy shall be determined by the Area EPS Operator from the best information available.

- D. Inadvertent Energy – MRES shall purchase all inadvertent energy supplied by the Distributed Energy Resource which is received by the Area EPS. The rate paid by MRES for the inadvertent energy will be equal to the commensurate real-time hourly locational marginal price (LMP) as settled by the Midcontinent Independent System Operator (MISO) or Southwest Power Pool (SPP) for the commercial pricing node [*identify node*] located at or near to [*name of WMU*], for the hours during which inadvertent energy was received by the Area EPS, less any administrative costs charged by MISO, SPP or other utilities with respect to the sale or transfer of such energy. The Interconnection Customer acknowledges and agrees that the hourly LMP rate fluctuates based upon the supply and demand for energy within the MISO or SPP market as determined by MISO or SPP, and that it is possible that the LMP price at times may be negative, meaning that the Interconnection Customer may have to make (rather than receive) payment for inadvertent energy received by the Area EPS. The Interconnection Customer shall receive payment for the inadvertent energy to MRES through a credit on the Interconnection Customer's monthly invoice from the Area EPS Operator. MRES, in turn, shall credit the monthly wholesale power supply bill submitted by MRES to the Area EPS Operator in an amount equal to the purchases of inadvertent energy during the preceding month. The Area EPS Operator shall provide to MRES, as soon as available following the end of each month, data indicating the amount of inadvertent energy purchased by MRES from the Interconnection Customer's generation during the preceding month.
- E. Control Issues – Starting and stopping of the generation, including the remote starting and stopping, if applicable.
- F. Dispatch of Distributed Energy Resources – What are the dispatch requirements for the Distributed Energy Resource; can it only run during Peak Hours? Are there a limited number of hours that it can run? Is it required to meet an availability percentage? The answer to these questions will depend greatly upon the PPA and other requirements. Is the Interconnection Customer required to coordinate outages of the Distributed Energy Resource with the Area EPS? Prior to any planned outage and following an unplanned outage, the Area EPS and MRES shall be notified in a timely manner.
- G. Outages of Distribution System – How are emergency outages handled? How are other outages scheduled? If the Interconnection Customer requires the Area EPS Operator to schedule the outages during after-hours, who pays for the Area EPS Operator's overtime?
- H. Notification/Contacts – Who should be notified? How should they be notified? When should they be notified? For what reasons should the notification take place?

1. Starting of the generation
 2. Dispatching of generation
 3. Notification of failures (both Area EPS and Distributed Energy Resource failures)
- I. Documentation of Operational Settings – How much fuel will the generation system typically have on hand? How long can it run with this fuel capacity? How is the generation system set to operate for a power failure? These may be issues documented in the Operating Agreement. The following are examples of what may be documented:
1. The Distributed Energy Resource will monitor the Area EPS phase voltage and after 2 seconds of any phase voltage below 90%, the generation will be started and the load transferred to the generator, if the generation is not already running.
 2. The Distributed Energy Resource will wait for 30 minutes after it senses the return of the Area EPS frequency and voltage before it will automatically reconnect to the Area EPS.
- J. Cost of Testing for Future Failures – If a failure of a component of the Distributed Energy Resource affects the interconnection with the Area EPS, what is the process for retesting, and for replacement? Who pays for the additional costs of the Area EPS to work with the Interconnection Customer to resolve these problems and/or to complete retesting of the modified equipment?
- K. Right of Access – At all times, the Area EPS Operator shall have access to the disconnect switch of the Distributed Energy Resource for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement, to meet its obligation to operate the Area EPS safely, and to provide service to its customers. If necessary for the purpose of this Agreement, the Interconnection Customer shall allow the Area EPS Operator access to the Area EPS's equipment and facilities located on the premises.
- L. Power Quality – The installation shall be constructed and operated to ensure that the Area EPS Operator's Distribution System is not adversely affected by power quality issues which may be caused by the Distributed Energy Resource, including voltage flicker. The Distributed Energy Resource shall be equipped with devices which serve to minimize power quality disturbances, including soft starting controls to minimize inrush currents and control devices to prevent multiple units from starting simultaneously.

SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused three originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: _____

Title: _____

Date: _____

Willmar Municipal Utilities, Area EPS Operator

By: _____

Name: _____

Title: _____

Date: _____

Missouri River Energy Services

By: _____

Name: _____

Title: _____

Date: _____

Attachment VI: Maintenance Agreement

Each Distributed Energy Resource interconnection will be unique and will require a unique Maintenance Agreement. This Maintenance Agreement will be tailored for each Distributed Energy Resource interconnection. It is also intended that this Maintenance Agreement will be reviewed and updated periodically to allow changes to meet the needs of both the Area EPS Operator and the Interconnection Customer (provided the change does not negatively affect the other Party). There may also be changes required by outside parties and influences such as changes in FERC or MISO/SPP requirements and/or policies which will require this Agreement to be modified.

- A. Routine Maintenance Requirements
 - 1. Who is providing maintenance – Contact information
 - 2. Periods of maintenance

- B. Modifications to the Distributed Energy Resource – The Interconnection Customer shall notify the Area EPS Operator, in writing, of plans for any modifications to the Distributed Energy Resource interconnection equipment at least twenty (20) business days prior to undertaking such modification. Modifications to any of the interconnection equipment, including all required protective systems, the generation control systems, the transfer switches/breakers, VTs & CTs, generating capacity, and associated wiring, shall be included in the notification to the Area EPS Operator. The Interconnection Customer agrees not to commence installation of any modifications to the Distributed Energy Resource until the Area EPS Operator has approved the modification in writing. The Area EPS shall have ten (10) business days to review and respond to the modification after receipt of the information required for review of the modifications.

SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

Willmar Municipal Utilities, Area EPS Operator

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Attachment VII: Area EPS Operator's Description of Distribution and Network Upgrades and Good Faith Estimates of Upgrade Costs

The Area EPS Operator shall describe Distribution and Network Upgrades and provide an itemized good faith estimate of the costs, including administrative overheads, of the Upgrade and annual operations and maintenance expenses associated with such Upgrades. The Area EPS Operator shall functionalize Upgrade costs and annual expenses as either transmission or distribution related. Additional Distribution or Network Upgrades required for an Affected System may be addressed in a separate agreement as described in Section 12.6 of the MN Interconnection Agreement.

Attachment VIII: Assignment of Interconnection Agreement

This Assignment of Interconnection Agreement (“Assignment”) is made and entered into this ____ day of _____, ____ by and between Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota (“Area EPS Operator”), _____ (“Assignor”), and _____ (“Assignee”).

WHEREAS, the Area EPS Operator and Assignor previously entered into an Interconnection Agreement (“Agreement”) dated as of _____, ____ including any and all Attachments and amendments thereto, for a Distributed Energy Resource (DER) described as follows:

DER System Information

Type of DER System: _____
Capacity Rating of System (AC): _____
Limited Capacity Rating (AC): _____
Address of DER System: _____

WHEREAS, the Assignor intends to convey its interest in the above-referenced DER to the Assignee, and the Assignor intends to assign its rights and obligations under the Agreement to the Assignee.

NOW THEREFORE, in consideration of the mutual undertakings herein contained, the Assignor, the Assignee, and the Area EPS Operator agree as follows:

- 1. Capitalized Terms.** Capitalized terms used but not defined herein shall have the meanings set forth in the Agreement.
- 2. Consent to Assignment.** The Assignor hereby irrevocably assigns the Agreement in all respects to the Assignee and the Assignee accepts the assignment thereof in all respects.
- 3. Amendment to Agreement.** The Area EPS Operator consents to this assignment and, as assigned, the Agreement is hereby amended so that wherever the name of the Assignor

is used therein it shall mean the Assignee. It is further agreed that all terms and conditions of the Agreement, as amended by this Assignment, shall remain in full force and effect.

- 4. **Payments by Area EPS Operator.** Any and all payments made by Area EPS Operator under the Agreement to either the Assignor or the Assignee shall be deemed to have been made to both and shall discharge the Area EPS Operator from any further liability with regard to said payment.

- 5. **Financial Obligations of Assignor and Assignee.** Any and all financial liability, including but not limited to amounts due, from the Interconnection Customer to the Area EPS Operator, occurring or accruing under the Agreement on or before the date of the signature of the Area EPS Operator to this Assignment shall be deemed to be the obligation of both the Assignor and Assignee, and the Area EPS Operator may recover any such amounts jointly and severally from the Assignor and Assignee.

- 6. **Contact information.** The following information updates and replaces the designated information as set forth on page 1 of the Agreement, and in Section 25.1, 25.2, 25.3 and 25.4 of the Agreement.

Page 1 Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____

Email: _____

25.1 General Notices. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____

Email: _____

25.2 Billing and Payment Notices. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.3 Alternative Forms of Notices. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

25.4 Designated Operating Representative. Interconnection Customer Information

Interconnection Customer: _____
Attention: _____
Address: _____

Phone: _____
Email: _____

7. Signatures. Facsimile or electronic signatures, or signatures to this Assignment sent electronically, shall have the same effect as original signatures. Photocopies, or electronically stored versions of this Assignment, shall have the same validity as the original.

The Area EPS Operator, Assignor, and Assignee have executed this Assignment as of the dates set forth below.

Assignor

[Insert legal name of Assignor]

Signed: _____

Name (Printed): _____

Title: _____

Date: _____

Assignee

[Insert legal name of Assignee]

Signed: _____

Name (Printed): _____

Title: _____

Date: _____

Area EPS Operator

Willmar Municipal Utilities

Signed: _____

Name (Printed): _____

Title: _____

Date: _____

Supplemental Review Offer

The Distributed Energy Resource (DER) Interconnection Application in the name of _____ (Interconnection Customer) for a DER system described as _____ (*insert description of DER System*) _____ and proposed to be located at _____ (*insert Address or Legal Description*) _____ has failed one or more of the initial engineering screens. To continue with the Interconnection Process, the Interconnection Customer may choose to continue with a Supplemental Review under the Fast Track Process or may choose the Interconnection Application to be evaluated under the Study Process track. The Interconnection Customer has fifteen (15) Business Days to return this Supplemental Review Offer to the Area Electric Power Supply (EPS or Area EPS) Operator, indicating its choice for the next step in the Interconnection Process. If this Supplemental Review Offer is not returned to the Area EPS Operator within such time period, the Interconnection Application will only continue to be evaluated under the Study Process track or it may be withdrawn by the Interconnection Customer.

Interconnection Customer agrees that the Area EPS Operator shall:

- _____ Proceed with a Supplemental Review of the Interconnection Application under the Fast Track Process.
- _____ Continue evaluation of the Interconnection Application under the Study Process track.
- _____ Deem the Interconnection Application withdrawn.

If the Interconnection Customer chooses to proceed with the Supplemental Review, the Interconnection Customer shall note the order in which the Supplemental Review screens should be performed and indicate the action the Area EPS Operator should take if a Supplemental Review screen has failed.

Supplemental Review Screen	Order to Perform Screens	Cost Estimate of Review Screen
Minimum Load		
Voltage & Power Quality		
Safety & Reliability		
Total Deposit Required		

Upon failure of a Supplemental Review screen or upon notification the Area EPS Operator is unable to complete a Supplemental Review screen, the Interconnection Customer agrees that the Area EPS Operator shall:

- _____ Proceed with the remaining Supplemental Review screens.
- _____ Stop the Supplemental Review screens and continue evaluation of the Interconnection Application under the Study Process track.
- _____ Stop the Supplemental Review screens and contact the Interconnection Customer for further instructions.
- _____ Deem the Interconnection Application withdrawn.

The Area EPS Operator has indicated a good faith estimate of the cost for each Supplemental Review screen. The Interconnection Customer must submit a deposit for the full estimate of Supplemental Review costs prior to the start of any Supplemental Review. Upon completion of the Supplemental Review or termination of the Supplemental Review by the Interconnection Customer, the balance of the actual Supplemental Review costs will be billed or credited to the Interconnection Customer. The balance must be paid in full to the respective party within twenty (20) Business Days of receipt of the final Supplemental Review invoice from the Area EPS Operator.

The Area EPS Operator will have thirty (30) Business Days to complete the Supplemental Review upon receipt of a signed copy of this Supplemental Review Offer and the required deposit. The Area EPS Operator will provide the Interconnection Customer with a written report indicating the Supplemental Review results and the underlying analysis performed.

The Interconnection Customer agrees to the terms and conditions specified in this Supplemental Review Offer and in the Fast Track Process document. The Interconnection Customer understands the Supplemental Review screens will not start until the deposit is received by the Area EPS Operator.

Interconnection Customer Signature

Date

For Office Use Only	
Application ID:	
Date Offer Received:	Date Deposit Received:
Date Supplement Review Results Provided to Interconnection Customer:	

INTERCONNECTION PROCESS

MN System Impact Study Agreement

SUMMARY

Agreement outlining the scope, timeline and responsibility of cost for a proposed DER's system impact to the distribution system

MN System Impact Study Agreement

This MN System Impact Study Agreement (“Agreement”) is made and entered into this _____ day of _____, 20__ by and between _____ (“Interconnection Customer”), and Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota (“Area EPS Operator”). The Interconnection Customer and Area EPS Operator each may be referred to as a “Party,” or collectively as the “Parties.”

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Distributed Energy Resource (DER) or generating capacity addition to an existing DER consistent with the Interconnection Application completed by the Interconnection Customer on _____ (date); and

WHEREAS, the Interconnection Customer desires to interconnect the DER with the Area EPS Operator’s electric system; and

WHEREAS, the Interconnection Customer has requested the Area EPS Operator to perform a System Impact Study to assess the impact of interconnecting the DER with the Area EPS Operator’s electric system, and potential Affected System(s);

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated, or the meanings specified, in the MN Interconnection Process Overview (MIP).
2. The Interconnection Customer elects and the Area EPS Operator shall cause to be performed a MN System Impact Study consistent with the MIP. The scope of a MN

System Impact Study shall be subject to the assumptions set forth in this Agreement, including Attachment A.

3. A MN System Impact Study will be based upon the technical information provided by the Interconnection Customer in the MN Interconnection Application. The Area EPS Operator reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the MN System Impact Study.
4. A MN System Impact Study may, as necessary, consist of a short circuit analysis, a stability analysis, a power flow analysis, voltage drop and flicker studies, protection and set point coordination studies, and grounding reviews. A MN System Impact Study shall state the assumptions upon which it is based, state the results of the analyses, and provide the requirement or potential impediments to providing the requested interconnection service, including a preliminary indication of the cost and length of time that would be necessary to correct any problems identified in those analyses and implement the interconnection. A MN System Impact Study shall provide a list of facilities that are required as a result of the MN Interconnection Application and non-binding good faith estimates of cost responsibility and time to construct. A MN Facilities Study may be required to identify all possibilities of facility upgrades, cost estimates and estimate of construction time.
5. A distribution MN System Impact Study shall incorporate a distribution load flow study, an analysis of equipment interrupting ratings, protection coordination study, voltage drop and flicker studies, protection and set point coordination studies, grounding reviews, and the impact on electric system operation, as necessary.
6. If the MN System Impact Study determines Affected Systems may be affected, a separate MN Transmission System Impact Study may be required. All Affected Systems

shall be afforded an opportunity to review and comment upon a MN System Impact Study that indicates potential adverse system impacts on their electric systems.

7. If the Area EPS Operator uses a queuing procedure for sorting or prioritizing projects and their associated cost responsibilities for any required Network Upgrades, the MN System Impact Study shall consider all Distributed Energy Resources (and with respect to Section 7.3 below, any identified Upgrades associated with such higher queued interconnection) that, on the date the MN System Impact Study is commenced:
 - 7.1. Are directly interconnected with the Area EPS Operator's electric system; or
 - 7.2. Are interconnected with Affected Systems and may have an impact on the proposed interconnection; and
 - 7.3. Have a pending higher queued Interconnection Application to interconnect with the Area EPS Operator's electric system.
8. A deposit equivalent to the good faith estimated cost of a MN System Impact Study shall be required from the Interconnection Customer when the signed Agreement is provided to the Area EPS Operator.
9. Any study fees shall be based on the Area EPS Operator's actual costs and include a summary of professional time. An invoice shall be sent to the Interconnection Customer within twenty (20) Business Days after the study is completed and delivered.
10. The Interconnection Customer must pay any study costs that exceed the deposit without interest, within twenty (20) Business Days, on receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced fees, the Area EPS

Operator shall refund such excess within twenty (20) Business Days of the invoice without interest.

11. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Minnesota. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

13. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest, and where permitted, their assigns.

14. Waiver

14.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

14.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, or duty under this Agreement. Termination or default of this Agreement for any reason by the

Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Area EPS Operator. Any waiver of this Agreement shall, if requested, be provided in writing.

15. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

16. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

17. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore, insofar as practicable, the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

18. Subcontractors

18.1. Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in

providing such services, and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

18.2. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires, as if no subcontract had been made; provided, however, that in no event shall the Area EPS Operator be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

18.3. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

19. Inclusion of Area EPS Operator Tariffs and Rules

The interconnection services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the DG Workbook-MN and rules applicable to the electric service provided by the Area EPS Operator, which are hereby incorporated into this Agreement by this reference. Notwithstanding any other provisions of this Agreement, the Area EPS Operator shall have the right to unilaterally change rates, charges, classification, service, tariff, or rule or any agreement relating thereto. The Interconnection Customer shall have the right to protest any such change through the Area EPS Operator's dispute resolution process, pursuant to the Area EPS Operator's rules and regulations.

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Willmar Municipal Utilities]

[Insert Name of Interconnection Customer]

(Signature)

(Signature)

(Title)

(Title)

Attachment A

Assumptions Used in Conducting the MN System Impact Study

The MN System Impact Study shall be based upon the following assumptions:

- 1) Designation of Point of Common Coupling and configuration to be studied.
- 2) Designation of alternative Points of DER Interconnection and configuration.

1) and 2) are to be completed by the Interconnection Customer. Other assumptions (attached to this Agreement) are to be provided by the Interconnection Customer and the Area EPS Operator. The Area EPS Operator shall use the Reference Point for Applicability which is either the Point of Common Coupling or the Point(s) of DER Interconnection as described in IEEE 1547.

Additional DER Technical Data Required for MN System Impact Study

If applicable, the Area EPS Operator shall provide a list of any additional technical data that is required to adequately perform the MN System Impact Study. This list of required technical data shall be attached to this Agreement. As indicated in Section 4 of the MN Interconnection Process: Study Process document of the MIP, this information is to be returned with the signed MN System Impact Study Agreement and deposit.

Data to Be Provided by the Area EPS Operator with the MN System Impact Study Agreement

Estimate Cost of System Impact Study	\$
Time duration to complete System Impact Study	Business Days

INTERCONNECTION PROCESS

MN Facilities Study Agreement

SUMMARY

Agreement outlining the scope, timeline and responsibility of cost for a proposed DER system's facility changes to the distribution system

MN Facilities Study Agreement

This MN Facilities Study Agreement (“Agreement”) is made and entered into this _____ day of _____, 20__ by and between _____ (“Interconnection Customer”), and Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota (“Area EPS Operator”). The Interconnection Customer and Area EPS Operator each may be referred to as a “Party,” or collectively as the “Parties.”

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Distributed Energy Resource (DER) or generating capacity addition to an existing DER consistent with the Interconnection Application completed by the Interconnection Customer on _____ (date); and

WHEREAS, the Interconnection Customer desires to interconnect the DER with the Area EPS Operator’s Electric System; and

WHEREAS, the Area EPS Operator has completed Initial Review, Supplemental Review, and/or a MN System Impact Study, and provided the results of said review to the Interconnection Customer, or determined none was required; and

WHEREAS, the Interconnection Customer has requested the Area EPS Operator to perform a Facilities Study to specify, and estimate the cost of, the equipment, engineering, procurement and construction work needed to implement the conclusions of the above noted review in accordance with Good Utility Practice, to physically and electrically connect the DER with the Area EPS Operator’s Distribution System.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated, or the meanings specified, in the MN Interconnection Process Overview (MIP).
2. The Interconnection Customer elects and the Area EPS Operator shall cause a MN Facilities Study to be performed consistent with the MIP. The scope of the MN Facilities Study shall be subject to data provided in Section 17 to this Agreement.
3. The MN Facilities Study shall specify and estimate the cost of the equipment, engineering, procurement and construction work (including overheads), needed to implement the conclusions of the MN System Impact Study(-ies). The MN Facilities Study shall also identify:
 - 1) the electrical switching configuration of the equipment, including, without limitation, transformer, switchgear, meters, and other station equipment, 2) the nature and estimated cost of the Area EPS Operator's Interconnection Facilities and Upgrades necessary to accomplish the interconnection, and 3) an estimate of the time required to complete the construction and installation of such facilities.
4. The Area EPS Operator may propose to group facilities required for more than one Interconnection Customer in order to minimize facilities costs through economies of scale. Any interconnection customer may require the installation of facilities required for its own Distributed Energy Resource if they are willing to pay the costs of those facilities.
5. A deposit equivalent to the good faith estimated cost of a distribution MN Facilities Study shall be required from the Interconnection Customer when the signed Agreement is provided to the Area EPS Operator.
6. Any study fees shall be based on the Area EPS Operator's actual costs and include a summary of professional time. An invoice shall be sent to the Interconnection Customer within twenty (20) Business Days after the study is completed and delivered.

7. The Interconnection Customer must pay any study costs that exceed the deposit without interest, within twenty (20) Business Days, on receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced fees, the Area EPS Operator shall refund such excess within twenty (20) Business Days of the invoice without interest.

8. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions, shall be governed by the laws of the State of Minnesota. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

9. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

10. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest, and where permitted, their assigns.

11. Waiver

11.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

11.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure

to comply with any other obligation, right, or duty under this Agreement.

Termination or default of this Agreement for any reason by the Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Area EPS Operator. Any waiver of this Agreement shall, if requested, be provided in writing.

12. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

13. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

14. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore, insofar as practicable, the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

15. Subcontractors

15.1. Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to

comply with all applicable terms and conditions of this Agreement in providing such services, and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

15.2. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires, as if no subcontract had been made; provided, however, that in no event shall the Area EPS Operator be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

15.3. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

16. Inclusion of Area EPS Operator Tariffs and Rules

The interconnection services provided under this Agreement, shall at all times, be subject to the terms and conditions set forth in the DG Workbook-MN and rules applicable to the electric service provided by the Area EPS Operator, which are hereby incorporated into this Agreement by this reference. Notwithstanding any other provisions of this Agreement, the Area EPS Operator shall have the right to unilaterally change rates, charges, classification, service, tariff, or rule or any agreement relating thereto. The Interconnection Customer shall have the right to protest any such change through the Area EPS Operator's dispute resolution process, pursuant to the Area EPS Operator's rules and regulations.

17. Data to be Provided by Interconnection Customer with MN Facilities Study Agreement

- 17.1. The Interconnection Customer shall be available to meet on site with the Area EPS Operator within five (5) Business Days of signing the MN Facilities Study Agreement. The Interconnection Customer's personnel for this site visit shall bring detailed information on the site layout. The Area EPS Operator may request the Interconnection Customer physically place stakes at the locations of major components.
- 17.2. Upon execution of this Agreement, the Interconnection Customer shall furnish a final site plan to the Area EPS Operator detailing the location of major equipment. The Point of Common Coupling (PCC) and Point of Distributed Resource Connection (PoC) shall be clearly marked. The site plan shall depict any nearby roads and be labeled with the road name. Accurate dimensions shall be included on the site plan. The proper emergency (911) address corresponding to the site shall be labeled on the site plan.
- 17.3. The Interconnection Customer shall furnish a final one-line diagram detailing the electrical connections between major components. The one-line shall be provided to the Area EPS Operator with the signed MN Facilities Study Agreement.
- 17.4. The Interconnection Customer shall furnish technical cut sheets on all equipment related to metering. The technical cut sheets shall be provided to the Area EPS Operator with the signed MN Facilities Study Agreement.
- 17.5. If available, copies of the Conditional Use Permit(s) from all necessary authorities shall be provided by the Interconnection Customer to the Area EPS Operator with the signed MN Facilities Study Agreement.

- 17.6. The Interconnection Customer shall secure any necessary easements from private land owners prior to signing the MN Facilities Study Agreement. Documentation of any such agreements shall be provided to the Area EPS Operator.
- 17.7. In the event that the Area EPS Operator determines a site survey is necessary in order to complete a MN Facilities Study, the Interconnection Customer shall make good faith efforts to complete the survey in a timely manner.
- 17.8. The MN Facilities Study assumes all land use permits required for the interconnection will be approved by the proper authorities. Permits are submitted after the MN Interconnection Agreement is signed and may impact project costs (i.e. overhead to underground requirements.)
- 17.9. The Interconnection Customer and Area EPS Operator shall provide a single point of contact for design and construction related matters. The Interconnection Customer's single point of contact shall respond in a timely manner to the Area EPS Operator's questions during the MN Facilities Study.
- 17.10. In the event that the Interconnection Customer does not provide the necessary information described in this Agreement, or if the Interconnection Customer takes more than five (5) Business Days to respond to a question during the MN Facilities Study, the MN Facilities Study timeframe shall pause until the question is resolved.

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Willmar Municipal Utilities]

[Insert Name of Interconnection Customer]

(Signature)

(Signature)

(Title)

(Title)

Data to Be Provided by the Area EPS Operator with the MN Facilities Study Agreement

Estimate Cost of Facilities Study	\$
Time duration to complete Facilities Study	Business Days

INTERCONNECTION PROCESS

MN Transmission System Impact Study Agreement

SUMMARY

Agreement outlining the scope, timeline and responsibility of cost for a proposed DER system's system impact to the transmission system

MN Transmission System Impact Study Agreement

This MN Transmission System Impact Study Agreement (“Agreement”) is made and entered

into this ____ day of _____, 20__ by and between

_____ (“Interconnection Customer”),

and Willmar Municipal Utilities, a municipal utility existing under the laws of the State of Minnesota, (“Area EPS Operator”), and

_____, a transmission system owner existing under the laws of

the State of Minnesota (“Transmission Provider”). The Interconnection Customer, Area EPS

Operator and Transmission Provider each may be referred to as a “Party,” or collectively as the

“Parties.”

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Distributed Energy Resource or generating capacity addition to an existing DER (in either case referred to herein as a “DER”) interconnected to the Area EPS Operator’s electric system, as described in the Interconnection Application completed by the Interconnection Customer and submitted to the Area EPS Operator on _____; and

WHEREAS, the Interconnection Customer has requested the Area EPS Operator to work with the Transmission Provider to perform a MN Transmission System Impact Study to assess the impact on the Transmission Provider’s electric transmission system of interconnecting the DER with the Area EPS Operator’s electric system, and to determine if there are potential Affected System(s) in addition to the Transmission Provider’s electric transmission system;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, the Parties agreed as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated, or the meanings specified, in the MN Interconnection Process Overview (MIP).
2. The Interconnection Customer requests and the Area EPS Operator and its Transmission Provider agrees to perform a MN Transmission System Impact Study consistent with the MIP. The Interconnection Customer understands and acknowledges that the Area EPS Operator and the Transmission Provider may perform separate system impact studies. The scope of a MN Transmission System Impact Study shall be subject to the assumptions set forth in this Agreement, including Attachment A.
3. A MN Transmission System Impact Study will be based upon the technical information provided by the Interconnection Customer in the Interconnection Application. Each of the Area EPS Operator and Transmission Provider reserve the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the MN Transmission System Impact Study. Neither the Area EPS Operator nor the Transmission Provider will be obligated to commence the MN Transmission System Impact Study until each has received adequate technical information from the Interconnection Customer.
4. In the event that the applicable bulk transmission system generation interconnection process (such as the Midcontinent Independent System Operator or MISO, or Southwest Power Pool or SPP) supersedes the MIP, the Transmission Provider will so notify the Interconnection Customer and this Agreement will be deemed terminated.
5. A MN Transmission System Impact Study may, as determined by the Area EPS Operator and/or the Transmission Provider, consist of a short circuit analysis, a stability analysis, a power flow analysis, voltage analysis and flicker studies, protection and set point coordination studies, and grounding reviews. A MN Transmission System Impact Study

shall state the assumptions upon which it is based, indicate the applicable Local Planning Criteria used, state the results of the analyses, and provide the requirement or potential impediments to providing the requested interconnection service, including a preliminary indication of the cost and length of time that would be necessary to correct any problems identified in those analyses and provide for the interconnection. A MN Transmission System Impact Study shall provide a list of transmission facilities that are required as a result of the Interconnection Application and non-binding good faith estimates of cost responsibility and time to construct such transmission facilities. A Facilities Study may be required to identify all possibilities of facility upgrades, cost estimates and estimate of construction time.

6. If the Transmission Provider determines there are any potential Affected System(s), the Affected System(s) will be asked to participate in or review/comment on the MN Transmission System Impact Study. The Affected System(s) will be entitled to determine in their sole discretion the extent of their participation or review/comment, and will be entitled to apply their respective Local Planning Criteria. The Transmission Provider will inform the Interconnection Customer of the estimated cost of the Affected System's participation in or review/comment on the MN Transmission System Impact Study.
7. The MN Transmission System Impact Study will be scheduled for completion taking in consideration for prior-queued projects in the applicable bulk transmission generation interconnection queue or Transmission Provider's generation interconnection queue. The Transmission Provider and/or the Area EPS Operator shall notify the Interconnection Customer if such condition exists.
8. The Area EPS Operator and/or the Transmission Provider shall provide an estimate of the cost of the MN Transmission System Impact Study to the Interconnection Customer. At the time that the Interconnection Customer executes this Agreement, the Interconnection Customer shall provide a deposit of the estimated cost(s) of the MN

Transmission System Impact Study to the Area EPS Operator and/or Transmission Provider, as applicable.

9. The Interconnection Customer shall be responsible for the actual costs incurred by the Area EPS Operator and/or the Transmission Provider to perform the MN Transmission System Impact Study. An invoice documenting the actual costs shall be sent by the Area EPS Operator and/or Transmission Provider to the Interconnection Customer within twenty (20) Business Days after the study is completed and delivered.
10. The Interconnection Customer shall pay the invoice amount less the deposit amount, within twenty (20) Business Days, on receipt of the invoice. If the deposit exceeds the actual cost of the study, the Transmission Provider shall refund such excess amount within twenty (20) Business Days of the date of the invoice.
11. Governing Law, Regulatory Authority, and Rules
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Minnesota. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.
12. Amendment
The Parties may amend this Agreement by a written instrument duly executed by both Parties.
13. No Third-Party Beneficiaries
This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities

other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest, and where permitted, their assigns.

14. Waiver

14.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

14.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, or duty under this Agreement. Termination or default of this Agreement for any reason by the Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Area EPS Operator. Any waiver of this Agreement shall, if requested, be provided in writing.

15. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

16. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon a Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, any other Party.

17. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other

Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore, insofar as practicable, the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

18. Subcontractors

18.1. Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services, and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

18.2. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Parties for the acts or omissions of any subcontractor the hiring Party hires, as if no subcontract had been made; provided, however, that in no event shall the Area EPS Operator or the Transmission Provider be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

18.3. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

19. Inclusion of Area EPS Operator Tariffs and Rules

The interconnection services provided under this Agreement, shall at all times, be subject to the terms and conditions set forth in the DG Workbook-MN and rules applicable to the electric service provided by the Area EPS Operator, which are hereby incorporated into this Agreement by this reference. Notwithstanding any other provisions of this Agreement, the Area EPS Operator shall have the right to unilaterally change rates, charges, classification, service, tariff, or rule or any agreement relating thereto. The Interconnection Customer shall have the right to protest any such change through the Area EPS Operator's dispute resolution process, pursuant to the Area EPS Operator's rules and regulations.

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

Willmar Municipal Utilities

[Insert Name of Interconnection Customer]

(Signature)

(Signature)

(Title)

(Title)

[Insert Name of Transmission Provider]

(Signature)

(Title)

Attachment A

Assumptions Used in Conducting the MN Transmission System Impact Study

The MN Transmission System Impact Study shall be based upon the following assumptions:

- 1) Designation of Point of Common Coupling and configuration to be studied.
- 2) Designation of alternative Points of DER Interconnection and configuration.

1) and 2) are to be completed by the Interconnection Customer. Other assumptions (attached to this Agreement) are to be provided by the Interconnection Customer, the Area EPS Operator and the Transmission Provider. The Area EPS Operator and Transmission Provider shall use the Reference Point for Applicability which is either the Point of Common Coupling or the Point(s) of DER Interconnection as described in IEEE 1547.

Additional DER Technical Data Required for MN Transmission System Impact Study

If applicable, the Transmission Provider shall attach a list to this Agreement of any additional technical data that is required to adequately perform the MN Transmission System Impact Study. As indicated in Section 5 of the Study Process document of the MIP, this information is to be returned with the signed MN Transmission System Impact Study Agreement and deposit.

Data to Be Provided by the Area EPS Operator and Transmission Provider with the MN Transmission System Impact Study Agreement

Estimate Cost of MN Transmission System Impact Study	\$
Time duration to complete MN Transmission System Impact Study	Business Days

CHAPTER 8

MN TECHNICAL REQUIREMENTS FOR INVERTER CONNECTED SYSTEMS RATED 100 kW or LESS

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Exhibit A: Example Inverter Connected One Line Diagram

Introduction

Electric distributed generation systems span a wide range of sizes and electrical characteristics. Electrical distribution system designs vary widely from that required to serve the residential customer to that needed to serve the large commercial customer. With so many variations possible, it becomes complex and difficult to create one interconnection standard that fits all generation interconnection situations.

This Technical Requirements document has been written to cover only the technical interconnection requirements to interconnect a specific type and size of generation system with the WMU; specifically, a PURPA qualified generation system utilizing a Grid Tie Inverter and rated 100 kW or less. If your system does not meet these qualifications, then these requirements are not applicable; please refer to the MN Technical Requirements >100 kW to 10 MW.

This document covers only the Technical Requirements and does not cover the Interconnection Process. Please read the document Interconnection Process Overview for direction to either the Simplified Process or Fast Track Process.

Definitions

The definitions defined in the “IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems” (IEEE 1547) apply to this document. The following definitions are in addition to the ones defined in IEEE 1547, or are repeated from the IEEE 1547 standard.

1. Area EPS: An electric power system (EPS) that serves Local EPS. Typically, an Area EPS has primary access to public rights-of-way, priority crossing of property boundaries, etc. WMU is an Area EPS.
2. Generation: Any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, or any other electric producing device including energy storage technologies.
3. Generation System: The interconnected Distributed Generation(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables up to the Point of Common Coupling.
4. Grid Tie Inverter: The inverter is a device that converts DC electricity to AC electricity. While a Grid Tie Inverter usually has been specially designed and constructed to safely interconnect with an Area EPS; for the purposes of this document, a Grid Tie Inverter should also be designed and tested to meet the requirements of IEEE 1547 and ANSI 929 standards and should also be certified with a UL 1741 label.
5. Interconnection Customer: The party or parties who are responsible for meeting the requirements set forth in this document. This could include the Generation System applicant, installer, designer, owner, or operator.
6. Local EPS: An EPS contained entirely within a single premises or group of premises.
7. Point of Common Coupling: The point where the Local EPS is connected to an Area EPS.
8. Type-Certified: Generation paralleling equipment that is listed by an Occupational Safety and Health Administration (OSHA) national testing laboratory as having met the applicable type testing requirement of UL 1741. At the time of preparation of this document, this was the only national standard available for certification of generation transfer switch equipment. Other subsequent forms of type-certification are permitted if acceptable to WMU.

Interconnection Requirements Goals

This document defines the minimum technical requirements for the implementation of the electrical interconnection between the Generation System and WMU's distribution system. It does not define the overall requirements for the Generation System. The requirements in this document are intended to achieve the following:

9. Ensure the safety of WMU personnel and contractors working on the electrical power system.
10. Ensure the safety of WMU customers and the general public.
11. Protect and minimize the possible damage to the electrical power system and other WMU's property.
12. Ensure proper operation to minimize adverse operating conditions on the electrical power system.

B. Area EPS Modifications

Depending upon the size of the Generation System, the location on WMU's distribution system, and how the Generation System is operated; certain modifications and/or additions may be required to the existing WMU distribution system, due to the addition of the Generation System. To the extent possible, this document describes the modifications, which could be necessary to WMU's distribution system for different types of Generation Systems. If any additional modifications are necessary, they will be identified by WMU during the application review process.

C. Generation System Protection

The Interconnection Customer is solely responsible for providing protection for the Generation System. Protection systems required in this document are structured to protect WMU's distribution system and the public. Additional protection equipment may be required by WMU to ensure proper operation for the Generation System. This is especially true when operating disconnected from WMU's distribution system. WMU and MRES do not assume responsibility for protection of the Generation System equipment or of any portion of the Local EPS.

D. Electrical Code Compliance

The Interconnection Customer shall be responsible for complying with all applicable local, independent, state, and federal codes such as building codes, NEC, NESC, and noise and emissions standards. As required by applicable state law, WMU's

distribution system will require proof of compliance with the NEC and installation approval by an electrical inspector recognized by an appropriate state governing board before the interconnection.

The Interconnection Customer's Generation System and installation shall comply with the latest applicable revisions of the ANSI/IEEE standards, in particular, IEEE 1547; "Standard for Interconnecting Distributed Resources with Electric Power Systems". See the reference section of this document for a partial list of the industry standards which apply.

References

The following standards shall be used in conjunction with this standard. When the stated version of the following standards is superseded by an approved revision, then that revision shall apply.

IEEE Std 100-2000, "IEEE Standard Dictionary of Electrical and Electronic Terms"

IEEE Std 519-1992, "IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems"

IEEE Std 929-2000, "IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems"

IEEE Std 1547, "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems"

IEEE Std C37.90.1-1989 (Current Version), "IEEE Standard Surge Withstand Capability (SEC) Tests for Protective Relays and Relay Systems"

IEEE Std C37.90.2 (Current Version), "IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers"

IEEE Std C62.41.2-2002, "IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits"

IEEE Std C62.42-1992 (Current Version), "IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and less) AC Power Circuits"

ANSI C84.1-1 995, "Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)"

ANSI/IEEE 446-1995, "Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications"

ANSI/IEEE Standard 142-1991, "IEEE Recommended Practice for Grounding of Industrial a Commercial Power Systems – Green Book"

UL Std. 1741 "Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources"

NEC – "National Electrical Code", National Fire Protection Association (NFPA), NFPA-70-2002

NESC – "National Electrical Safety Code." ANSI C2-2000, Published by the Institute of Electrical and Electronics Engineers, Inc

Interconnection Issues and Technical Requirements

- A. **Inverter Connection**: This is a continuous parallel connection with the distribution system. Small generation systems may utilize inverters to interface to the WMU distribution system. Solar, wind, and fuel cells are some examples of generation which typically use inverters to connect to the WMU distribution system. The design of such inverters shall either contain all necessary protection to prevent unintentional islanding or the Interconnection Customer shall install conventional protection to affect the same protection.
1. Inverter Certification - Prior to installation, the inverters shall be Type-Certified for interconnection to the electrical power system. The certification will confirm anti-islanding protection and power quality related levels at the Point of Common Coupling. Also, utility compatibility, electric shock hazard, and fire safety will be approved through UL listing of the model. Once this Type Certification is completed, additional design review of the inverters should not be necessary by the WMU.
 2. For three-phase operation, the inverter control must also be able to detect and separate for the loss of one phase. Larger inverters will still require customer protection settings which must be calculated and designed to be compatible with the WMU distribution system.
 3. A visible disconnect is required for safely isolating the distributed generation when connecting with an inverter. The inverters shall not be used as a safety isolation device.
 4. When banks of inverter systems are installed at one location, a design review by the WMU must be performed to determine if any additional protection systems, metering or other modifications are needed. These additional systems or modifications will be identified by the WMU during the interconnection study process.
- B. **General Requirements** - The following requirements apply to the interconnected generating equipment. WMU's distribution system shall be considered the source side and the WMU's system shall be considered the load side in the following interconnection requirements.
1. **Visible Disconnect** – A disconnecting device shall be installed to electrically isolate the Inverter from the rest of the load. The visible disconnect shall provide a visible air gap between Interconnection Customer's Generation and WMU's distribution system in order to establish the safety isolation required for work on WMU's distribution system. This disconnecting device shall be readily accessible 24 hours per day by WMU field personnel and shall be capable of

being padlocked by WMU field personnel. The disconnecting device shall be lockable in the open position.

The visible disconnect shall be a UL approved or National Electrical Manufacture's Association approved, manual safety disconnect switch of adequate ampere capacity. The visible disconnect shall not open the neutral when the switch is open.

The visible disconnect shall be labeled, as required by WMU.

2. Energization of Equipment by Generation System – The Generation System shall not energize any de-energized portion of WMU's distribution system.
3. Fault and Line Clearing – The Generation System shall be removed from WMU's distribution system for any faults or outages occurring on the electrical circuit serving the Generation System.
4. Interference – The Interconnection Customer shall disconnect the Distributed Generation from WMU's distribution system if the Distributed Generation causes radio, television or electrical service interference to other WMU'S or customers, via the EPS or interference with the operation of Area EPS. The Interconnection Customer shall either effect repairs to the Generation System or reimburse WMU for the cost of any required modifications to WMU's distribution system due to the interference.
5. Unintended Islanding – Under certain conditions with extended parallel operation, a part of WMU's distribution system may be disconnected from the rest of WMU's distribution system and may require the Generation System to continue to operate and to provide power to a portion of the isolated circuit. This is called "islanding". It is not possible to successfully reconnect the energized isolated circuit to the rest of WMU's distribution system since there are no synchronizing controls associated with all of the possible locations of disconnection. Therefore, it is required that the Generation System be automatically disconnected from WMU's distribution system immediately by protective relays for any condition that would cause WMU's distribution system to be de-energized. The Generation System shall either isolate itself from the WMU's distribution system and serve only the Customer's load, or shut down completely. The Generation System must be blocked from closing back into WMU's distribution system until WMU's distribution system is reenergized and WMU's distribution system voltage is within Range B of ANSI C84.1 Table 1 for a minimum of one minute. Depending upon the size of the Generation System, it may be necessary to install direct transfer trip equipment from WMU's distribution system source(s) to remotely trip the generation interconnection to prevent islanding for certain conditions.

6. Protective Systems – In general, a Grid Tie Inverter is designed, constructed, and tested so that the necessary protective functions are built into the inverter, to ensure isolation of the generation system from the distribution system. The functions required by IEEE 1547 and IEEE 929 standards include Over/Under Voltage, Over/Under Frequency, phase, and ground overcurrent; so, no further protective equipment is typically necessary. Please note that the NEC or other state or local codes may require you to install additional protective equipment, such as fuses.
7. Disconnection – WMU’s distribution system operator may refuse to connect, or may disconnect without prior notice, a Generation System from WMU’s distribution system under the following conditions:
 - a. Lack of approved Standard Application Form, and Interconnection and Power Purchase Agreement.
 - b. Termination of interconnection by mutual agreement.
 - c. Non-Compliance with the technical or contractual requirements.
 - d. System Emergency or imminent danger to the public or WMU personnel (Safety).
 - e. Routine maintenance, repairs and modifications to WMU’s distribution system. WMU shall coordinate planned outages with the Interconnection Customer to the best extent possible.
 - f. Any other reason described in the Interconnection and Power Purchase Agreement.

Generation Metering, Monitoring, and Control

Metering, Monitoring, and Control – For small renewable generation systems less than 100 kW, the following are the Metering, Monitoring, and Control requirements. This document assumes that the Generation System is a QF under the PURPA requirements and that the power is not being sold to a third party.

A. Metering Requirements

For Generation Systems that are QFs under PURPA, metering requirements are:

1. For single-phase Generation Systems, the applicant is required to provide and install a WMU-approved single phase meter socket, unless otherwise specified by WMU. WMU will supply the single-phase metering required. Responsibility of the metering cost will be determined by the WMU.

2. For three-phase Generation Systems, the applicant is required to provide a WMU-approved commercial three phase meter socket, unless otherwise specified by WMU. WMU will supply the three-phase metering required. Responsibility for the metering cost will be determined by the WMU.

B. Monitoring and Control Requirements

For qualified inverter connected Generation Systems 100 kW and less, there are no requirements for monitoring and remote control of the generation system by WMU.

Agreements

- A. MN Interconnection Agreement or MN Standard Agreement – The contract between the Applicant, WMU, and MRES defining the parties’ respective rights and duties relating to interconnection, operation, and power purchases.

Testing Requirements

A. Certification of Equipment

The most important part of the process to interconnect generation is safety. One of the key components of ensuring safety is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. Therefore, all of the electrical wiring in a business or residence should be listed for its intended purpose by a recognized testing and certification laboratory. Typically we see this referred to as “UL” listed. In order to comply with this requirement, the Inverter used shall be listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929. If so listed, the Inverter shall be acceptable for interconnection without additional protection system requirements.

B. Commissioning Testing

The following tests shall be completed by the Interconnection Customer. WMU has the right to witness all field testing and to review all records prior to allowing the system to be made ready for normal operation.

1. Before testing – The Generation System shall be inspected and approved by a designated electrical inspector prior to interconnecting the Generation System with the electrical system.
2. Any pre-testing recommended by the equipment manufacturer and/or installer shall be completed prior to the On-line Commissioning Test.

3. On-Line Commissioning Test – WMU and the Interconnection Customer shall complete the following tests once the Generation System has completed Pre-testing and the results have been reviewed and approved by WMU. Generation System functionally shall be verified for specific interconnections as follows:

a. Anti-Islanding Test Steps

- i. The Generation System shall be started and operated in parallel with WMU's distribution system source.
- ii. WMU's distribution system source shall be removed by opening a switch, fuse, or breaker or other means on the WMU side of the inverter.
- iii. Under the condition established in step (ii), the Generation System shall stop generating.
- iv. Under the condition established in step (ii), the Generation System shall not reenergize any part of the WMU's distribution system (Area EPS).
- v. The device that was opened to disconnect WMU's distribution system source shall be closed and the Generation System shall not re-parallel/reconnect with WMU's distribution system for at least 5 minutes or for another agreed-to duration.
- vi. For three phase systems this test will be repeated for each phase of the system and also for a complete three phase loss of Utility power.

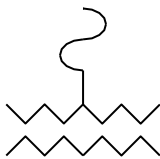
C. Periodic Testing and Record Keeping

1. Any time the inverter hardware or software is replaced and/or modified, the WMU Coordinator shall be notified. This notification shall be as soon as reasonably possible and, if possible, be provided with sufficient warning so that WMU personnel can be involved and/or witness the verification testing. Verification testing shall be completed on the replaced and/or modified equipment and systems. The involvement of WMU personnel will depend upon the complexity of the Generation System and the component being replaced and/or modified. Since the Interconnection Customer and WMU are now operating an interconnected system, it is important for each to communicate to the other changes in operation, procedures, and/or equipment in order to ensure the safety and reliability of the Local and Area EPS.

2. All interconnection-related protection systems shall be periodically tested and maintained by the Interconnection Customer, at intervals specified by the manufacturer or system integrator. These intervals shall not exceed 5 years. Periodic test reports and a log of inspections shall be maintained by the Interconnection Customer and made available to WMU upon request.

Exhibit A: Example Inverter Connected One Line Diagram

SOURCE – AREA



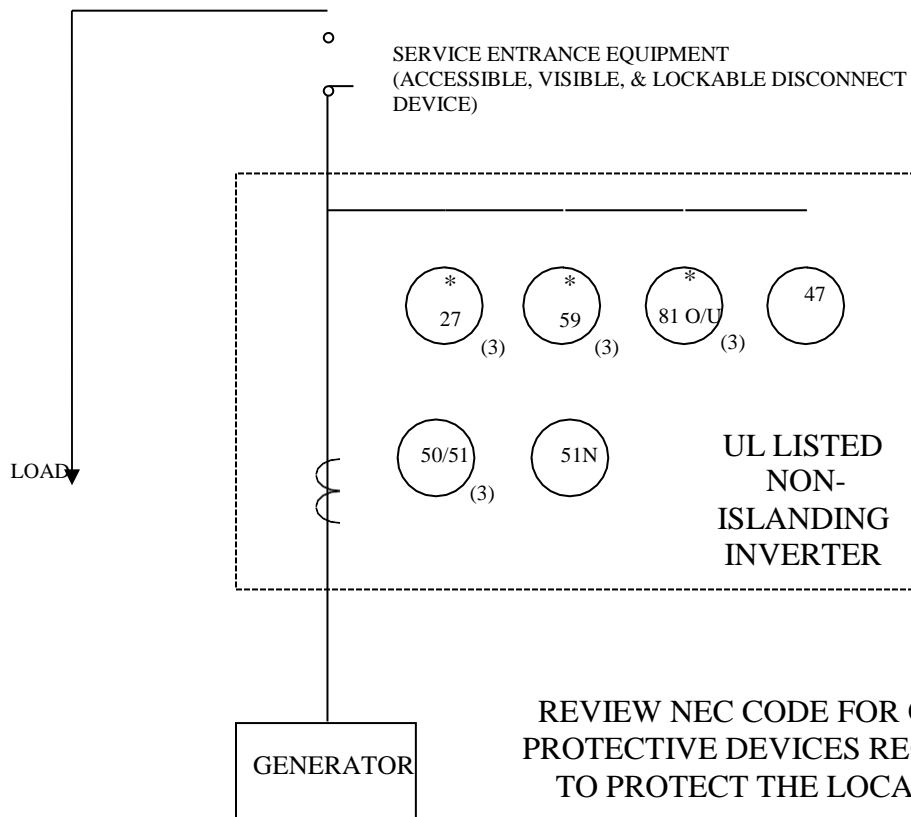
PROTECTION SHOWN IS FOR GROUNDED WYE – GROUNDED WYE TRANSFORMER
FOR OTHER TRANSFORMER CONNECTIONS CONTACT THE AREA EPS OPERATOR FOR POSSIBLE ADDITIONAL PROTECTIVE REQUIREMENTS

AREA EPS



METERING (SEE TABLE 5A)

LOCAL EPS



REVIEW NEC CODE FOR OTHER PROTECTIVE DEVICES REQUIRED TO PROTECT THE LOCAL EPS

FOR INVERTER CONNECTED GENERATION SYSTEMS GREATER THAN 250 KW, TRANSFER TRIP MAY BE REQUIRED BY THE AREA EPS

Device No.	Function
27/59	*Under/Over Voltage
47	Negative Sequence
50/51	Phase Overcurrent
51N	Ground Overcurrent
81 O/U	*Over/Under Frequency

(1) (2) (3) Indicates Number of Phases Monitored

*Indicates Minimum Required Protection.
Other Relays Shown are Recommended for Generator Protection.

INVERTER	
DATE: CONNECTED	
Nov 2009	Figure 1

CHAPTER 9

MN TECHNICAL REQUIREMENTS FOR GREATER THAN 100 KW THROUGH 10 MW

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Foreword

Electric distribution system connected generation units span a wide range of sizes and electrical characteristics. Electrical distribution system design varies widely from that required to serve the rural customer to that needed to serve the large commercial customer. With so many variations possible, it becomes complex and difficult to create one interconnection standard that fits all generation interconnection situations.

In establishing a generation interconnection standard, there are three main issues that must be addressed: (1) Safety, (2) Economics, and (3) Reliability.

The first and most important issue is safety; the safety of the general public and of the employees working on the electrical systems. This standard establishes the technical requirements that must be met to ensure the safety of the general public and of the employees working with the WMU distribution system. Typically, designing the interconnection system for the safety of the general public will also provide protection for the interconnected equipment.

The second issue is economics; the interconnection design must be affordable to build. The interconnection standard must be developed so that only those items that are necessary to meet safety and reliability are included in the requirements. This standard sets the benchmark for the minimum required equipment; if it is not needed, it will not be required.

The third issue is reliability; the generation system must be designed and interconnected such that the reliability and the service quality for all customers of the electrical power systems are not compromised. This applies to all electrical systems, not just the WMU distribution system.

Many generation interconnection standards exist or are in draft form. IEEE and FERC, along with many states, have been working on generation interconnection standards. There are other standards, such as NEC, that establish requirements for electrical installations. The NEC requirements are in addition to this standard. This standard is designed to document the requirements where the NEC has left the establishment of the standard to “the authority having jurisdiction” or to cover issues which are not covered in other national standards.

This standard covers installations with an aggregated capacity of greater than 100 kW. Many of the requirements in this document do not apply to small, 100 kW or less, generation installations. As an aid to the small, distributed generation customer, these small unit interconnection requirements have been extracted from this full standard and are available as a separate, simplified document as Chapter 8 of the DG Workbook - MN titled: “MN Technical Requirements: 100 kW or Less.”

Introduction

This standard has been developed to document the technical requirements for the interconnection between a Generation System and an area electrical power system “Utility System or Area EPS.” This standard covers 3-phase Generation Systems with an aggregate capacity of Greater than 100 kW through 10 MW at the Point of Common Coupling. This standard covers Generation Systems that are interconnected with WMU’s distribution facilities. This standard does not cover Generation Systems that are directly interconnected with the Transmission System. Contact the area transmission provider for their Transmission System interconnection standards.

While this standard provides the technical requirements for interconnecting a Generation System with a typical radial distribution system, it is important to note that there are some unique Area EPS, which have special interconnection needs. One example of a unique Area EPS would be one operated as a “networked” system. This standard does not cover the additional special requirements of those systems. The Interconnection Customer must contact the Owner/operator of the Area EPS with which the interconnection is intended, to make sure that the Generation System is not proposed to be interconnected with a unique Area EPS. If the planned interconnection is with a unique Area EPS, the Interconnection Customer must obtain the additional requirements for interconnecting with the distribution system.

The WMU has the right to require the Generator System to make the necessary upgrades to the WMU distribution system and potentially to the transmission system to mitigate any potential safety and reliability issues created by the interconnection of the Generator.

This standard only covers the technical requirements and does not cover the interconnection process from the planning of a project through approval and construction. Please read the companion document “Chapter 4: Interconnection Process Overview” for the description of the procedure to follow and a generic version of the forms to submit. The earlier the Interconnection Customer gets the WMU Generation Interconnection Coordinator involved in the planning and design of the Generation System Interconnection, the smoother the process will go.

A. Definitions

The definitions defined in the “IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems” (IEEE 1547) apply to this document as well. The following definitions are in addition to the ones defined in IEEE 1547, or are repeated from the IEEE 1547 standard.

1. Area EPS: An electric power system (EPS) that serves Local EPSs. Note: Typically, an Area EPS has primary access to public rights-of-way, priority crossing of property boundaries, etc. (WMU is an Area EPS).
2. Generation: Any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.
3. Generation System: The Interconnected Distributed Generation(s) controls, relays, switches, breakers, transformers, inverters, and associated wiring and cables up to the Point of Common Coupling.
4. Interconnection Customer: The party or parties who are responsible for meeting the requirements of this standard. This could be the Generation System applicant, installer, designer, owner, or operator.
5. Local EPS: An EPS contained entirely within a single premises or group of premises.
6. Point of Common Coupling: The point where the Local EPS is connected to an Area EPS.
7. Transmission System: Those facilities as defined by using the guidelines established by the Minnesota Public Utilities Commission “In the Matter of Developing Statewide Jurisdictional Boundary Guidelines for Functionally Separating Interstate Transmission from Generation and Local Distribution Functions,” Docket No. E-015/M-99-1002.
8. Type-Certified: Generation paralleling equipment that is listed by an OSHA-listed national testing laboratory as having met the applicable type testing requirement of UL 1741. At the time this document was prepared this was the only national standard available for certification of generation transfer switch equipment. This definition does not preclude other forms of type-certification if agreeable to the WMU.

B. Interconnection Requirements

This standard defines the minimum technical requirements for the implementation of the electrical interconnection between the Generation System and the WMU distribution system. It does not define the overall requirements for the Generation System. The requirements in this standard are intended to achieve the following:

1. Ensure the safety of utility personnel and contractors working on the electrical power system.
2. Ensure the safety of utility customers and the general public.
3. Protect and minimize the possible damage to the electrical power system and other customer's property.
4. Ensure proper operation to minimize adverse operating conditions on the electrical power system.

C. Protection

The Generation System and Point of Common Coupling shall be designed with proper protective devices to promptly and automatically disconnect the Generation from the WMU distribution system in the event of a fault or other system abnormality. The type of protection required will be determined by:

1. Size and type of the generating equipment.
2. The method of connecting and disconnecting the Generation System from the electrical power system.
3. The location of generating equipment on the WMU distribution system.

D. Area EPS Modifications

Depending upon the match between the Generation System, the WMU distribution system, and how the Generation System is operated, certain modifications and/or additions may be required to the existing WMU distribution system, with the addition of the Generation System. To the extent possible, this standard describes the modifications which could be necessary to the WMU distribution system for different types of Generation Systems. For some unique interconnections, additional and/or different protective devices, system modifications, and/or additions will be required by the WMU operator. In these cases the WMU will provide the final determination of the required modifications and/or additions. If any

special requirements are necessary they will be identified by the WMU during the application review process.

E. Generation System Protection

The Interconnection Customer is solely responsible for providing protection for the Generation System. Protection systems required in this standard are structured to protect the WMU distribution system and the public. The Generation System protection is not provided for in this standard. Additional protection equipment may be required to ensure proper operation for the Generation System. This is especially true while operating disconnected from the WMU distribution system. The WMU distribution system does not assume responsibility for protection of the Generation System equipment or of any portion of the Local EPS.

F. Electrical Code Compliance

The Interconnection Customer shall be responsible for complying with all applicable local, independent, state, and federal codes such as building codes, NEC, NESC, and noise and emissions standards. As required by Minnesota State law, the WMU distribution system will require proof of complying with the NEC before the interconnection is made, through installation approval by an electrical inspector recognized by the Minnesota State Board of Electricity.

The Interconnection Customer's Generation System and installation shall comply with latest revisions of the ANSI/IEEE standards applicable to the installation, especially IEEE 1547 "Standard for Interconnecting Distributed Resources with Electric Power Systems." See the reference section in this document for a partial list of the standards which apply to the generation installations covered by this standard.

References

The following standards shall be used in conjunction with this standard. When the stated version of the following standards is superseded by an approved revision, then that revision shall apply.

IEEE Std 100-2000, “IEEE Standard Dictionary of Electrical and Electronic Terms”

IEEE Std 519-1992, “IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems”

IEEE Std 929-2000, “IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems”

IEEE Std 1547, “IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems”

IEEE Std C37.90.1-1989 (1995), “IEEE Standard Surge Withstand Capability (SEC) Tests for Protective Relays and Relay Systems”

IEEE Std C37.90.2 (1995), “IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers”

IEEE Std C62.41.2-2002, “IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits”

IEEE Std C62.45-1992 (2002), “IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and less) AC Power Circuits”

ANSI C84.1-1995, “Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)”

ANSI/IEEE 446-1995, “Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications”

ANSI/IEEE Standard 142-1991, “IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems – Green Book”

UL Std. 1741 “Inverters, Converters, and Controllers for use in Independent Power Systems”

NEC – “National Electrical Code”, National Fire Protection Association (NFPA), NFPA-70-2002

NESC – “National Electrical Safety Code” ANSI C2-2000, Published by the Institute of Electrical and Electronics Engineers, Inc.

Types of Interconnections

- A. The manner in which the Generation System is connected to and disconnected from the WMU distribution system can vary. This section focuses only one of several methods of transferring the load from the Area EPS to the Generation System: Extended Parallel Operation.

With Extended Parallel Operation, the Generation System is paralleled with the WMU distribution system in continuous operation. Special design, coordination, and agreements are required before any extended parallel operation will be permitted. The WMU distribution system interconnection study will identify the issues involved.

1. Any anticipated use in the extended parallel mode requires special agreements and special protection coordination.
2. Protective Relaying is required as described in section 6.
3. Figure 14 at the end of this document provides a typical one-line diagram for this type of interconnection. It must be emphasized that this is a typical installation only and final installations may vary from the examples shown due to transformer connections, breaker configuration, etc.

Interconnection Issues and Technical Requirements

- A. General Requirements – The following requirements apply to all interconnected generating equipment. The WMU distribution system shall be considered the source side and the customer’s system shall be considered the load side in the following interconnection requirements.

1. Visible Disconnect – A disconnecting device shall be installed to electrically isolate the WMU distribution system from the Generation System. The only exception for the installation of a visible disconnect is if the generation is interconnected via a mechanically interlocked open transfer switch and installed per the NEC (702.6) “so as to prevent the inadvertent interconnection of normal and alternate sources of supply in any operation of the transfer equipment.”

The visible disconnect shall provide a visible air gap between Interconnection Customer’s Generation and the WMU distribution system in order to establish the safety isolation required for work on the WMU distribution system. This disconnecting device shall be readily accessible 24 hours per day by WMU field personnel and shall be capable of being padlocked by WMU field personnel. The disconnecting device shall be lockable in the open position.

The visible disconnect shall be a UL approved or NEMA approved, manual safety disconnect switch of adequate ampere capacity. The visible disconnect shall not open the neutral when the switch is open. A draw-out type circuit breaker can be used as a visual open.

The visible disconnect shall be labeled, as required by the WMU, to inform the WMU field personnel.

2. Energization of Equipment by Generation System – The Generation System shall not energize any de-energized portion of the WMU distribution system. The Interconnection Customer shall install the necessary padlocking (lockable) devices on equipment to prevent the energization of a de-energized electrical power system. Lock out relays shall automatically block the closing of breakers or transfer switches on to a de-energized Area EPS. The only exception to this rule is for controlled “islanding” of select portions of the WMU distribution system that are reenergized by “campus” style Generation Systems. These Generation Systems shall utilize WMU approved interconnection equipment and be designed and approved for this “islanding” operation. Special design and operating procedures are required to allow for this method of operation.
3. Power Factor – The power factor of the Generation System and connected load shall be as follows;
 - a. Extended Parallel Generation Systems shall be designed to be capable of operating between 90% lagging and 95% leading. These Generation Systems shall normally operate near unity power factor (+/-98%) or as mutually agreed between the WMU and the Interconnection Customer.
4. Low Voltage Ride-Through (LVRT) Capability

Depending on the characteristics of the distribution system to which the generation capacity is connected, and the relative size of the generation capacity, it may be necessary for the generation equipment to meet certain LVRT requirements, in order for the EPS to maintain stability. The need for equipment or provisions in order to maintain stability during system disturbances will be determined during the evaluation of the proposed interconnection.
5. Grounding Issues
 - a. Grounding of sufficient size to handle the maximum available ground fault current shall be designed and installed to limit step and touch potentials to safe levels as set forth in “IEEE Guide for Safety in AC Substation Grounding,” ANSI/IEEE Standard 80.

- b. It is the responsibility of the Interconnection Customer to provide the required grounding for the Generation System. A good standard for this is the IEEE Std. 142-1991 (or most current standard) “Grounding of Industrial and Commercial Power Systems.”
 - c. All electrical equipment shall be grounded in accordance with local, state, and federal electrical and safety codes and applicable standards.
 - d. Sales to Area EPS or other parties – Transportation of energy on the Transmission System is regulated by the area reliability council and FERC. Those contractual requirements are not included in this standard. The WMU will point out these additional contractual requirements during the interconnection approval process.
- B. For Inverter based, closed transfer, and soft loading interconnections – The following additional requirements apply:

1. Fault and Line Clearing – The Generation System shall be removed from the WMU distribution system for any faults or outages occurring on the electrical circuit serving the Generation System
2. Operating Limits - In order to minimize objectionable and adverse operating conditions of the electric service provided to other customers connected to the WMU distribution system, the Generation System shall meet the Voltage, Frequency, Harmonic and Flicker operating criteria as defined in the IEEE 1547 standard during periods when the Generation System is operated in parallel with the WMU distribution system.

If the Generation System creates voltage changes greater than 4% on the WMU distribution system, it is the responsibility of the Interconnection Customer to correct these voltage sag/swell problems caused by the operation of the Generation System. Also, if the operation of the interconnected Generation System causes flicker, which causes problems for other customers interconnected to the WMU distribution system, the Interconnection Customer is responsible for correcting the problem.

3. Flicker – The operation of Generation System is not allowed to produce excessive flicker to adjacent customers. See the IEEE 1547 standard for a more complete discussion on this requirement.

The stiffer the WMU distribution system, the larger a block load change that it will be able to handle. For any of the transfer systems, the WMU distribution system voltage shall not drop or rise greater than 4% when the load is

added or removed from the WMU distribution system. It is important to note that if another interconnected customer complains about the voltage change caused by the Generation System, even if the voltage change is below the 4% level, it is the Interconnection Customer's responsibility to correct or pay for correcting the problem. Utility experience has shown that customers have seldom objected to instantaneous voltage changes of less than 2% on the WMU distribution system.

4. Interference – The Interconnection Customer shall disconnect the Distributed Generation from the WMU distribution system if the Distributed Generation causes radio, television, or electrical service interference to other customers, via the EPS or interference with the operation of Area EPS. The Interconnection Customer shall either effect repairs to the Generation System or reimburse the WMU for the cost of any required modifications to the WMU distribution system due to the interference.

5. Synchronization of Customer Generation
 - a. An automatic synchronizer with synch-check relaying is required for unattended automatic quick open transition, closed transition, or soft loading transfer systems.

 - b. To prevent unnecessary voltage fluctuations on the WMU distribution system, synchronizing equipment must be capable of closing the Distributed Generation into the WMU distribution system within the limits defined in IEEE 1547. Actual settings shall be determined by the Registered Professional Engineer establishing the protective settings for the installation.

 - c. Unintended Islanding – Under certain conditions with extended parallel operation, it would be possible for a part of the WMU distribution system to be disconnected from the rest of the WMU distribution system and have the Generation System continue to operate and provide power to a portion of the isolated circuit; this condition is called "islanding." It is not possible to successfully reconnect the energized isolated circuit to the rest of the WMU distribution system since there are no synchronizing controls associated with all of the possible locations of disconnection. Therefore, it is a requirement that the Generation System be automatically disconnected from the WMU distribution system immediately by protective relays for any condition that would cause the WMU distribution system to be de-energized. The Generation System must either isolate with the customer's load or trip. The Generation System must also be blocked from closing back into the WMU distribution system until the WMU distribution system is reenergized and the WMU distribution system voltage is within Range B of ANSI C84.1 Table 1 for a minimum of 1 minute. Depending upon the size of

the Generation System it may be necessary to install direct transfer trip equipment from the WMU distribution system source(s) to remotely trip the generation interconnection to prevent islanding for certain conditions

6. Disconnection – The WMU distribution system operator may refuse to connect or may disconnect a Generation System from the WMU distribution system under the following conditions:
 - a. Lack of approved MN Interconnection Application Form and MN Interconnection Agreement.
 - b. Non-Compliance with the technical or contractual requirements.
 - c. System Emergency or for imminent danger to the public or WMU personnel (Safety).
 - d. Routine maintenance, repairs and modifications to the WMU distribution system.

The WMU shall coordinate planned outages with the Interconnection Customer to the extent possible.

Generation Metering, Monitoring, and Control

Metering, Monitoring and Control – Depending upon the method of interconnection and the size of the Generation System, there are different metering, monitoring, and control requirements Table 5A is a table summarizing the metering, monitoring, and control requirements.

Due to the variation in Generation Systems and the WMU’s operational needs, the requirements for metering, monitoring, and control listed in this document are the expected maximum requirements that the WMU distribution system will apply to the Generation System. It is important to note that for some Generation System installations, the WMU distribution system may waive some of the requirements of this section if they are not needed. An example of this is with rural or low capacity feeders which require more monitoring than larger capacity, typically urban feeders.

Another factor which will affect the metering, monitoring, and control requirements will be the tariff under which the Interconnection Customer is supplied by the WMU distribution system. Table 5A has been written to cover most applications.

TABLE 5A			
Metering, Monitoring, and Control Requirements			
Generation System Capacity at Point of Common Coupling	Metering	Generation Remote Monitoring	Generation Remote Control
< 40 kW Inverter Connected System	See "Chapter 4 Interconnection: Process"	--	---
40 – 250 kW with limited parallel	Detented Area EPS Metering at the Point of Common Coupling	None Required	None Required
40 – 250 kW with extended parallel	Detented Area EPS Metering at the Point of Common Coupling	Interconnection Customer supplied direct dial phone line. Area EPS to supply its own monitoring equipment	None Required
250 – 1000 kW with limited parallel	Detented Area EPS Metering at the Point of Common Coupling	Interconnection Customer supplied direct dial phone line and monitoring points available. See B 1	None Required
250 – 1000 kW With extended parallel operation	Recording metering on the Generation System and a separate recording meter on the load	Required Area EPS (potential transmission provider) remote monitoring system. See B 1	None Required
>1000 kW With limited parallel Operation	Detented Area EPS Metering at the Point of Common Coupling	Required Area EPS remote (potential transmission provider) monitoring system. See B 1	None required
>1000 kW With extended parallel operation	Recording metering on the Generation System and a separate recording meter on the load.	Required Area EPS remote (potential transmission provider) monitoring system. See B 1	Direct Control via SCADA by Area EPS of interface breaker

“Detented” = A meter which is detented will record power flow in only one direction.

A. Metering

1. As shown in Table 5A, the requirements for metering will depend upon the type of generation and the type of interconnection. For most installations, the requirement is a single point of metering at the Point of Common Coupling. The WMU will install a special meter that is capable of measuring and recording energy flow in both directions, for three phase installations, or two detented meters wired in series for single phase installations. A dedicated-direct dial phone line may be required to be supplied to the meter for the WMU's use to read the metering. Some monitoring may be done through the meter and the dedicated-direct dial phone line, so in many installations the remote monitoring and the meter reading can be done using the same dial-up phone line.
2. Depending upon which tariff the Generation System and/or customer's load is being supplied under, additional metering requirements may result; contact the WMU for tariff requirements. In some cases, the direct dial-phone line requirement may be waived by the WMU for smaller Generation Systems.
3. All Area EPS revenue meters shall be supplied, owned, and maintained by the WMU. All voltage transformers (VT) and current transformers (CT) used for revenue metering shall be approved and/or supplied by the WMU. The WMU's standard practices for instrument transformer location and wiring shall be followed for the revenue metering.

For Generation Systems that sell power and are greater than 40 kW in size, separate metering of the generation and of the load may be required. A single meter recording the power flow at the Point of Common Coupling for both the Generation and the load may not be allowed by the rules under which the area transmission system is operated. The WMU power supplier, Missouri River Energy Services, is required to report to the MISO or SPP the total peak load requirements.

- B. Monitoring (SCADA) is required as shown in table 5A. The need for monitoring is based on the need of the system control center to have the information necessary for the reliable operation of the WMU distribution system. This remote monitoring is especially important during periods of abnormal and emergency operation.

The difference in Table 5A between remote monitoring and SCADA is that SCADA typically is a system that is in continuous communication with a central computer and provides updated values and status to the WMU distribution system operator within several seconds of the changes in the field. Remote monitoring on the other hand will tend to provide updated values and status within minutes of the change in state of the field. Remote monitoring is typically less expensive to install and operate. The transmission provider may also require remote monitoring of the Generation System. The transmission provider may require such monitoring and will be confirmed

prior to operation. The cost of providing such monitoring is the cost of the Generator System.

1. Where Remote Monitoring or SCADA is required, as shown in Table 5A, the following monitored and control points are required:
 - a. Real and reactive power flow for each Generation System (kW and kVAR). This is only required if separate metering of the Generation and the load is required, otherwise #4 monitored at the point of Common Coupling will meet the requirements.
 - b. Phase voltage representative of the WMU distribution system's service to the facility.
 - c. Status (open/close) of Distributed Generation and interconnection breaker(s) or, if transfer switch is used, status of transfer switch(s).
 - d. Customer load from Area EPS service (kW and kVAR).
 - e. Control of interconnection breaker, if required by the WMU distribution system operator.

When telemetry is required, the Interconnection Customer must provide the communications medium to WMU's Control Center. This could be radio, dedicated phone circuit, or other form of communication. If a telephone circuit is used, the Interconnection Customer must also provide the telephone circuit protection. The Interconnection Customer shall coordinate the remote terminal unit (RTU) addition with the WMU. The WMU may require a specific RTU and/or protocol to match their SCADA or remote monitoring system.

Protective Devices and Systems

- A. Protective devices required to permit safe and proper operation of the WMU distribution system, while interconnected with customer's Generation System, are shown in the figures at the end of this document. In general, an increased degree of protection is required for increased Distributed Generation size. This is due to the greater magnitude of short circuit currents and the potential impact to system stability from these installations. Medium and large installations require more sensitive and faster protection to minimize damage and ensure safety.

If a transfer system is installed, which has a user accessible selection of several transfer modes, the transfer mode which has the greatest protection requirements will establish the protection requirements for that transfer system.

The Interconnection Customer shall provide protective devices and systems to detect the Voltage, Frequency, Harmonic, and Flicker levels as defined in the IEEE 1547 standard during periods when the Generation System is operated in parallel with the WMU distribution system. The Interconnection Customer shall be responsible for the purchase, installation, and maintenance of these devices. Discussion on the requirements for these protective devices and systems follows:

1. Relay settings

- a. If the Generation System is utilizing a Type-Certified system, such as a UL listed inverter, a Professional Electrical Engineer is not required to review and approve the design of the interconnecting system. If the Generation System interconnecting device is not Type-Certified or if the Type-Certified Generation System interconnecting device has additional design modifications made, the Generation System control, the protective system, and the interconnecting device(s) shall be reviewed and approved by a Professional Electrical Engineer, registered in the State of Minnesota.
- b. A copy of the proposed protective relay settings shall be supplied to the WMU for review and approval to ensure proper coordination between the generation system and the WMU distribution system.

2. Relays

- a. All equipment providing relaying functions shall meet or exceed ANSI/IEEE Standards for protective relays, i.e., C37.90, C37.90.1 and C37.90.2.
- b. Required relays that are not “draw-out” cased relays shall have test plugs or test switches installed to permit field testing and maintenance of the relay without unwiring or disassembling the equipment. Inverter based protection is excluded from this requirement for Generation Systems <40 kW at the Point of Common Coupling.
- c. Three phase interconnections shall utilize three phase power relays, which monitor all three phases of voltage and current, unless so noted in the appendix one-line diagrams.
- d. All relays shall be equipped with setting limit ranges at least as wide as specified in IEEE 1547, and meet other requirements as specified in the WMU interconnect study. Setting limit ranges are not to be confused with the actual relay settings required for the proper operation of the installation. At a minimum, all protective systems shall meet the requirements established in IEEE 1547.

- i. Over-current relays (IEEE Device 50/51 or 50/51V) shall operate to trip the protecting breaker at a level to ensure protection of the equipment and at a speed to allow proper coordination with other protective devices. For example, the over-current relay monitoring the interconnection breaker shall operate fast enough for a fault on the customer's equipment, so that no protective devices will operate on the WMU distribution system. A 51 V is a voltage restrained or controlled over-current relay and may be required to provide proper coordination with the WMU distribution system.
- ii. Over-voltage relays (IEEE Device 59) shall operate to trip the Distributed Generation per the requirements of IEEE 1547.
- iii. Under-voltage relays (IEEE Device 27) shall operate to trip the Distributed Generation per the requirements of IEEE 1547.
- iv. Over-frequency relays (IEEE Device 81O) shall operate to trip the Distributed Generation off-line per the requirements of IEEE 1547.
- v. Under-frequency relay (IEEE Device 81U) shall operate to trip the Distributed Generation off-line per the requirements of IEEE 1547. Coordination with the WMU distribution system is required for this setting.

The WMU distribution system will provide the reference frequency of 60 Hz. The Distributed Generation control system must be used to match this reference. The protective relaying in the interconnection system will be expected to maintain the frequency of the output of the Generation.

- vi. Reverse power relays (IEEE Device 32) (power flowing from the Generation System to the WMU distribution system) shall operate to trip the Distributed Generation off-line for a power flow to the system with a maximum time delay as determined by the WMU's engineer.
- vii. Lockout Relay (IEEE Device 86) is a mechanically locking device which is wired into the close circuit of a breaker or switch and, when tripped, will prevent any close signal from closing that device. This relay requires that a person manually reset the lockout relay before that device can be reclosed. These relays are used to ensure that a denergized system is not reenergized by automatic control action, and prevents a failed control from auto-reclosing an open breaker or switch.
- viii. Transfer Trip – All Generation Systems are required to disconnect from the WMU distribution system when the WMU distribution system is disconnected from its source, to avoid unintentional islanding.

With larger Generation Systems, which remain in parallel with the WMU distribution system, a transfer trip system may be required to sense the loss of the WMU distribution system source. When the WMU distribution system source is lost, a signal is sent to the Generation System to separate the Generation from the WMU distribution system. The size of the Generation System versus the capacity and minimum loading on the feeder will dictate the need for transfer trip installation. The WMU distribution system interconnection study will identify the specific requirements.

If multiple WMU sources are available or multiple points of sectionalizing on the WMU distribution system exist, then more than one transfer trip system may be required. The WMU interconnection study will identify the specific requirements. For some installations the alternate WMU source(s) may not be utilized except in rare occasions. If this is the situation, the Interconnection Customer may elect to have the Generation System locked out when the alternate source(s) are utilized, if agreeable to the WMU.

- ix. Parallel limit timing relay (IEEE Device 62PL) Settings, as determined by the WMU's engineer, shall trip the Distributed Generation circuit breaker on limited parallel interconnection systems. Power for the 62 PL relay must be independent of the transfer switch control power. The 62PL timing must be an independent device from the transfer control and shall not be part of the generation PLC or other control system.

**TABLE 6A
SUMMARY OF RELAYING REQUIREMENTS**

Type of Interconnection	Over-current (50/51)	Voltage (27/59)	Frequency (81 0/U)	Directional Over Current (67)	Lockout (86)		Sync-Check (25)	Transfer Trip
Extended Parallel < 250 kW (Fig. 4)	Yes	Yes	Yes	Yes	Yes	----	Yes	----
Soft Loading Extended Parallel >250kW (Fig.4)	Yes	Yes	Yes	Yes	Yes	----	Yes	Yes

Agreements

- A. Interconnection Agreement – An interconnection agreement is required for all Generation Systems that normally operate in parallel with the WMU distribution system. The specific terms of the interconnection agreement will vary depending upon the size and type of Generation System. This agreement will contain the terms and conditions upon which the Generation System will be connected, constructed, and maintained, when operated in parallel with the WMU distribution system. Some of the issues covered in the Interconnection Agreement are as follows:
1. Construction Process
 2. Testing Requirements
 3. Maintenance Requirements
 4. Firm Operating Requirements such as Power Factor
 5. Access requirements for the WMU distribution system personnel
 6. Disconnection of the Generation System (Emergency and Non-emergency)
 7. Term of Agreement
 8. Insurance Requirements
 9. Dispute Resolution Procedures
- B. Operating Agreement – For Generation Systems that normally operate in parallel with the WMU distribution system, an agreement separate from the Interconnection Agreement, called the “Operating Agreement,” is usually required. This agreement is created for the benefit of both the Interconnection Customer and the WMU and will be agreed to between the Parties. This agreement will be dynamic and is intended to be updated and reviewed annually. For some smaller systems, the Operating Agreement can simply be a letter agreement; for larger and more integrated Generation Systems the Operating Agreement will tend to be more involved and more formal. The Operating Agreement covers items that are necessary for the reliable operation of the Local and Area EPS. Some of the items typically included in the Operating Agreement are as follows:
1. Emergency and normal contact information for both the WMU operations center and for the Interconnection Customer.

2. Procedures for periodic Generation System test runs.
 3. Procedures for maintenance on the WMU distribution system that affect the Generation System.
 4. Emergency Generation Operation Procedures
- C. Other Agreements – Depending on the nature and size of the Generation System, additional agreements may be required. Any such other agreements will be identified by the WMU and will be agreed upon by the parties.

Testing Requirements

A. Pre-Certification of Equipment

The most important part of the process to interconnect generation with Local and Area EPS is safety. One of the key components of ensuring the safety of the public and employees is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. To meet this goal, all of the electrical wiring in a business or residence is required by the State of Minnesota to be listed by a recognized testing and certification laboratory for its intended purpose. Typically, we see this as “UL” listed. Since Generation Systems tend to be uniquely designed for each installation, they have been designed and approved by Professional Engineers. As the number of Generation Systems installed increases, vendors are working toward creating equipment packages which can be tested in the factory and then will only require limited field testing. This will allow us to move toward “plug and play” installations. For this reason, this standard recognizes the efficiency of “pre-certification” of Generation System equipment packages that will help streamline the design and installation process.

An equipment package shall be considered certified for interconnected operation if it has been submitted by a manufacturer, tested and listed by a nationally recognized testing, and certification laboratory (NRTL) for continuous utility interactive operation in compliance with the applicable codes and standards. Presently generation paralleling equipment that is listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929 shall be acceptable for interconnection without additional protection system requirements. An “equipment package” shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package which includes a generator or other electric source, it shall not require further design review, testing, or additional equipment to meet the certification requirements for interconnection. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then the Interconnection Customer shall show that the

generator or other electric source being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing and listing performed by the nationally recognized testing and certification laboratory, no further design review, testing, or additional equipment shall be required to meet the certification requirements of this interconnection procedure. A certified equipment package does not include equipment provided by the WMU.

The use of Pre-Certified equipment does not automatically qualify the Interconnection Customer to be interconnected to the WMU distribution system. An application will still need to be submitted and an interconnection review may still need to be performed to determine the compatibility of the Generation System with the WMU distribution system.

B. Pre-Commissioning Tests

1. Non-Certified Equipment

a. Protective Relaying and Equipment Related to Islanding

- i. Distributed generation that is not Type-Certified (type tested), shall be equipped with protective hardware and/or software designed to prevent the Generation from being connected to a de-energized Area EPS.
- ii. The Generation may not close into a de-energized Area EPS and protection is provided to prevent this from occurring. It is the Interconnection Customer's responsibility to provide a final design and to install the protective measures required by the WMU. The WMU will review and approve the design, the types of relays specified, and the installation. Mutually agreed upon exceptions may at times be necessary and desirable. It is strongly recommended that the Interconnection Customer obtain WMU written approval prior to ordering protective equipment for parallel operation. The Interconnection Customer will own these protective measures installed at their facility.
- iii. The Interconnection Customer shall obtain prior approval from the WMU for any revisions to the specified relay calibrations.

C. Commissioning Testing

The following tests shall be completed by the Interconnection Customer. All of the required tests in each section shall be completed prior to moving on to the next section of tests. The WMU has the right to witness all field testing and to review all

energization. Where appropriate, those points may be verified during the energization process.

- h. Phase Tests – The Interconnection Customer shall work with WMU personnel to complete the phase test to ensure proper phase rotation of the Generation and wiring.
 - i. Synchronizing test – The following tests shall be done across an open switch or racked out breaker. The switch or breaker shall be in a position that it is incapable of closing between the Generation System and the WMU distribution system for this test. This test shall demonstrate that, at the moment of the paralleling-device closure, the frequency, voltage and phase angle are within the required ranges, stated in IEEE 1547. This test shall also demonstrate that if any of the parameters are outside of the ranges stated, the paralleling- device shall not close. For inverter-based interconnected systems, this test may not be required unless the inverter creates fundamental voltages before the paralleling device is closed.
2. On-Line Commissioning Test – The following tests will proceed once the Generation System has completed pre-testing and the results have been reviewed and approved by the WMU. For smaller Generation Systems, the WMU may have a set of standard interconnection tests that will be required. On larger and more complex Generation Systems, the Interconnection Customer and the WMU will get together to develop the required testing procedure. All on-line commissioning tests shall be based on written test procedures agreed to between the WMU and the Interconnection Customer.

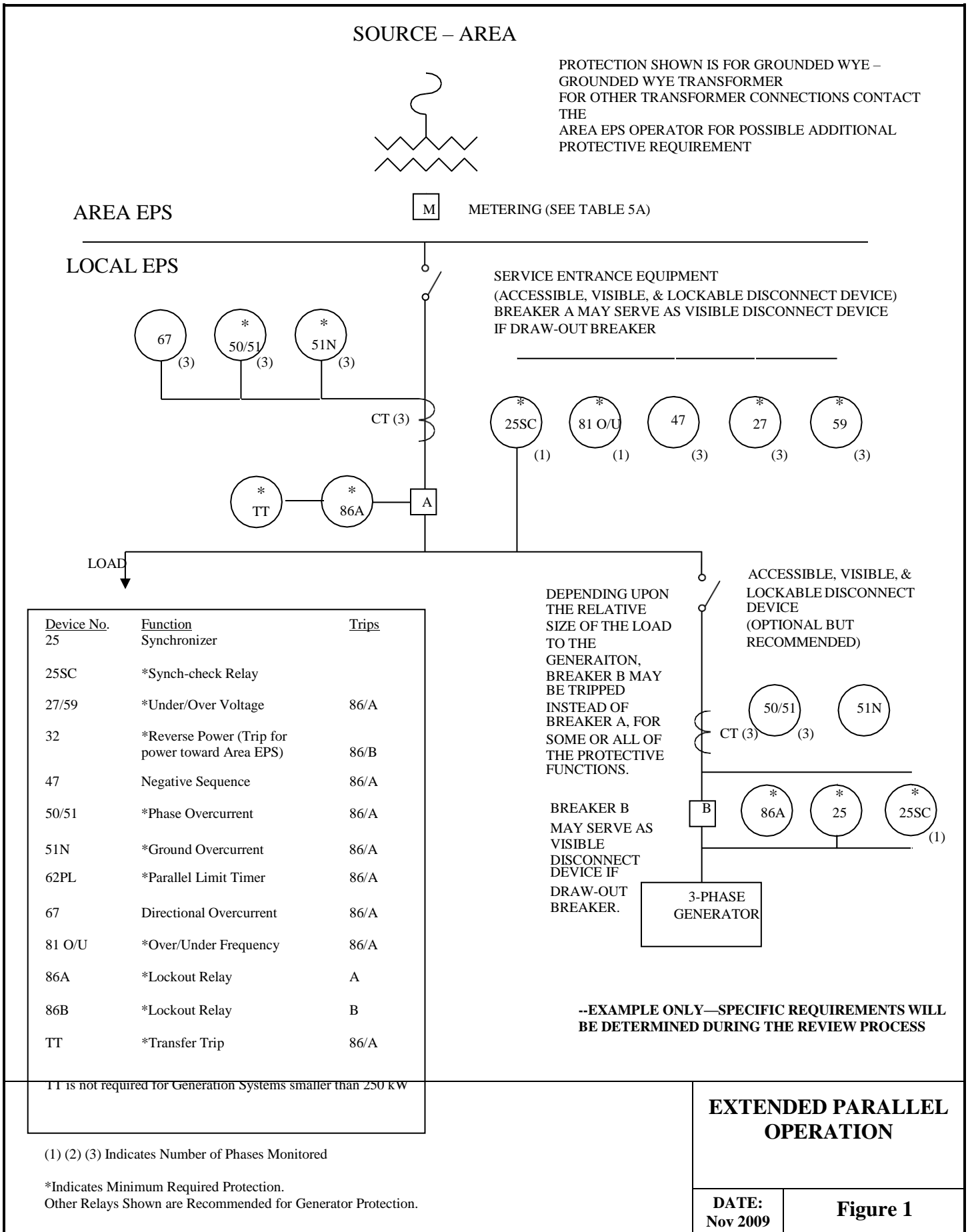
Generation System functionally shall be verified for specific interconnections as follows:

- a. Anti-Islanding Test – For Generation Systems that parallel with the utility for longer than 100 msec.
 - i. The Generation System shall be started and connected in parallel with the WMU distribution system source.
 - ii. The WMU distribution system source shall be removed by opening a switch, breaker, etc.
 - iii. The Generation System shall either separate with the local load or stop generating.
 - iv. The device that was opened to remove the WMU distribution system source shall be closed and the Generation System shall not

synchronize again with the WMU distribution system for at least 5 minutes.

3. Final System Sign-off – To ensure the safety of the public, all interconnected customer owned generation systems, which do not utilize a Type-Certified system, shall be certified as ready to operate by a Professional Electrical Engineer registered in the State of Minnesota, prior to the installation being considered ready for commercial use.
4. Periodic Testing and Record Keeping
 - a. Any time the interface hardware or software, including protective relaying and generation control systems, are replaced and/or modified, the WMU Generation Coordinator shall be notified. This notification shall, if possible, be with sufficient warning so that WMU personnel can be involved in the planning for the modification and/or witness the verification testing. Verification testing shall be completed on the replaced and/or modified equipment and systems. The involvement of WMU personnel will depend upon the complexity of the Generation System and the component being replaced and/or modified. Since the Interconnection Customer and the WMU are now operating an interconnected system, it is important for each to communicate changes in operation, procedures, and/or equipment to ensure the safety and reliability of the Local and Area EPS.
 - b. All interconnection-related protection systems shall be periodically tested and maintained by the Interconnection Customer at intervals specified by the manufacture or system integrator. These intervals shall not exceed 5 years. Periodic test reports and a log of inspections shall be maintained by the Interconnection Customer and made available to the WMU upon request. The WMU shall be notified prior to the period testing of the protective systems so that WMU personnel may witness the testing if so desired.

Exhibit A: Extended Parallel Diagram



CHAPTER 10

----DRAFT----MEMBER RESOLUTION

RESOLUTION _____

WHEREAS, the Public Utility Regulatory Policies Act of 1978 (PURPA), as amended, requires a utility to buy power and sell power to Qualifying Facilities (QF);

WHEREAS, the MEMBER and Missouri River Energy Services (MRES) filed a Petition of Waiver, which specifies the obligations of the MEMBER and MRES to a QF, with the Federal Energy Regulatory Commission (FERC) under Section 210 of PURPA, and have been granted such waiver by the FERC;

WHEREAS, the MEMBER and MRES agreed to comply with “Rules of Compliance” as part of the Waiver;

WHEREAS, the MEMBER has drafted guidelines and documents to implement the Rules of Compliance known as the “Distributed Generation Workbook for Minnesota members” to accommodate QFs in interconnection and power purchase arrangements, which are subject to be updated periodically;

NOW, THEREFORE, BE IT RESOLVED that in recognition of the above statements, the MEMBER hereby adopts the Distributed Generation Workbook for Minnesota members as the “Small Power Production and Co-Generation Policy.”

Chair

Adopted:

Pre-Application Report

This report summarizes information available to the WMU regarding an interconnection of a distributed energy resource to the WMU's distribution system. The report includes only information that is readily available to the WMU. This report is not a guarantee by the WMU that a future interconnection application will be approved for the proposed site. Information provided in this report is subjected to change as modifications are made to the WMU's distribution system.

Pre-Application Request			
Pre-Application ID:			
Project Address:			
DER Size:		kW AC	DER Type:
Project Contact:			
Email:		Phone:	

Electric Distribution System Information			Info Not Available
Total capacity of the circuit based on normal conditions likely to serve the proposed PCC		MW AC	
Existing aggregate generation capacity interconnected to the circuit likely to serve the proposed PCC		MW AC	
Aggregate queued generation capacity for the circuit likely to serve the proposed PCC		MW AC	
Available capacity of the circuit most likely to serve the proposed PCC		MW AC	
Estimated peak load of relevant line sections		kW AC	
Estimated minimum load of relevant line sections (daytime minimum load to be specified for solar DER, if available.)		kW AC	
Substation Voltage (Nominal Distribution)		kV	
Substation Voltage (Nominal Transmission)		kV	
Nominal distribution circuit voltage at proposed PCC		kV	

PCC: Point of Common Coupling

Electric Distribution System Information – Continued			
			Info Not Available
Approximate circuit distance between the proposed PCC and the substation:		Miles	
Distance to three phase circuit (if not already located on a three-phase circuit):		Miles	
Limiting conductor ratings from the proposed PCC to the substation		Amps	
Number of available phases on the Area EPS at the proposed PCC		Phases	
Is the proposed point of common coupling located on a spot network, grid network, or radial supply?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Is the proposed PCC located behind a line voltage regulator?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Type of voltage regulating devices between substation and proposed PCC	Device A		
	Device B		
	Device C		
Number and type of protection devices between substation and proposed PCC	Device A		
	Device B		
	Device C		
Any additional known distribution system constraints?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Additional known constraints that could affect installation or operation of the DER or Area EPS at the proposed PCC are attached to this report. Constraints may include, but are not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.

Utility Information			
Report Completed By:			
Company:			
Project Contact:			
Email:		Phone:	

Storage Application

This form is required in addition to a completed Interconnection Application form for any DER with an energy storage component. An application to interconnect energy storage is only required for storage designed to operate in parallel with the distribution system. Electric vehicles and backup generators do not need to apply.

Energy Storage		
Application for:	<input type="checkbox"/> Stand-alone storage as DER <input type="checkbox"/> Storage as component of DER	
Customer Account Number:		
Address of Generating Facility:		
City:	State:	Zip Code:
Equipment Manufacturer:	Equipment Model:	
Max Continuous Real Power (In kW):	Max Continuous Apparent Power (In kVA):	
Power Factor range of adjustability:	Peak AC Energy (In kWh):	
Is the equipment UL 1741 listed? <i>Manufacturer specification sheet(s) are required to be attached to this application.</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the storage 100% charged by a net energy metering eligible energy source?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Source charging the storage (<i>Check all that apply</i>):		
<input type="checkbox"/> Utility	<input type="checkbox"/> Wind	<input type="checkbox"/> Solar
<input type="checkbox"/> Diesel	<input type="checkbox"/> Other (please specify)	
Is the storage configured to export energy to the Area EPS?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the settings accessible to the end user?		<input type="checkbox"/> Yes <input type="checkbox"/> No

For Office Use Only	
Application ID:	Queue Number:
Date Received:	

Energy Storage

Available control operating modes:

Control modes being enabled for interconnection:

For non-export, how does the system determine the magnitude of customer load?

What is the process for changing operational modes of the energy storage?

Please attach any additional materials.