

## Exhibit D Operating Agreement

Developer/Customer: \_\_\_\_\_

Service Address: \_\_\_\_\_

Account: \_\_\_\_\_

Premise: \_\_\_\_\_

Generator Size: \_\_\_\_\_ kW

This Exhibit D – Operating Agreement (Exhibit D), is an Exhibit to the Generation System Interconnection Agreement between the Parties and provides the specific operating information and requirements for, and facilitates the operation of, the Generation System. The Interconnection Customer must operate the Generation System in accordance with the Technical Requirements, this Exhibit D as well as all provisions of Section 10 of the Xcel Energy Minnesota tariff. Unless otherwise defined in this Exhibit D, capitalized terms herein shall have the meaning provided such terms in the Generation System Interconnection Agreement.

Nothing in this Exhibit D is intended to or shall be construed as limiting Xcel Energy’s rights under the Xcel Energy Minnesota tariff. In the event of a conflict between this Operating Agreement and any law, regulation and/or the Xcel Energy Minnesota tariff, the law regulation or Xcel Energy Minnesota tariff shall control, and the conflicting Operating Agreement provision shall have no effect. In the event of such a conflict, the remaining terms of this Operating Agreement shall remain in effect.

If the Generation System at Site identified above is part of a co-located Community Solar Garden site, the Generation Systems which are part of the same co-located Community Solar Garden site are:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Pursuant to Minnesota Public Utilities Commission ruling the aggregated name plate capacity of the Generation Systems which are part of such a co-located Community Solar Garden site cannot exceed 5 MW (AC) if the application under the Solar\*Rewards Community program was submitted on or prior to September 25, 2015, and cannot exceed 1 MW (AC) on a co-located basis if the application was submitted after that date.

The Parties may, upon written agreement of the Parties, amend this Exhibit D pursuant to the terms of the Generating System Interconnection Agreement. In addition, upon written agreement of the Parties, this Operating Agreement may be reviewed and updated periodically, to allow the operation of the Generation System to change to meet the needs of both Xcel Energy and Interconnection Customer, provided that change does not negatively affect the other Party. In addition, the Parties may agree to amend this Operating Agreement to reflect operating changes required by regulatory authorities having jurisdiction over the matters governed by this Exhibit D, such as changes required by the Minnesota Public Utility Commission, the Federal Energy Regulatory Commission or the Midwest Independent System Operator.

## Exhibit D

This Exhibit D sets forth the technical terms pursuant to which Interconnection Customer may export energy to Xcel Energy from the Generation System. This Exhibit D does not provide for the amount, metering, billing and accounting for the export of energy from the Generation System, nor does it constitute Xcel Energy's agreement to purchase or pay for any such energy. Any such arrangements will be provided for in a separate written agreement.

Unless otherwise noted, capitalized terms shall have the meaning set forth in the Generating System Interconnection Agreement.

### 1.0 Definitions

- 1.1. "Engineering Study" means the Engineering Study Xcel Energy performed as part of the Interconnection Process conducted pursuant to its Distributed Generation Standard Interconnection and Power Purchase Tariff, Minnesota Electric Rate Book - MPUC No. 2, Section 10.
- 1.2. "Xcel Energy Control Center Contact" is as defined in Section 8.2.
- 1.3. "Interconnection Customer Control Center Contact" is as defined in Section 8.2.
- 1.4. Unless specifically defined otherwise, all measurements and performance requirements will be measured at the point of common coupling.

**2.0 Power Factor Requirements.** The power factor of the Generation System and connected load shall be as follows: (1) Inverter Based interconnections – shall be designed within reasonable limits to operate at a power factor of no less than 90% at the inverter terminals; (2) Limited Parallel Generation Systems, such as closed transfer or soft-loading transfer systems shall operate at a power factor of no less than 90%, during the period when the Generation System is parallel with Xcel Energy, as measured at the Point of Common Coupling; and, (3) 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 Xcel Energy and the Interconnection Customer.

#### 2.1. Normal operation:

- 2.1.1. Interconnection Customer will operate the Generation System as an Inverter Based Generation system at a fixed power factor, as identified by the Engineering Study, within the power factor range as described in Section 2.0 above to mitigate voltage rise due to reverse power flow. Power production outside the specified power factor range is not allowed at any time without permission by Xcel Energy. It is the responsibility of Interconnection Customer and not Xcel Energy to assure that all equipment is sized properly so as to not curtail real power production if that is an objective of the Interconnection Customer.

## Exhibit D

Interconnection Customer shall operate the Generation System at a fixed power factor of \_\_\_\_\_. Note that a generator leading power factor means the machine is absorbing reactive power.

- 2.1.2.** In the future, distribution system reconfigurations, capacity constraints, or other external factors may require that the Generation System be served from another system and/or may also require that the Generation System change power factors in order to prevent voltage rise. Xcel Energy shall provide reasonable advance notice to Interconnection Customer pursuant Section XII(B) of the Generating System Interconnection Agreement in order to coordinate the implementation of such changes.

### **2.2. Contingency operation:**

- 2.2.1.** Temporary system conditions, such as overvoltage, may require Xcel Energy's Control Center Contact, in accordance with good utility practice and avoiding, to the extent reasonably possible, a reduction in the Generation System output (in the sole discretion of Xcel Energy), to direct the Interconnection Customer's Control Center Contact to disconnect or partially curtail the output of the Generation System. In some cases, and in its sole discretion, Xcel Energy may permit Interconnection Customer to partially operate or fully restore operation by temporarily applying different power factor settings.

### **3.0 Start-Up, Shut-Down, and Ramp Rates**

- 3.1.** Where the Generation System consists of one or more units, Interconnection Customer shall stagger the planned start-up and shutdown of the units, with a minimum delay of 30 seconds between the starting and stopping of each unit, in order to mitigate voltage flicker. A controlled shutdown may be allowed if a sequence of operation, including estimated timeframes for actions, is submitted to and approved by Xcel Energy in advance.
- 3.2.** Interconnection Customer shall have the ability to limit the up-ramp or skew rate of the Generation System.
- 3.3.** In order to mitigate a voltage surge, Xcel Energy reserves the right, based upon the Engineering Study, to specify how many inverters may come online simultaneously. Interconnection Customer may also be required to ensure that the inverters for the Generation System allow random or preprogrammed time delays between the startup of multiple inverters. Ramp Rate Limitations: \_\_\_\_\_.

### **4.0 Local and Remote Control**

- 4.1.** The Interconnection Customer shall ensure that at all times Xcel Energy has access to a breaker that can remotely control the Generation System from Xcel Energy's systems. To the extent allowed by law, Xcel Energy shall provide notice to the Interconnection Customer explaining the reason for the disconnection. If there is an emergency described in Section 4.1.1 or 4.1.2 below and prior notice is not reasonably possible, Xcel Energy shall after the fact, provide to the Interconnection Customer as to why the disconnection was required. Where reasonably possible

## Exhibit D

Xcel Energy shall use commercially reasonable efforts to reconnect the Generation System in a timely manner. Interconnection Customer agrees and consents to Xcel Energy's remote tripping, as reasonably necessary under good utility practice, of the breaker for the Generation System including, but not limited to, in the following circumstances, as system conditions exceed parameters defined in any IEEE, NESC or ANSI standards:

- 4.1.1. Electric Distribution or Generator System emergency
- 4.1.2. Public emergency
- 4.1.3. Abnormal feeder operation
- 4.1.4. Planned switching
- 4.1.5. Interconnection Customer's failure to promptly respond to and execute on Xcel Energy's request to curtail the output of, or disconnect, the Generation System.

4.2. If Xcel Energy remotely trips the breaker for the Generation System and Interconnection Customer desires that Xcel Energy close the breaker remotely, Interconnection Customer's Control Center Contact may make the request of Xcel Energy's Control Center Contact, and Xcel Energy will close the breaker remotely once the reason for the remote tripping has passed and it is safe and consistent with good utility practice to do so.

### 4.3. Local or Remote Close

- 4.3.1. If the Generation System has caused an outage on the Distribution System, Interconnection Customer shall contact Xcel Energy's Control Center Contact and, consistent with Section 5 below, verify that the Distribution System is in a normal operating configuration and the Generator System can be energized prior to energizing the Generator System.
- 4.3.2. If Xcel Energy remotely trips the breaker for the Generation System, Xcel Energy's Control Center Contact will notify the Interconnection Customer's Control Center Contact when the Generation System can be returned to normal operation.

### 4.4. Transfer Trip (TT)/Communication Channel

- 4.4.1. Upon loss of the TT communication channel, if any, the Interconnection Customer shall immediately disconnect the Generation System.
- 4.4.2. In general, the Generation System shall remain offline for the duration of the time the TT communication channel is lost. However, Xcel Energy may, in its sole discretion, allow limited operation of the Generation System in these circumstances.
- 4.4.3. The Generation System interconnection breaker shall trip with no intentional delay when receiving a transfer trip signal.

## 5.0 Outages of the Distribution System

5.1. Upon the occurrence of an emergency outage(s) to Xcel Energy's distribution system, Interconnection Customer shall do the following:

## Exhibit D

- 5.1.1. Disconnect the Generation System from Xcel Energy's system when a TT signal is active, if applicable.
- 5.1.2. Unless otherwise directed by Xcel Energy's Control Center Contact, wait five (5) minutes after the TT signal is removed, if applicable, from the interconnection breaker before implementing startup procedure for the Generation System.
- 5.1.3. Obtain permission from the Xcel Energy Control Center Contact to startup the Generation System.

5.2. Xcel Energy shall use commercially reasonable efforts to promptly restore the Generation System to service, consistent with good utility practice.

5.3. Unless otherwise directed by Xcel Energy's Control Center Contact, during a momentary distribution system interruption the Interconnection Customer shall wait five (5) minutes after successful close of the feeder breaker or recloser before starting up the Generation System.

5.4. During an extended distribution system interruption, unless otherwise directed by Xcel Energy's Control Center Contact the Interconnection Customer shall wait 5 minutes after sensing normal voltage and frequency before starting up the Generation System.

**6.0 Interference.** If the Generation System causes radio, television or electrical service interference to other customers, via the electric power system or interference with the operation of Xcel Energy, the Interconnection Customer shall disconnect the Generation System. The Interconnection Customer shall either effect repairs to the Generation System or reimburse Xcel Energy for the cost of any required Xcel Energy modifications due to the interference.

### **7.0 Electric Distribution System Modification:**

7.1. At its sole discretion Xcel Energy may modify its electric distribution system. Xcel Energy shall provide written notice to Interconnection Customer explaining the plans and schedule for any modifications to its electric distribution system that may impact operation or protection of Generation System. Xcel Energy shall provide such notice as soon as reasonably practicable prior to the time Xcel Energy intends to begin to modify its electric distribution system. Xcel Energy shall utilize good utility practice to minimize any curtailment of energy for the Generation System. Xcel Energy will make reasonable efforts to avoid planned system outages during the months of June, July and August.

7.2. Xcel Energy shall include the Generation System in its substation and feeder additions planning and distribution system reconfigurations and make all necessary and required accommodations to Interconnection Customer to insure that the Generation System retains its capability to deliver its power output to Xcel Energy per the Engineering Study, subject to the provisions of paragraph 7.1 above.

Exhibit D

7.3. The Generation System must be designed and interconnected such that the reliability and the service quality for all customers of the electrical power system are not compromised. The Interconnection Customer is responsible for all costs associated with the installation, operation, and maintenance of the Generation System. The Interconnection Customer shall be responsible for any expenses, which may be incurred by Xcel Energy as a result of any changes or modifications of the Interconnection Customer's Generation System.

**8.0 Contingency Configurations**

8.1. During contingency operations, if the Interconnection Customer is unable to use power factor control to mitigate voltage or power quality issues created by the Generation System, whether the voltage or power quality issues are due to steady state voltage rise or in the event of voltage regulation issues due to reverse power flow, at the direction of Xcel Energy's Control Center Contact the Interconnection Customer shall disconnect the Generation System if, in Xcel Energy's sole discretion, it believes disconnection would facilitate maintaining compliance with ANSI Range B voltage limits.

8.2. During contingency operations, if the Generation System creates loading, overloading or protection issues, at the direction of Xcel Energy's Control Center Contact the Interconnection Customer shall disconnect the Generation System if, in Xcel Energy's sole discretion, it believes disconnection is consistent with good utility practice .

8.3. If the Generation System is taken offline during contingency operations, Xcel Energy's Control Center Contact may, in its sole discretion, direct the Interconnection Customer's Control Center Contact to keep the Generation System offline or operate it on a limited basis if field ties and alternate sources of power utilized during contingency configurations do not have the capability to accommodate operation of Generation System.

**9.0 Control Center Contacts**

9.1. Each Party shall contact each other's Control Center Contact for all operational issues related to the Generation System. In order to permit Xcel Energy and Interconnection Customer to take immediate action, Interconnection Customer and Xcel Energy shall at all times provide to each other the contact information of each other's Control Center Contact, who shall be available twenty-four (24) hours a day, seven (7) days a week and be able to take action with respect to the operation of the Generation System and the Distribution System, respectively.

9.2. The contact information for the Xcel Energy Control Center contact that is available to Interconnection Customer twenty (24) hours a day, seven (7) days a week is:

\_\_\_\_\_  
\_\_\_\_\_

9.3. The contact information for Interconnection Customer's Control Center contact that is available to Xcel Energy twenty (24) hours a day, seven (7) days a week is:

\_\_\_\_\_  
\_\_\_\_\_

## Exhibit D

**9.4.** Each Party shall keep the other informed of their Control Center contact information. Notice of changes to Control Center contact information shall be provided immediately pursuant to Section XII B of the Generating System Interconnection Agreement.

### **10.0 Right of Access.**

**10.1.** At all times, Xcel Energy shall have access to the disconnect switch of the Generation System for any reasonable purpose in connection with: the performance of its obligations under the Generating System Interconnection Agreement (including this Operating Agreement); to meet its obligation to operate the Xcel Energy system safely and reliably; to comply with law or regulation; or, to provide service to its customers.

**10.2.** At all times, the Interconnection Customer shall give Xcel Energy access to Xcel Energy's equipment and facilities located on the Interconnection Customer's premises. when necessary for Xcel Energy to: perform its obligations under the Generating System Interconnection Agreement (including this Operating Agreement); meet its obligation to operate the Xcel Energy system safely and reliably; to comply with law or regulation; or, provide service to its customers.

Exhibit D

**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**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**Xcel Energy**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



## **Exhibit E**

### **Maintenance Agreement**

Developer/Customer: \_\_\_\_\_

Service Address: \_\_\_\_\_

Account: \_\_\_\_\_

Premise: \_\_\_\_\_

Generator Size: \_\_\_\_\_ kW

Each Generation System interconnection will be unique and will require a unique Maintenance Agreement. It is envisioned that this Exhibit will be tailored for each Generation System interconnection. It is also intended that this Maintenance Agreement Exhibit will be reviewed and updated periodically, to allow the maintenance of the Generation System be allowed to change to meet the needs of both Xcel Energy and the Interconnection Customer, provided that change does not negatively affect the other Party. There may also be changes required by outside issues; such as changes in FERC and MISO requirements and/or policies that will require this agreement to be modified.

#### **1.0 Routine Maintenance Requirements –**

- 1.1. Interconnection Customer shall maintain the system in good working order.
- 1.2. Interconnection Customer shall perform maintenance in accordance with manufacturer recommendations and intervals.

#### **2.0 Generation Metering, Monitoring, and Control**

- 2.1. When telemetry is required, the Interconnection customer is financially responsible for the communications channel to Xcel Energy's Control Center. The communication channel shall comply with Xcel Energy requirements and standards. If the remote terminal unit (RTU) and/or communication channel is provided by Xcel Energy, the Interconnection Customer shall be responsible for operating and maintenance costs, and replace of any failed parts or materials.
- 2.2. Interconnection customer shall be responsible for costs associated with emergency repairs, scheduled repairs, or replacement of parts for the telemetry system.
- 2.3. Interconnection Customer shall be responsible for replacement costs for advanced metering equipment, such as an ION meter.

#### **3.0 Modifications to the Generation System –**

- 3.1. The Interconnection Customer shall notify Xcel Energy, in writing of plans for any modifications to the Generation System interconnection equipment at least twenty (20) business days prior to undertaking such modification.
- 3.2. Modifications to any of the interconnection equipment, including all required protective systems, the generation control systems, the transfer switches/breakers, VT's & CT's, generating capacity and associated wiring shall be included in the notification to Xcel Energy.
- 3.3. The Interconnection Customer agrees not to commence installation of any modifications to the Generating System until Xcel Energy has approved the modification, in writing.
- 3.4. Xcel Energy shall have a minimum of five (5) business days and a maximum of ten (10) business days, to review and respond to the modification, after the receipt of the information required to review the modifications.

Exhibit E

**4.0 Special Facilities**

- 4.1. Interconnection Customer may request underground facilities where Company standard construction is overhead facilities.
- 4.2. The Company will determine if the request will not adversely affect the reliability, operational integrity, or schedule of required work.
- 4.3. The Interconnection Customer shall be responsible for Operating, Maintenance and Replacement costs of the special facilities.
- 4.4. Perpetual easements will be granted Company at no cost to the Company whenever any portion of the underground distribution system is located on private land. Said easements also will allow the Company access for inspection, maintenance, and repair of Company facilities.

**5.0 Shared Facilities**

- 5.1. If the Generation System is designed as part of a co-located Community Solar Garden Site under the Company’s Solar\*Rewards Community program and there are shared facilities between the Generation Systems comprising the co-located Community Solar Garden Site, then Interconnection Customer agrees to be jointly and severally liable with the Interconnection Customers associated with the co-located Community Solar Garden Site for all parts, installation, and maintenance costs and fees associated with the shared facilities.
- 5.2. Examples of shared facilities include, but are not limited to, remote monitoring facilities, communication equipment, and communication channels.

**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**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**Xcel Energy**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_