

# 40kW (and under) Solar/Inverter Installations

## Generation Interconnection Application to Minnesota Power



**WHO SHOULD FILE THIS APPLICATION:** Anyone expressing interest to install generation which will interconnect with Minnesota Power (local electric utility). This application should be completed and returned to Minnesota Power in order to begin processing the request.

**INFORMATION:** This application is used by Minnesota Power to perform a preliminary interconnection review. The Applicant shall complete as much of the form as possible. The fields in BOLD are required to be completed for application processing. The Applicant will be contacted if additional information is required. The response may take up to 15 business days after receipt of all the required information.

For further details regarding Minnesota Power's interconnection processes and standards, refer to the "State of Minnesota Interconnection Process for Distributed Generation Systems", the "State of Minnesota Distributed Generation Interconnection Requirements", the terms and conditions outlined in this application and other interconnection information. These documents can be found on Minnesota Power's website at: [www.mnpower.com/DistributedGeneration](http://www.mnpower.com/DistributedGeneration)

**COST:** Customer will be notified of cost, if any, by Minnesota Power during the approval process. The application fee amount is outlined in the "State of Minnesota Power Interconnection Application for Distributed Generation Systems".

### Owner / Applicant

**MP Customer Name:**

**Account Number:**

**Meter Number:**

**Representative:**

**Phone Number:**

**FAX Number:**

**Title:**

**Mailing Address:**

**Email Address:**

### Location of Generation System Interconnection

**Street Address, legal description or GPS coordinates:**

### Project Design / Engineering (if applicable) / Installer

**Company:**

**Representative:**

**Phone Number:**

**FAX Number:**

**Mailing Address:**

**Email Address:**

### Electrical Contractor (if applicable)

**Company:**

**Representative:**

**Phone Number:**

**FAX Number:**

**Mailing Address:**

**Email Address:**

# 40kW (and under) Solar/Inverter Installations

Generation Interconnection Application to Minnesota Power

## Solar Panel

**Manufacturer:**

**Model:**

**System Rating (kW):**

Estimated Annual kWh production:

## Inverter (if applicable)

**Manufacturer:**

**Model:**

## System Design Specifications

Tilt Angle:

Azimuth:

Shading (% Unshaded):

## System Cost

System Cost Before Incentives:

## Transfer Switch (if applicable) Visible Lockable Disconnect Switch (within ten feet of utility meter)

Model Number:

Type:

Manufacturer:

Rating (amps):

## Estimated Start / Completion Dates

Construction Start Date:

Completion (operational) Date:

## Please attach the following documents to this application:

- Attach a 1-line diagram using MP preferred symbology (see page 5 for sample drawing and preferred symbology)
- Attach a site drawing (see page 6 for sample)
- Attach solar panel spec sheet\*\*
- Attach inverter spec sheet\*\*
- Attach evidence of intent\*
- Attach site photos

## Prior to energizing the system the following will be provided:

- Proof of liability insurance
- Electrical inspection
- Signed Uniform Statewide Contract

\*Proof of intent to proceed, I.E. signed purchase agreement.

\*\*Please submit new specification sheets and any other changes to the proposed installation as soon as possible so that MP can determine the status of the current application.

## Eligible Equipment

1. Photovoltaic modules must be certified as meeting the most current edition of Underwriters Laboratory Standard 1703 (UL1703)
2. All inverters must be certified as meeting the current edition of Underwriters Laboratory 1741 (UL1741).

## Installation Requirements

1. A visible open, lockable disconnect must be installed within 10' of the utility meter(s).
2. A production meter must be installed within 10' from the existing utility meter as described in Minnesota Power's Distribution Construction Standards (DCS) 4800.
3. All systems must have a Preliminary Review conducted by Minnesota Power and approved prior to installation. During the review, the service will be analyzed and the customer will be notified if modifications or upgrades are required.
4. Customers must obtain liability insurance against personal or property damage due to engineering studies the installation, interconnection, and operation of its electric generating facilities. The amount of liability insurance required is covered in the interconnection contract. DG systems 40 kW and under require \$300,000.00 liability insurance.
5. Installations must comply with all applicable building and zoning codes. Proof of an approved electrical inspection must be submitted prior to energizing the system.
6. Installations are subject to the requirements and provisions of Minnesota Statute (216B.164), Minnesota Rules (Chapter 7835), the currently adopted edition of the National Electrical Code (NEC), IEEE 1547 and electric utility requirements.

## SolarSense Rebate Requirements (applicable to customers awarded SolarSense funds only)

1. Be a Minnesota Power retail customer installing a grid-tied solar PV system. Customers exempt from the Solar Energy Standard are not eligible to apply.
2. Rebates are generally limited to one per customer, per year based on market activity and dollar availability. Customers may not apply for a SolarSense rebate if they have installed a solar PV system within the past 12 months.
3. Be in good standing with Minnesota Power.
4. Get preapproval of the project prior to purchase and installation of equipment.
5. Install new components, including all major system components.
6. Own the PV system and the property/building where the system will be installed.
7. Complete the installation within six months of receiving system approval and a signed uniform statewide contract.
8. You must have completed an energy analysis within the immediately preceding 24 months.
9. You may not install a system with kWh generation capacity of more than 120% of the premise's twelve months energy consumption.
10. You must install a system with a nameplate capacity of 40 kW or less.
11. The installer must submit system design specifications to Minnesota Power in order to calculate the incentive estimate.
12. PV modules must come with a 20-year or greater manufacturer's performance warranty. All inverters must come with a minimum 10-year manufacturer's performance warranty. Installers must offer a minimum 2 year workmanship warranty.
13. You must submit the final installation costs to Minnesota Power.
14. Complete and submit the Renewable Energy Credit (REC) Contract once the installation is complete.
15. Use a certified installer (NABCEP or UL certified).
16. All production needs to be measured through the production meter before going through any other device.

The undersigned warrants, certifies and represents the following:

1. The information provided in this form is true and correct to the best of my knowledge; and
2. The installation will meet all SolarSense Rebate Program requirements, if applying for rebate.
3. Any substantive changes to the system design, equipment, or other specifications may require submittal of a new application and restart the review process. Contact Minnesota Power regarding any scope changes.

## Sign Off Area:

With this Application, we are requesting Minnesota Power to review the proposed Generation System Interconnection. We request that Minnesota Power identifies the additional equipment and costs involved with the interconnection of this system and to provide a budgetary estimate of those costs. We understand that the estimated costs supplied by Minnesota Power, will be estimated using the information provided. We also agree that we will supply, as requested, additional information, to allow Minnesota Power to better review this proposed Generation System Interconnection. We have read the "State of Minnesota Interconnection Process for Distributed Generation Systems", the "State of Minnesota Distributed Generation Interconnection Requirements", the terms and conditions outlined in this application and other interconnection information and will design the Generation System and interconnection to meet those requirements.

MP Customer Name (print):

MP Customer Signature:

Date:

Installer Name (print):

Installer Signature:

Date:

**Send this completed & signed application and attachments to:**

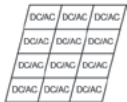
**Minnesota Power  
Renewable Program  
30 West Superior Street  
Duluth, MN 55802-2093**

**Or send via email to [SolarProgram@mnpower.com](mailto:SolarProgram@mnpower.com)**

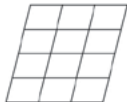
DG Symbols

Minnesota Power Preferred Symbology

Solar Array with  
Micro Inverters



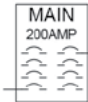
Solar Array



Transformer  
Type:  
Rating:



Main Service  
Panel



Breaker Panel



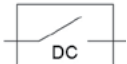
Breaker



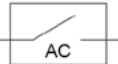
Junction Box



DC Disconnect  
Switch



AC Disconnect  
Switch



DC Fused  
Disconnect Switch



AC Fused  
Disconnect Switch



Battery



Inverter



Ground



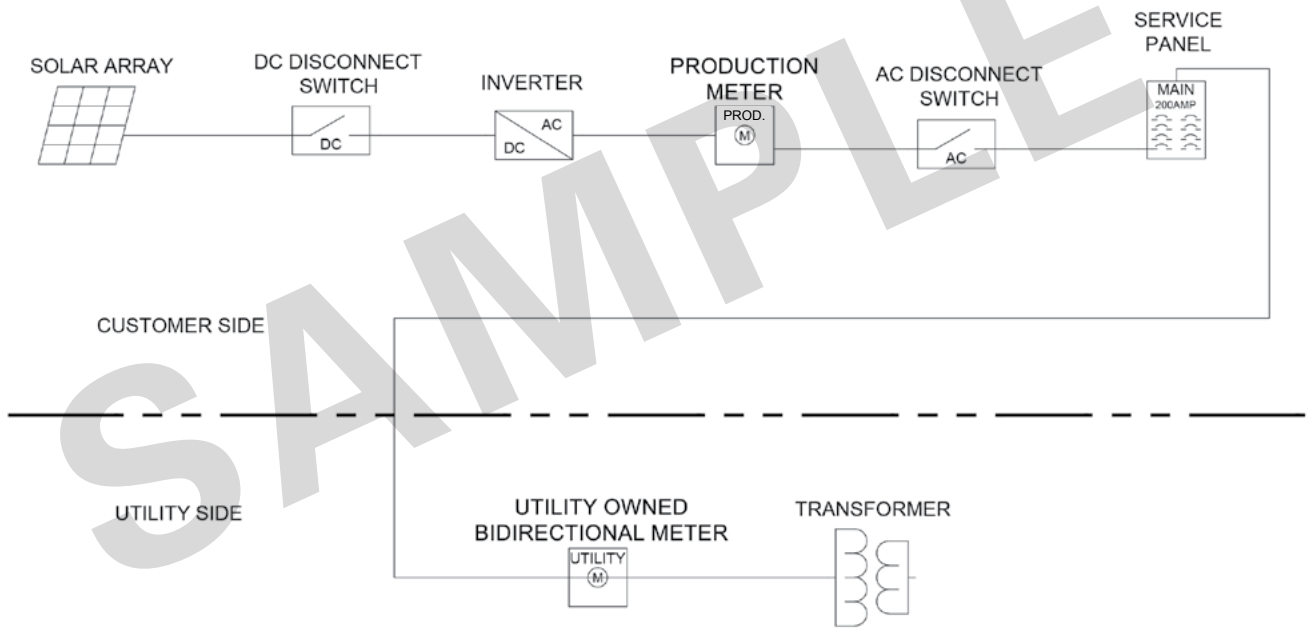
Utility Owned  
Bidirectional Meter



Production  
Meter

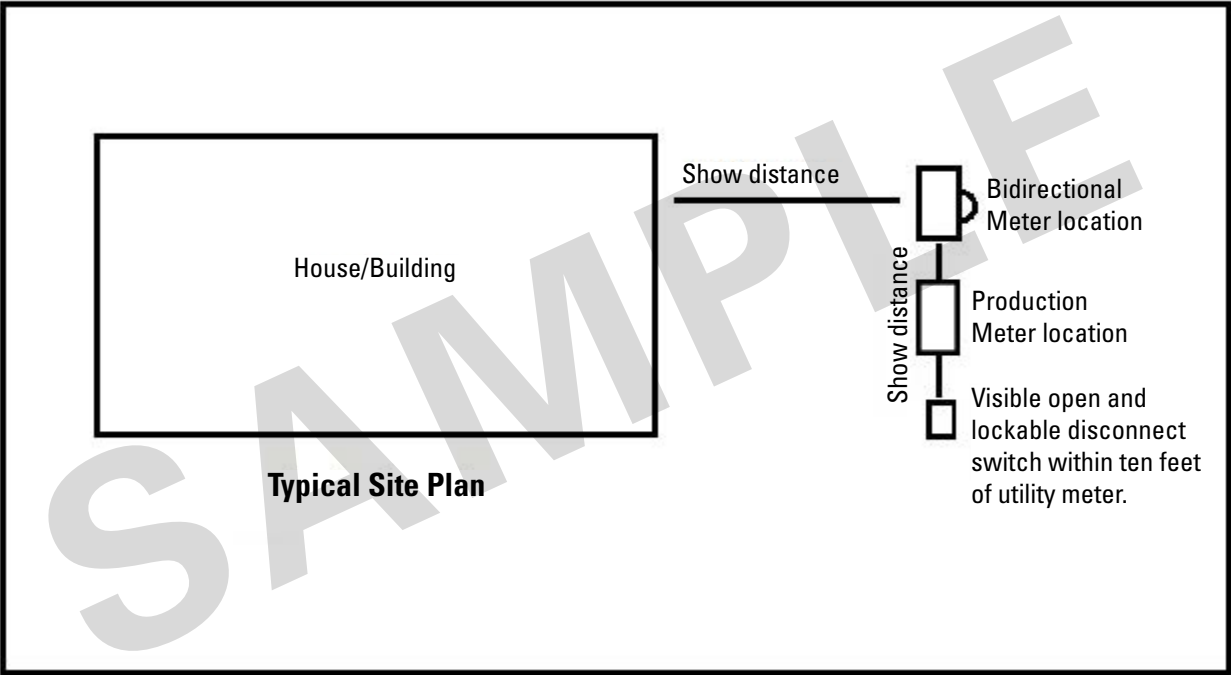


TYPICAL SOLAR SYSTEM ONE LINE

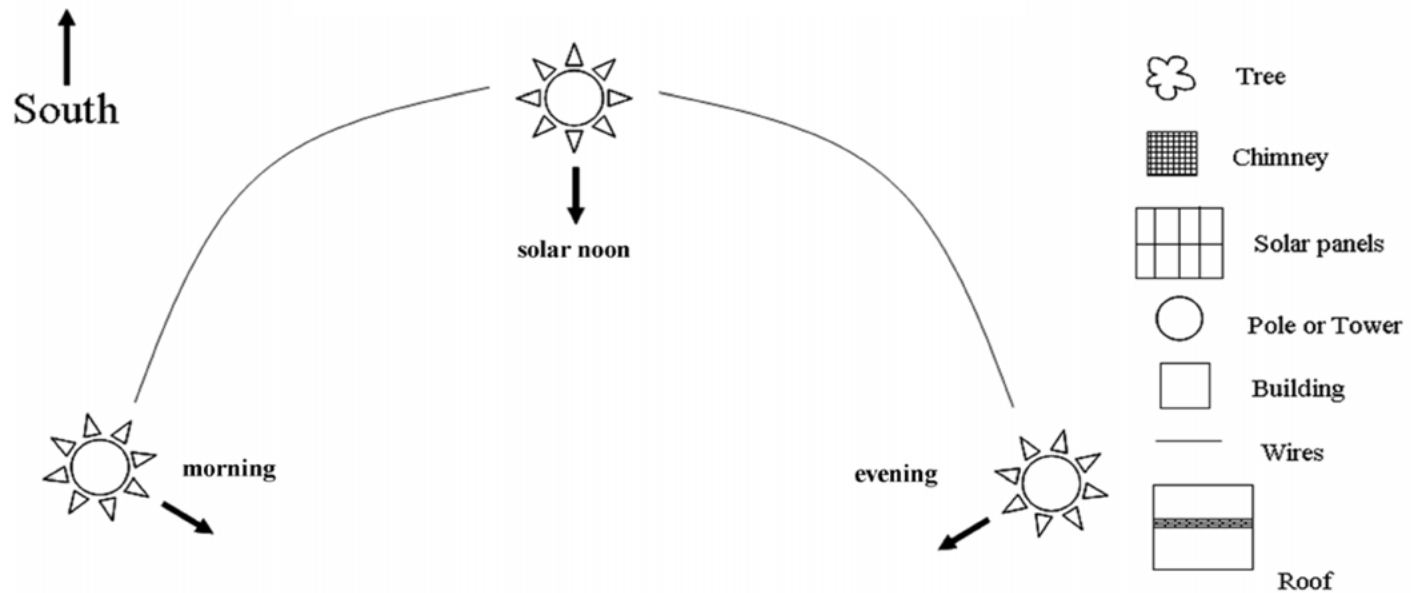


Label visible, open and lockable disconnect switch shown on site plan.

Site Drawing



## Solar Site Diagram - Top View



**This Diagram must be completed as part of the Minnesota Power SolarSense Application.** Using the symbols (at right of the diagram) sketch the locations and distances between the proposed array and surrounding objects. Include estimated heights above ground for all objects.

**What angle will the array face? \_\_\_\_\_ (180° - due south)**

1. Draw the proposed location of the solar system using the appropriate symbols.
2. Determine the orientation of the system.
3. Draw any objects that appear in the photos of the horizon. Pay particular attention to those objects which may appear to present a shading obstruction in the horizon photos.
  - a. You do not need to draw objects that are located behind the solar panels unless they reach over the top of the solar panels.
  - b. Estimate the appropriate width at the widest point of each object.
  - c. Measure and make note of the distance from the solar array to each object on the diagram.
  - d. Include heights of objects and the height of the lowest point of the PV array.

This site diagram must accompany the application. The site diagram is a representation of the solar installation's location along with nearby objects that might shade the system. It is designed to help interpret the photos included with the application form and as a cross reference to the shading analysis.

## Definitions

**Anti-islanding test** – a utility representative will test the completed system for safety before an interconnection contract is processed

**Azimuth** – the direction measured in degrees from North that the solar installation is oriented

**Building code** – check with city and/or county to identify permits needed for the solar installation

**DC rating** – solar capacity, measured in watts

**Evidence of Intent** – evidence that the applicant is serious about participating in the solar rebate program: \$500 down payment to the installer or utility interconnection application is acceptable

**Grid connected** – PV system is interconnected to an electric utility; grid connected systems in Minnesota benefit from net metering if the capacity is less than 1 mW\*

**Interconnection agreement** – a contract with the electric utility to let a customer sell electricity back to the utility; utilities must use standard state contract (MN Rule 7835.9910 [www.leg.state.mn.us](http://www.leg.state.mn.us))

**Interconnection guidelines** – safety and technical requirements for the solar installation

**Inverter** – converts DC electricity from the solar panels into AC electricity

**Kilowatt (kW)** – 1000 watts (four 250 watt solar modules = 1 kilowatt)

\*Net metering rules vary by system size.



# SolarSense Expected Performance Based Incentive Application



## ELIGIBILITY REQUIREMENTS

- Be a Minnesota Power retail customer installing a grid-tied solar PV system. Customers exempt from the Solar Energy Standard are not eligible to apply.
- Rebates are generally limited to one per customer, per year based on market activity and dollar availability. Customers may not apply for a SolarSense rebate if they have installed a solar PV system within the past 12 months.
- Be in good standing with Minnesota Power.
- Get preapproval of the project prior to purchase and installation of equipment.
- Install new components, including all major system components.
- Own the PV system and the property/building where the system will be installed.
- Complete the installation within six months of receiving system approval and a signed uniform statewide contract.
- You must have completed an energy analysis within the immediately preceding 24 months.
- You may not install a system with kWh generation capacity of more than 120% of the premise's twelve months energy consumption.
- You must install a system with a nameplate capacity of 40 kW or less.
- The installer must submit system design specifications to Minnesota Power in order to calculate the incentive estimate.
- PV modules must come with a 20-year or greater manufacturer's performance warranty. All inverters must come with a minimum 10-year manufacturer's performance warranty. Installers must offer a minimum 2 year workmanship warranty.
- You must submit the final installation costs to Minnesota Power.
- Complete and submit the Renewable Energy Credit (REC) Contract once the installation is complete.
- Use a certified installer (NABCEP or UL certified).
- All production needs to be measured through the production meter before going through any other device.

### Please attach the following documents to this application:

- Complete interconnection application including all required attachments
- Shade analysis from Solar Pathfinder, SolMetric SunEye or equivalent site assessment tool
- Evidence of intent to complete installation within six months (i.e. signed purchase agreement)

### Sign Off Area:

By signing this application, you acknowledge that you meet the participation eligibility requirements listed above and that all required documents are attached to this application.

MP Customer Name (print):

MP Customer Signature:

Date:

### Send this completed & signed application and attachments to:

Minnesota Power  
Renewable Program  
30 West Superior Street  
Duluth, MN 55802-2093

Or send via email to [SolarProgram@mnpower.com](mailto:SolarProgram@mnpower.com)