

Solar*Rewards® Community® - Engineering Frequently Asked Questions

For Garden Operators

Minnesota

*The purpose of this document is to provide Garden Operators further documentation of engineering requirements for the Solar*Rewards Community program. Many elements of this document will come from Xcel Energy's Electric Rate Book, Section 9, which can be found [here](#).*

*Disclaimer: Xcel Energy's Frequently Asked Questions are intended to provide information to participants in the Solar*Rewards Community Program. Answers are subject to change. The customer and/or Garden Operator is responsible for verifying program rules. Changes to these FAQs are approved during Solar*Rewards Community Implementation Workgroup Meetings and are reflected in Meeting Minutes filed with the Minnesota Public Utilities Commission in Docket 13-867. If there is any conflict between the FAQ and the Tariff provisions, the Tariff provisions control.*

Updated 1/31/17

TABLE OF CONTENTS

1. [What documents are needed for engineering review?](#)
2. [What are the engineering review fees and how may they be submitted?](#)
3. [What are typical interconnection costs?](#)
4. [How long does engineering review take?](#)
5. [How does an applicant appeal a Co-Location and/or engineering decision?](#)
6. [What is a “Material Upgrade”?](#)
7. [What is ‘House Power’?](#)
8. [May a Solar Gardens be placed behind an existing service?](#)
9. [How should the metering be designed?](#)
10. [Where do external utility disconnect switches need to be placed?](#)
11. [Are any customer-owned materials allowed on the utility side of the point of common coupling?](#)
12. [What must appear on the Line Diagram?](#)
13. [What if my project impacts the transmission system?](#)
14. [How do I schedule a bi-weekly meeting?](#)
15. [Where can I find Standards for Electric Installation and Use for 2014?](#)
16. [Will Xcel Energy accept new inverter technologies?](#)
17. [What telemetry details are required for Solar*Rewards Community projects?](#)

*Disclaimer: Xcel Energy’s Frequently Asked Questions are intended to provide information to participants in the Solar*Rewards Community Program. Answers are subject to change. The customer and/or Garden Operator is responsible for verifying program rules. Changes to these FAQs are approved during Solar*Rewards Community Implementation Workgroup Meetings and are reflected in Meeting Minutes filed with the Minnesota Public Utilities Commission in Docket 13-867. If there is any conflict between the FAQ and the Tariff provisions, the Tariff provisions control.*

1. What documents are required for engineering review?

Xcel Energy requires (1) a one-line diagram, (2) site plan, and (3) complete Interconnection Application (sometimes referred to as IA)

Further information can be found on our [website](#).

2. What are the engineering review fees and how may they be submitted?

Interconnection Application and Engineering Study fees for Solar*Rewards Community Gardens are determined by system size and are as follows:

System Size	Application Fee
20kW and Under	\$100
20kW-250kW	\$1,000
250kW-500kW	\$3,000
500kW-1,000kW	\$2,000*

**Engineering study fees may apply; firm cost of estimate for study will be given at the time of preliminary review.*

Application fees need to be accompanied with an Interconnection Application Fee Form, which can be downloaded through the application portal in Salesforce, and mailed in check form to:

Xcel Energy
Solar*Rewards Community Program
P.O. Box 59
Minneapolis, MN 55440-0059

3. What are typical interconnection costs?

Range of Typical DG Interconnection Costs, as shown in section 10 tariff

DG Size Range	Limited Parallel	Extended Parallel
0 -40 kW	\$300 to \$10,000	\$300 to \$10,000
40 -250 kW	\$500 to \$15,000	\$500 to \$20,000
>250 – 1000 kW	\$2,000 to \$25,000	\$2,000 to \$150,000
>1 MW	\$5,000 to \$35,000	\$5,000 to \$1,000,000

Note: actual interconnection costs may fall outside of these ranges.

4. How long does engineering review take?

Engineering review typically takes 40 days on a best efforts basis, but no more than 50 business days as noted in our Section 9 Tariff, 2nd Revised Sheet No. 68.

*Disclaimer: Xcel Energy's Frequently Asked Questions are intended to provide information to participants in the Solar*Rewards Community Program. Answers are subject to change. The customer and/or Garden Operator is responsible for verifying program rules. Changes to these FAQs are approved during Solar*Rewards Community Implementation Workgroup Meetings and are reflected in Meeting Minutes filed with the Minnesota Public Utilities Commission in Docket 13-867. If there is any conflict between the FAQ and the Tariff provisions, the Tariff provisions control.*

5. How does an applicant appeal a Co-Location and/or engineering decision?

Appeals relating to Co-Location and Engineering can be referred to the Department of Commerce. Appeals are initiated through email to the Department of Commerce. Xcel Energy must be copied at SRCMN@xcelenergy.com.

6. What is a “Material Upgrade”?

Material Upgrades are defined by the Section 9 Tariff Original Sheet No. 68.4 -68.5 for co-located projects.

7. What details are required for grounding?

Xcel Energy requires grounding details (i.e. grounding transformer) including ratings. The study shall check for effective grounding for the generation system. Requirements can be found [here](#).

8. What is ‘House Power’?

The ‘House Power’ rule can be found in the Section 9 Tariff, Sheet 71. It states:

“House Power” shall mean the electricity needed to assist in the PV System’s generation, including system operation, performance monitoring and associated communications, except for energy directly required for the local control and safe operation of the PV System. It also means other electricity used by the Community Solar Garden, such as for perimeter lighting, a visitor’s center or any other structures or facilities at the Community Solar Garden Site. House power is all electrical usage between the main service meter and production meter.

More information can be found on tariff Sheets 74 & 75.

9. May a Solar Gardens be placed behind an existing service?

No. Each garden must have its own separate service.

10. How should the metering be designed?

Metering standards can be found in the [Blue Book](#); found:

The main service meter will be bidirectional; the production meter will be uni-directional.

11. Where do external utility disconnect switches need to be placed?

They must be visible, lockable, and readily accessible. Preferred location is within 10’ of metering, or an exception can be requested. Any exception must include permanent placard indicating location of all meters and utility AC safety disconnects, specifically clarifying main service meter and production meter associated with each individual garden.

*Disclaimer: Xcel Energy’s Frequently Asked Questions are intended to provide information to participants in the Solar*Rewards Community Program. Answers are subject to change. The customer and/or Garden Operator is responsible for verifying program rules. Changes to these FAQs are approved during Solar*Rewards Community Implementation Workgroup Meetings and are reflected in Meeting Minutes filed with the Minnesota Public Utilities Commission in Docket 13-867. If there is any conflict between the FAQ and the Tariff provisions, the Tariff provisions control.*

12. Are any customer owned materials allowed on the Utility side of the Point of Common Coupling?

No.

13. What must appear on the Line Diagram?

Please see applicable sample Line Diagrams on the Xcel Energy website under ***Information for Garden Operators***.

Please see the Section 10 Tariff Info Packet “cover letter” for further details on secondary service.

14. What if my project impacts the transmission system?

Xcel Energy will refer your project to MISO for further review under the following circumstances:

- If the interconnection affects the transmission system, which is currently defined by tariff as power being exported onto the bulk system. Xcel Energy transmission engineers will review the proposal and contact MISO and the applicant of the potential transmission impact.
- MISO will assess whether more detailed study is required and, whether any upgrades are needed to accommodate the additional distributed generation.
- If MISO determines that upgrades are needed, the applicant will be given the option of paying for these upgrades or reducing the size of their project to avoid the need for the upgrades.

15. Where can I find Standards for Electric Installation and Use?

Information on standards can be found [here](#). A Professional Engineer stamp is not needed on the engineering documents for Xcel Energy but local jurisdiction might require it.

16. Will Xcel Energy accept new inverter technology?

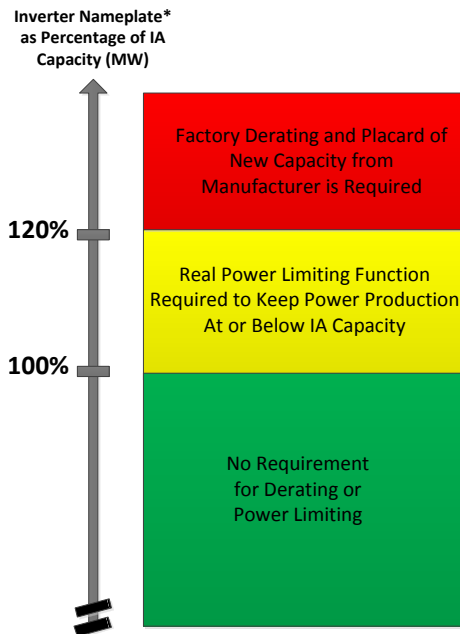
Xcel Energy has noted several inverters proposed for projects that may not be capable of operating at the full power factor range of 90% leading to 90% lagging at the inverter terminals, in accordance with the Interconnection Agreement. It is the developer’s responsibility to verify the inverters utilized are compliant. We have also received requests to use inverters that would be de-rated to meet the required program standards.

If the inverter has an apparent power (MVA) or real power (MW) rating above the capacity noted in the interconnection agreement (IA), up to 120% of the approved capacity, the inverter shall use a real power limiting function to assure that the IA real power capacity is never exceeded.

*Disclaimer: Xcel Energy’s Frequently Asked Questions are intended to provide information to participants in the Solar*Rewards Community Program. Answers are subject to change. The customer and/or Garden Operator is responsible for verifying program rules. Changes to these FAQs are approved during Solar*Rewards Community Implementation Workgroup Meetings and are reflected in Meeting Minutes filed with the Minnesota Public Utilities Commission in Docket 13-867. If there is any conflict between the FAQ and the Tariff provisions, the Tariff provisions control.*

If the inverter is overrated by more than 20%, a different inverter may be required that better matches the facility IA capacity. We can accept a factory derating of the proposed inverter, which is not accessible to the field personnel, with a factory installed placard with the reduced rating. Derating by other means will not be accepted and the facility will be reviewed as capable of the full, original inverter rating.

We will monitor compliance of the IA capacity by measured values from the generator production meter. Violation of the capacity of an IA is viewed as a serious issue due potential impacts to reliability and power quality. For these reasons, operational generation systems that do not comply with this policy may be disconnected in an expedited manner after initial notice is given.



* If the inverter has MW and MVA nameplate capacities, the MW value should be used for this determination. If only a MVA rating is present, that should be used.

17. What telemetry details are required for Solar*Rewards Community projects?

Telemetry is required for all community solar garden projects and is often determined by site. The Company will allow a cellular 4G interconnection telemetry enclosure requiring one enclosure (sized 20" by 20" by 12") to hold all the details and security for telemetry equipment.

The cost estimate for this solution is \$20,000 plus the inclusion of a monthly fee for the cellular connection.

Further information can be found on our [website](#).

*Disclaimer: Xcel Energy's Frequently Asked Questions are intended to provide information to participants in the Solar*Rewards Community Program. Answers are subject to change. The customer and/or Garden Operator is responsible for verifying program rules. Changes to these FAQs are approved during Solar*Rewards Community Implementation Workgroup Meetings and are reflected in Meeting Minutes filed with the Minnesota Public Utilities Commission in Docket 13-867. If there is any conflict between the FAQ and the Tariff provisions, the Tariff provisions control.*