

Community Solar Gardens



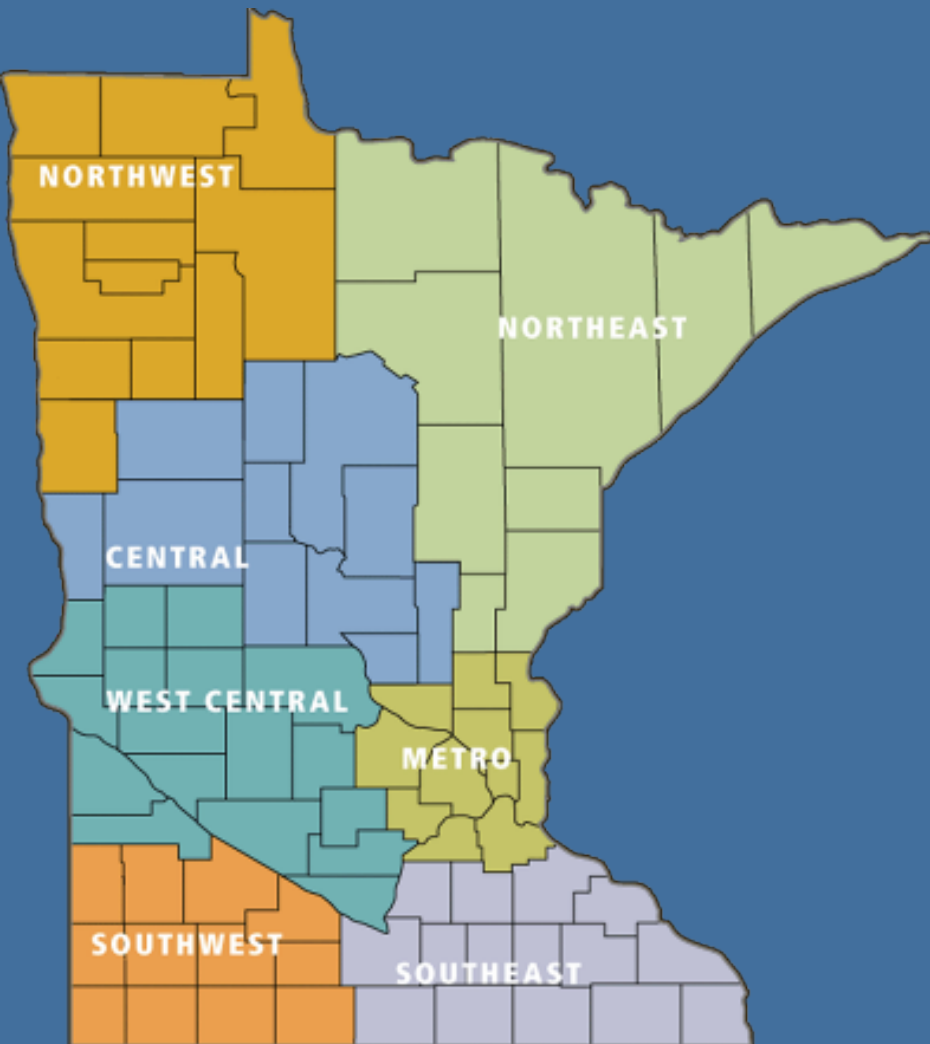
Lissa Pawlisch

Clean Energy Resource Teams (CERTs)

UM Extension, Regional Sustainable Development Partnerships



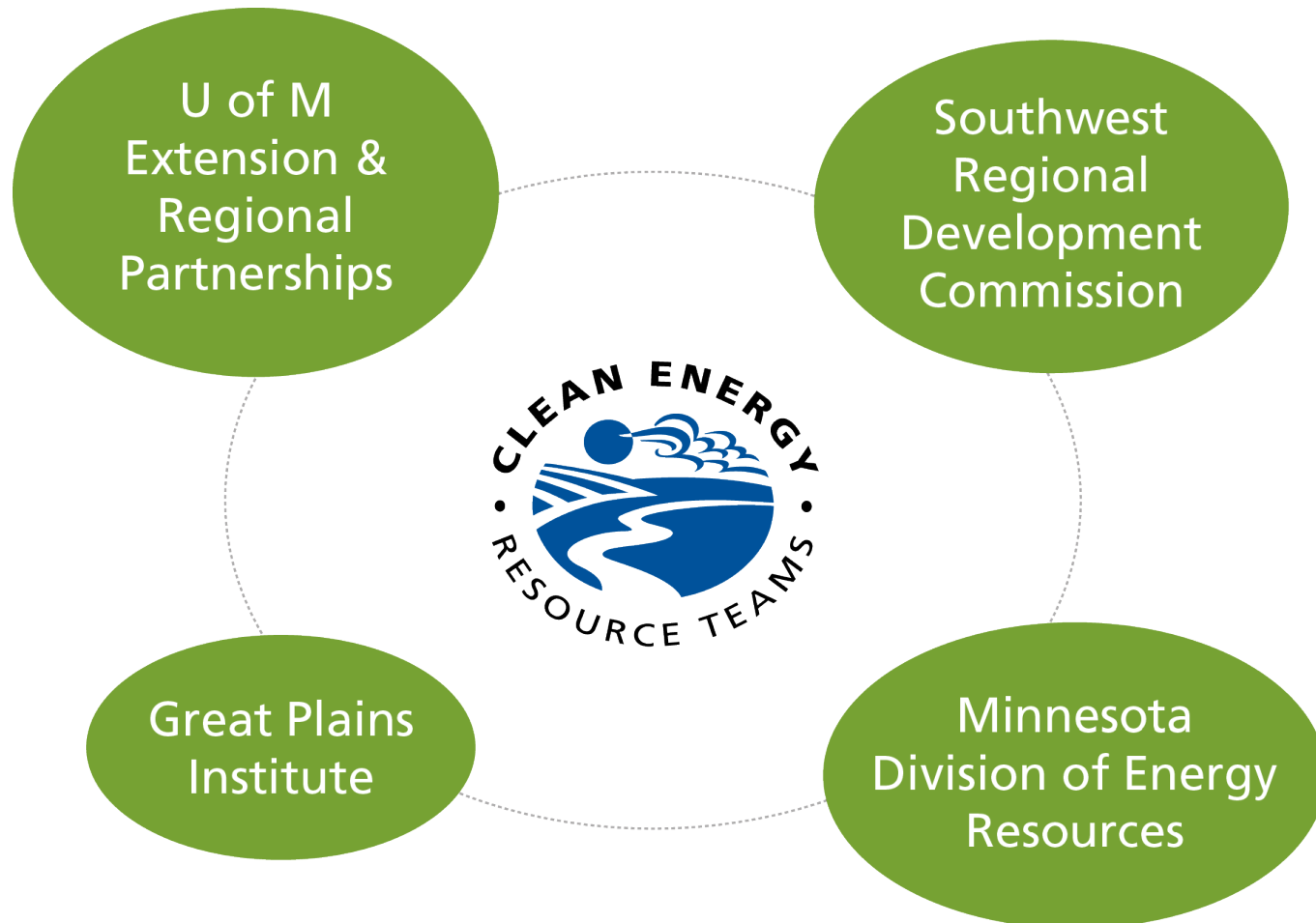
CERTs Mission



Connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects



Partnership



Community Shared Solar: Cliff Notes



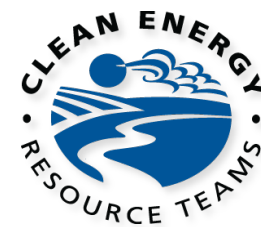
Point to
yours!



Why Community Shared Solar?



Photo from: http://www.greenbeltsolar.com/solar_shading_article.htm Photo from: <http://www.forrent.com/apartment-community-profile/1019896.php>, Rosedale Estates II



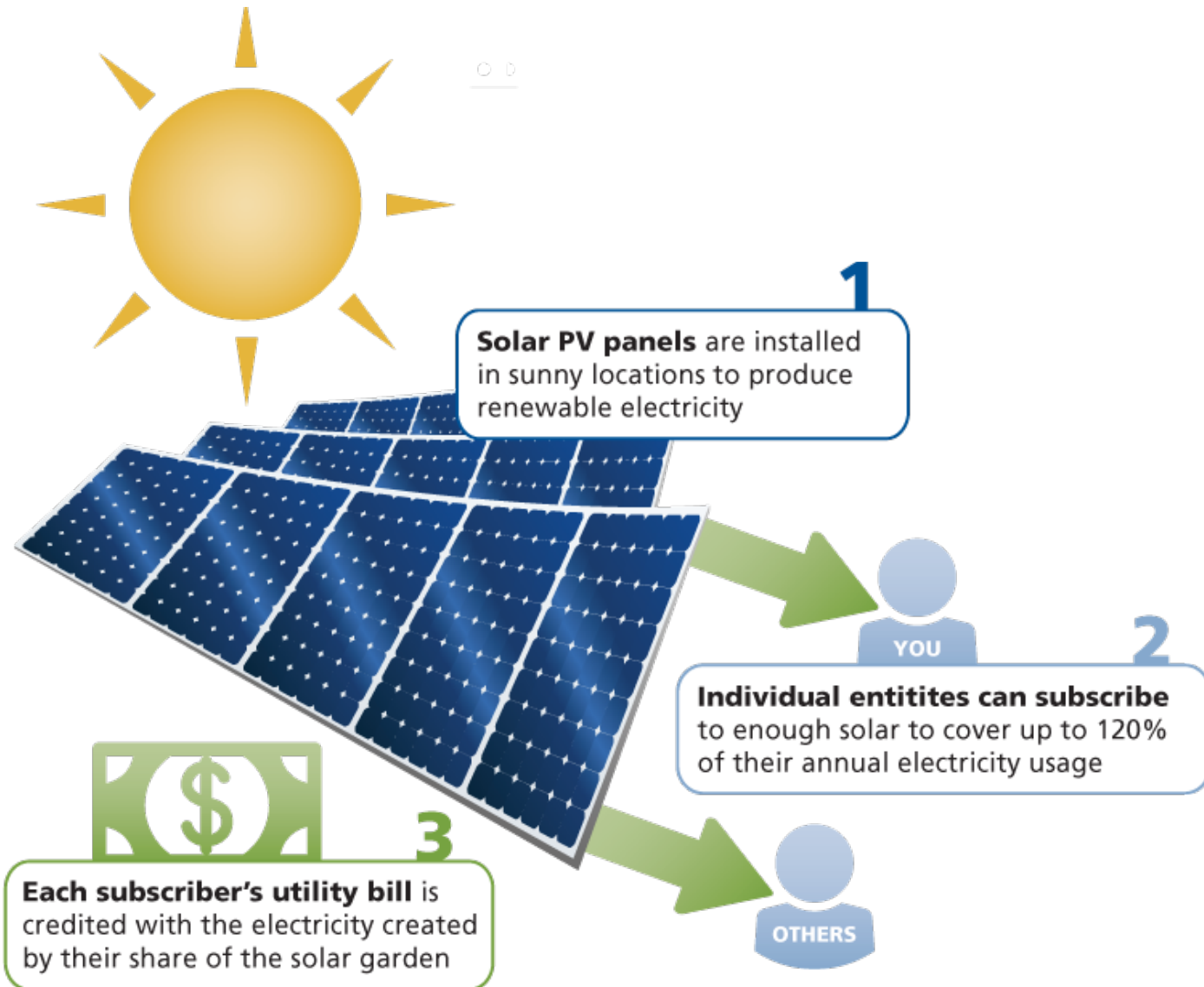
Drivers behind CSGs

- Minnesota's 2013 Policy
 - Xcel's Community Solar Garden requirement
 - 1.5 % Solar Energy Standard
- Federal Investment tax credits –
 - 30% through 2016;
 - Falls to 10% in 2017
- Customer/member interest
- First mover advantage in interconnection
- Joint solicitation potential with MetCouncil

Community Solar Gardens (CSG)



Definition:
Centrally-located solar PV systems that provide electricity to participating subscribers



By the Numbers



- 1 garden
- Max garden size = 1 MW
- Minimum 5 subscribers per garden
- No subscriber > 40% of garden output
- Cover up to 120% of annual elec. usage



SUBSCRIBER



SUBSCRIBER



SUBSCRIBER

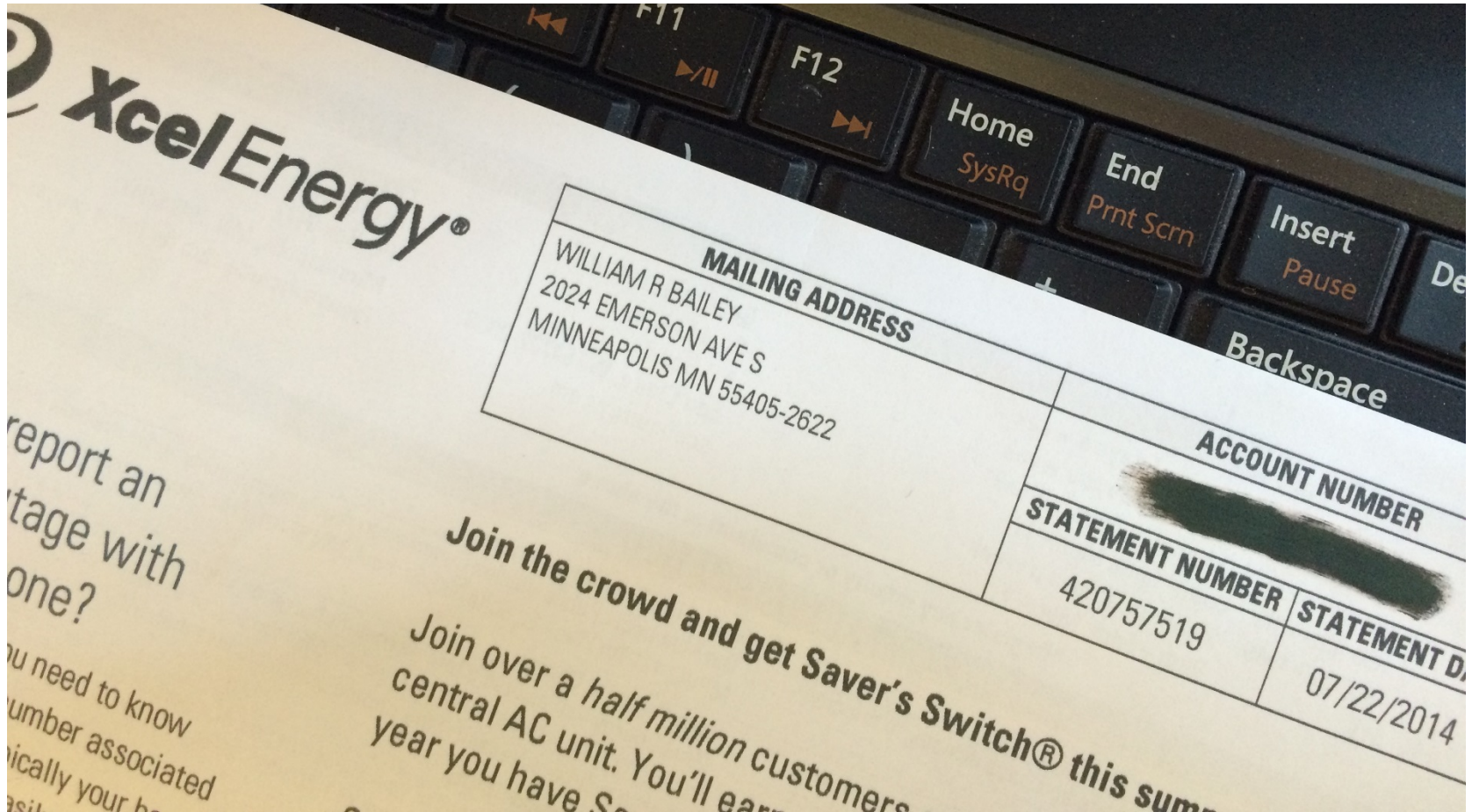


SUBSCRIBER



SUBSCRIBER

Only Prerequisite Is...



Who are the players?



SUBSCRIBERS: individuals or groups who get solar power



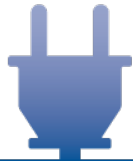
DEVELOPER: primary group organizing the solar garden



HOST SITE: location where solar garden is installed



FINANCE: sources of financing for the project



UTILITY: electricity provider where solar garden is located



SITE ASSESSOR: expert that studies solar garden location



INSTALLER: expert that installs the solar garden



OUTREACH PARTNERS: groups that find subscribers



SUBSCRIBER

This can be you!

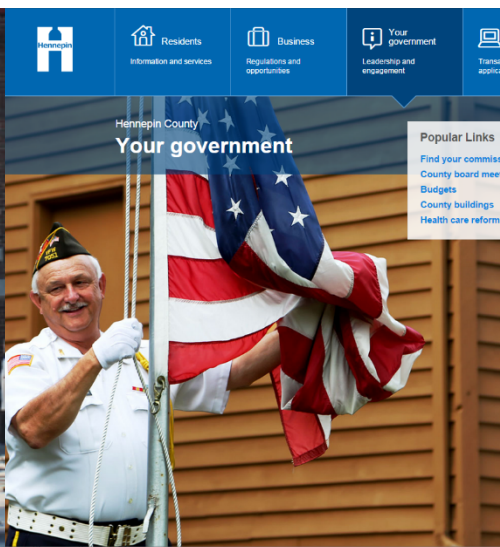


Photo credits: Henn Co. Webs



HOST SITE

Host Site Possibilities

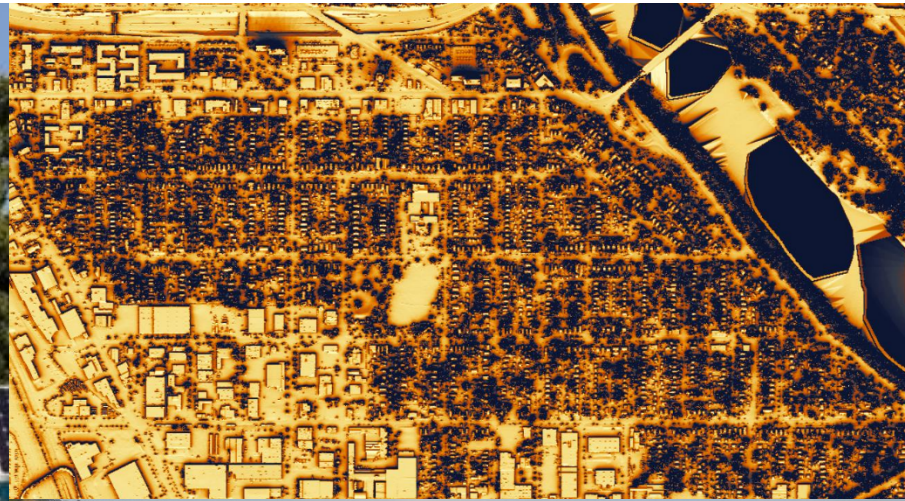
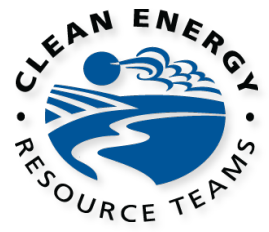


Photo credit: Wright Hennepin Coop



FINANCE

Funding for Projects



Current projects



Solar Gardens by Utility Territory & CERT region

Connexus Energy (current) – Metro

Kandiyohi Power Coop (current) – WC

Lake Region Electric Cooperative (current) – Central

McLeod Cooperative Power (current) – WC

Runestone Electric Association (current) – WC

Stearns Electric Association (current) – Central

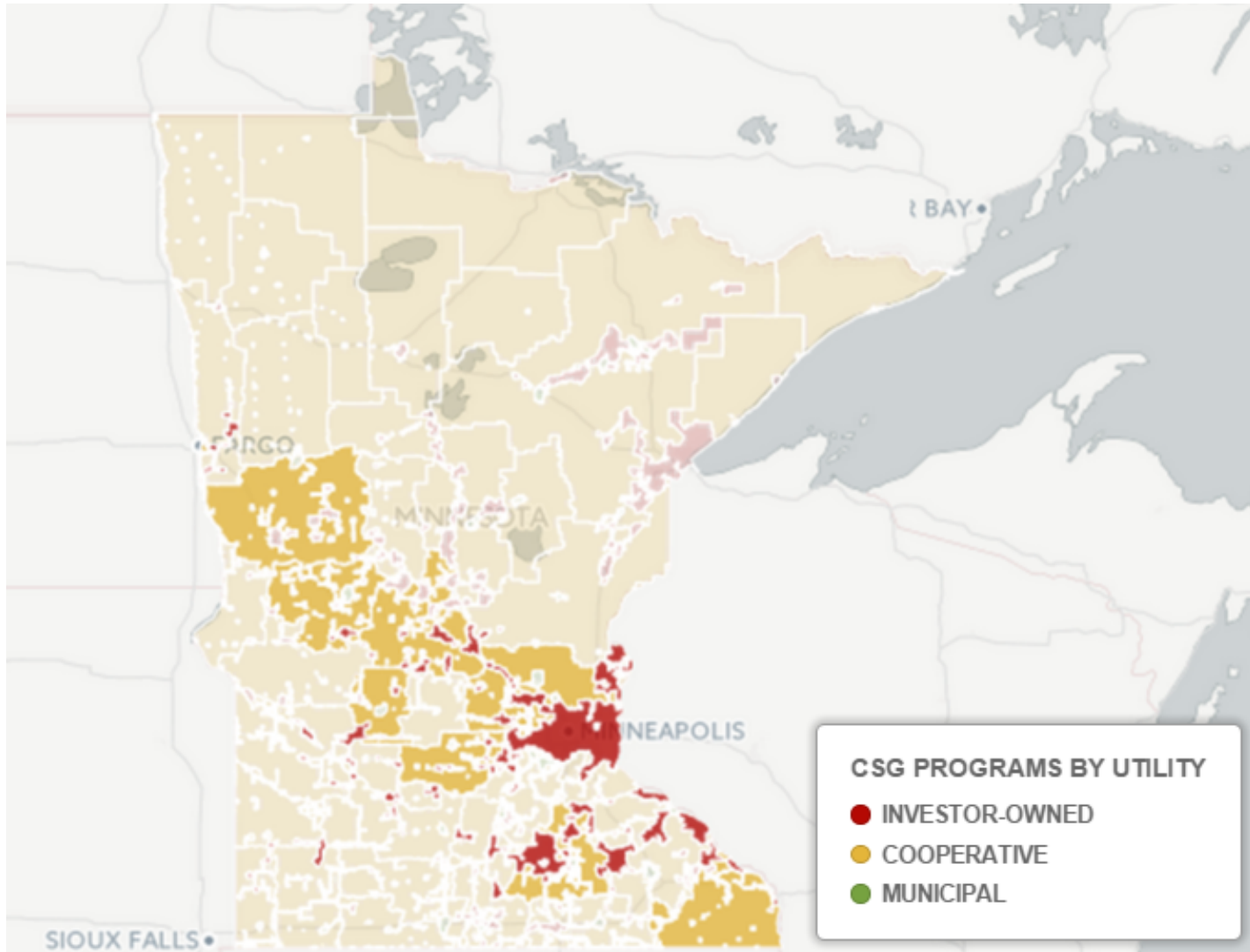
Steele-Waseca Cooperative Electric (current) – SE

Tri-County Electric Cooperative (current) – SE

Wright-Hennepin Cooperative Electric Association (current) – Metro

Xcel Energy (current) – Metro, SE, SW, WC

Current projects – map view



Cooperatives Up & Running



This is a screenshot of a Google Maps listing for "WH Solar Clean Energy Collective". The listing includes a date stamp for "November 18 2014", a photograph of a solar farm, and the address "6800 Electric Dr. Rockford, Minnesota 55373". A text block describes the project as a Clean Energy Collective developed by Wright-Hennepin Cooperative Electric Association, allowing users to purchase solar output without installing equipment. A "More Information" link is visible at the bottom of the text block.

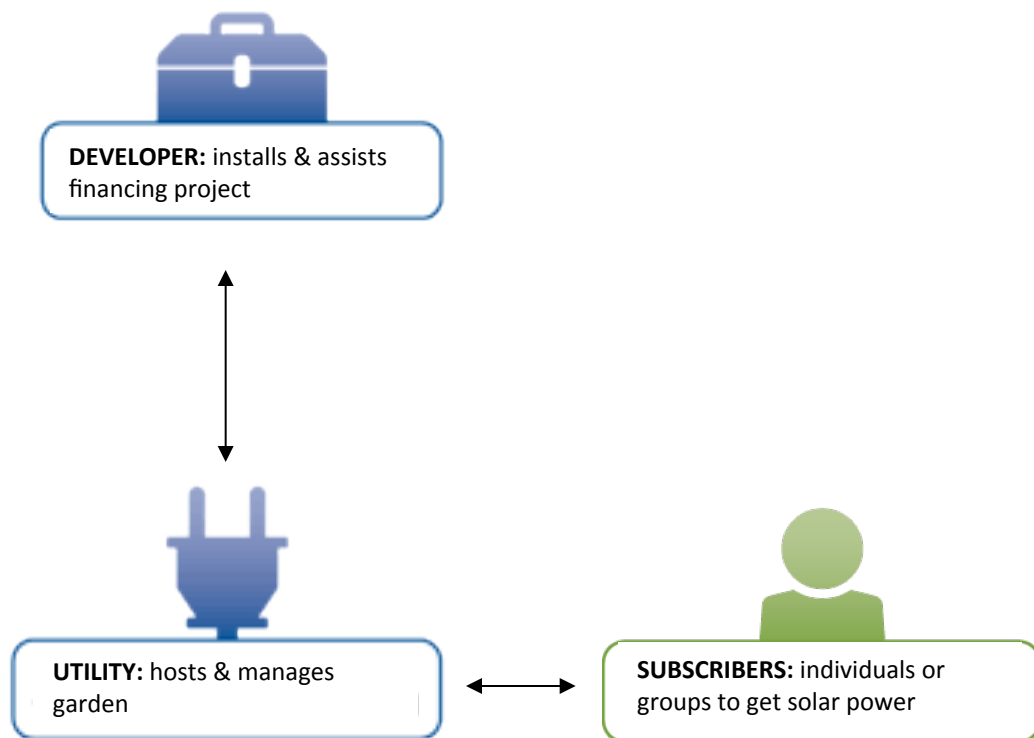


Photo credits: Connexus Energy: <https://www.connexusenergy.com/residential/programs-rates/solarwise/>, Wright Hennepin Cooperative: <http://www.whe.org/for-my-home/products-services/wh-solar-community.html>



How does it work?

Cooperative or Municipal Utility Programs



Utility can contract with developer to set up the garden. Utility operates garden and handles all aspects of relationship with subscribers.

Lake Region Electric Coop



A Cooperative Solar Solution

"Bringing renewable energy to rural Minnesota – just like we brought electricity to the countryside 75 years ago"



Lake Region Electric Cooperative
Tim Thompson, CEO

Lake Region Electric Coop



[Business Resources](#) [View/Pay my Bill](#) [Your Cooperative](#) [Customer Service Center](#)



LAKE REGION COMMUNITY SOLAR
An Easy, Affordable Way to Own Solar

Lake Region Community Solar
33,187W
Generated Today: 158.616 kWh
Month to Date: 3230.27 kWh
Year to Date: 23.688 MWh

Lake Region Community Solar II Pricing

Panel Options	Average Annual Production	Price	<i>EASY-PAY</i> Option
1 Half Panel Output (205 watts)	294 kWh	\$700	Just \$20/mo for 35 months
1 Full Panel Output (410 watts)	584 kWh	\$1,400	Just \$40/mo for 35 months

*You can buy the output of as little as one half of a panel or as much as 10 panels.
The maximum output you can purchase is limited by your average annual usage or 10 panels, whichever is less.*

Kandiyohi Power Cooperative



Kandiyohi Power Community Solar

Kandiyohi Power is offering its members an affordable new way to purchase renewable solar energy.

With KPC's Community Solar, you can purchase solar power:

- Without installing equipment on your property
- Without worrying about maintaining the system
- For **\$1,250** per 1 full panel output

Lock in your future price of power for a portion of your electric needs.

- Your monthly electric bill is reduced by the number of kWh's that the panel(s) produce and the bill credits are priced at the current KPC retail rate. If KPC's rates rise, so do the solar bill credits.

Several pricing options are available, including:

- \$0 down, 24 month loan
- Full up-front purchase

You get all the benefits of owning solar panels, but with none of the hassle. Choose as few as one, or as many panels as you need to power your entire home.

For more information see our [FAQ's](#) page or call our office at (320) 796-1155.

Ready to buy your panel(s) and start receiving bill credits?

- Option 1: Print the [Customer Agreement Form](#), complete the form, and return it to Kandiyohi Power Cooperative with payment. Phone payment also accepted.
- Option 2: Stop by to complete a Customer Agreement Form and make payment.




[Frequently Asked Questions](#)

[How Solar Power Works](#)

[Customer Agreement Form](#)



Kandiyohi Power Cooperative

Your Touchstone Energy® Partner 



Source: www.kpcoop.com/

Steele-Waseca Coop Electric

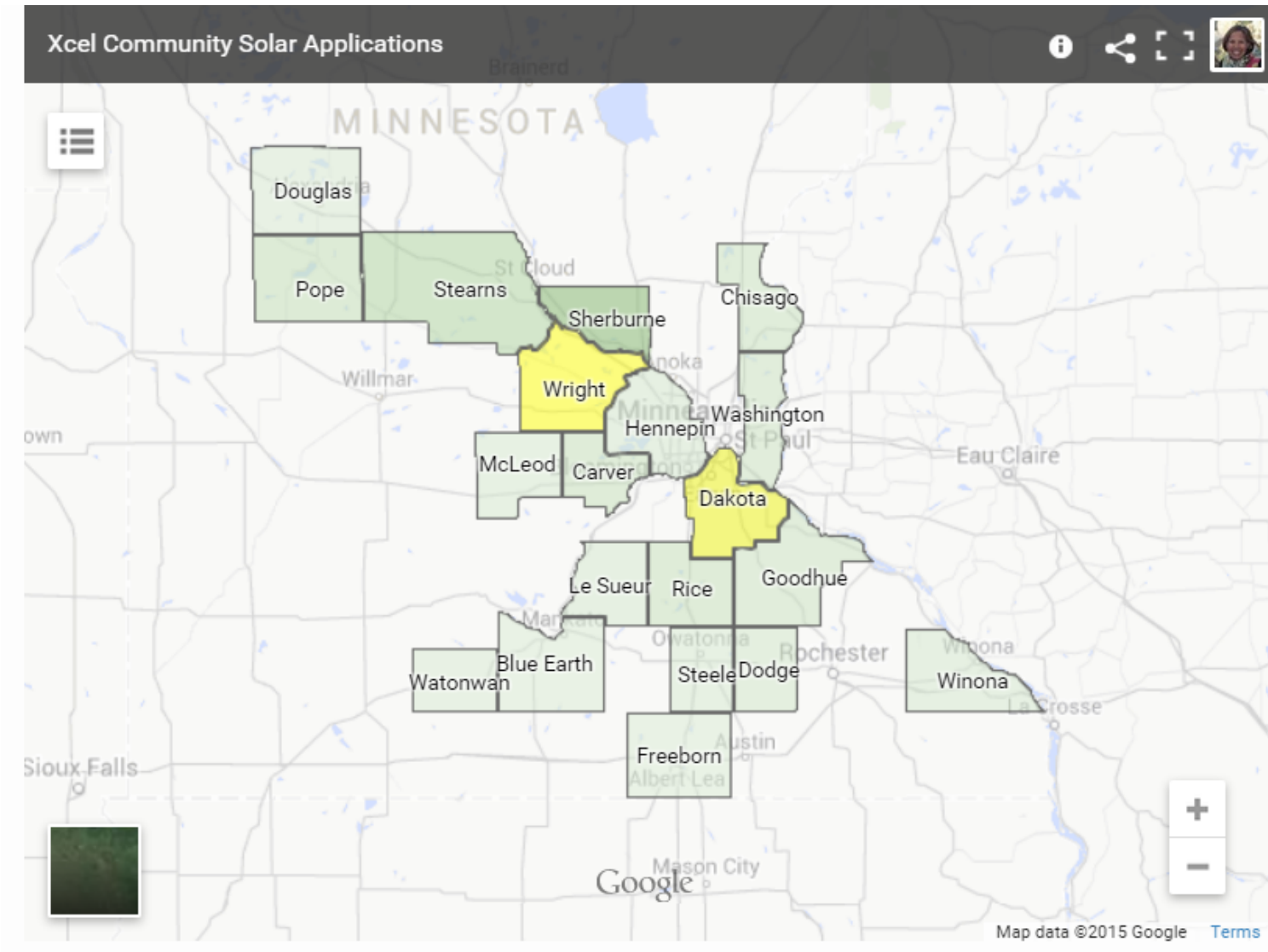


\$170 for one-410 watt panel;
participate in 16-hour Storage Water Heater program

\$1,225/panel w/o the water heater

Photo credits: www.swce.coop/ and http://ep.yimg.com/ca//yhst-13738724167386_2270_103566369

Xcel Projects in the Queue



Xcel Projects in the Queue



List of Garden Operators by County

County	Submitted Applications	Applications Reviewed for Completeness*	Approved Applications**	Sum of Ratec AC Power Output (kW)
Anoka	7		0	6,001
Blue Earth	22		0	22,000
Carver	26	14	0	25,990
Chisago	14	10	0	13,987
Dakota	159	121	0	157,377
Dodge	13	7	0	12,888
Douglas	2	1	0	1,900
Freeborn	1	1	0	950
Goodhue	31	7	0	29,720
Hennepin	39	3	0	32,087
Le Sueur	12	2	0	10,836
McLeod	3		0	3,000
Nicollet	10		0	10,000
Olmsted	3		0	3,000
Ouray	2		0	2,000
Pope	10	7	0	9,561
Ramsey	2		0	126
Redwood	3		0	3,000
Rice	42	12	0	41,996
Scott	24		0	24,000
Sherburne	72	60	0	71,840
Stearns	20	20	0	20,766

Grand Total proposed
(as of 6/18/2015) =
763 MW

Projects in 28 of
Minnesota's 87
counties.

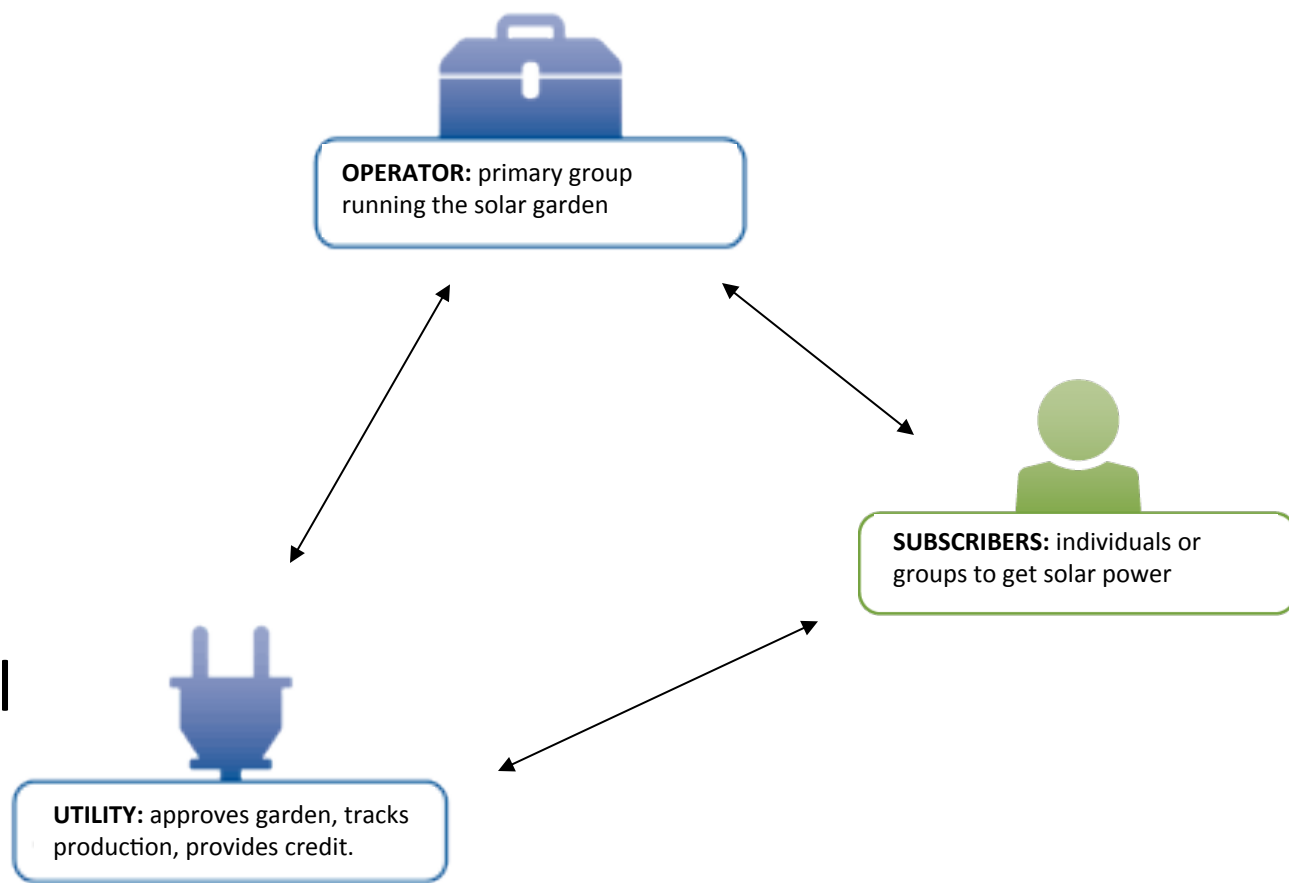
Source: http://www.xcelenergy.com/Energy_Solutions/Business_Solutions/Renewable_Solutions/SolarRewards_Community-MN



How does it work?

3rd Party Operator develops & runs garden. Maintains relationship w/ subscriber for payment. Utility provides subscriber w/ bill credit.

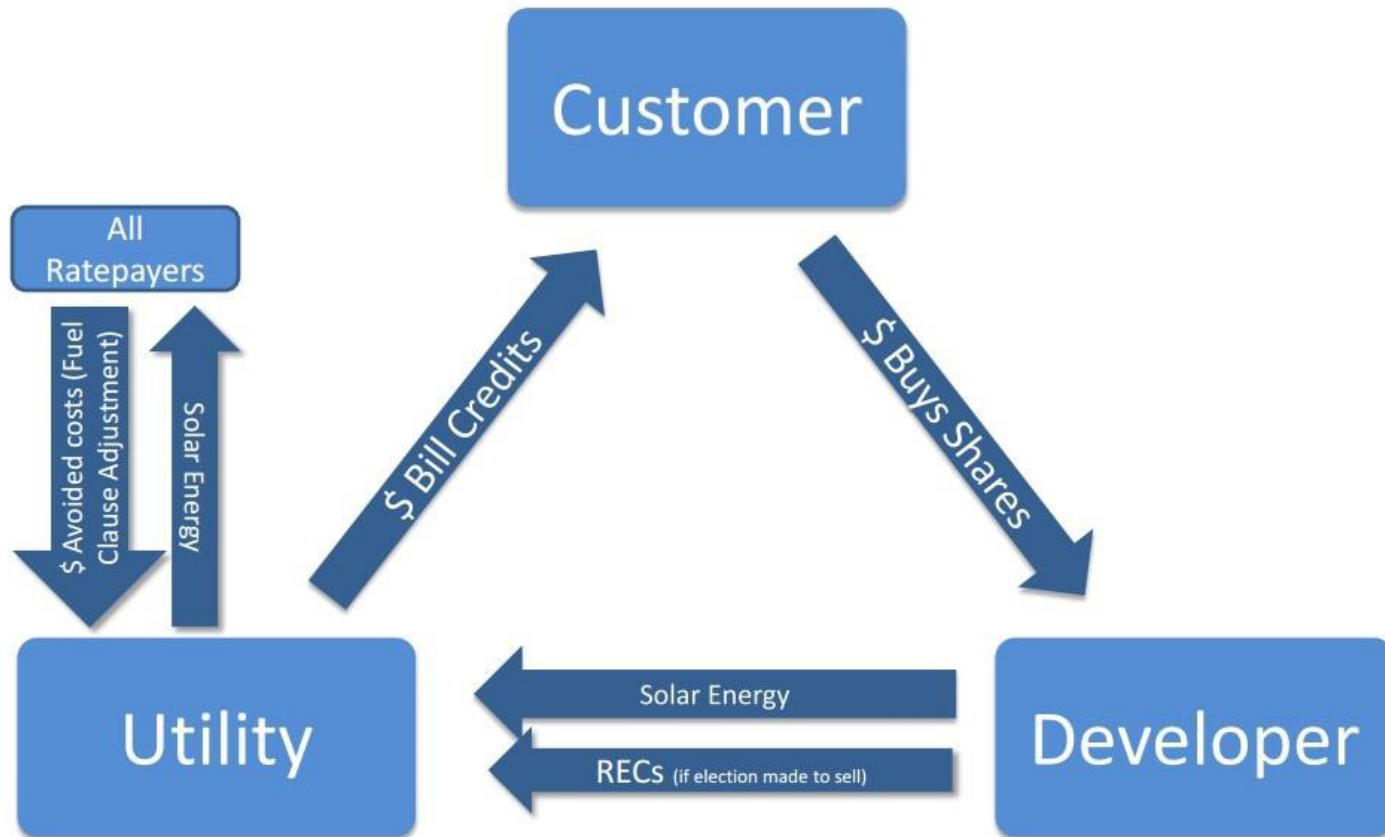
Xcel Energy Program



How does it work?



Solar Rewards Community MN Relationship Flow



Payment Rates for Xcel



2015 Applicable Retail Rates + Renewable Energy Credit (REC) Payments (\$/kWh)			
REC Payment	Residential Service	Small General Service	General Service/ Demand Metered
None (Applicable Retail Rate)	0.12743	0.12431	0.09914
0.02 (> 250 kW gardens)	0.14743	0.14431	0.11914
0.03 (\leq 250 kW gardens)	0.15743	0.15431	0.12914

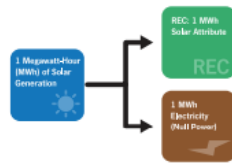
RECs in brief



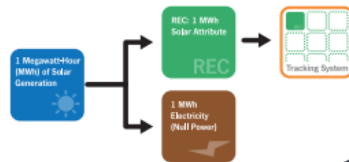
REC Best Practices and Claims

For every megawatt-hour of clean, renewable electricity generation, a renewable energy certificate (REC) is created. A REC embodies all of the environmental attributes of the generation and can be tracked and traded separately from the underlying electricity.

How RECs Work

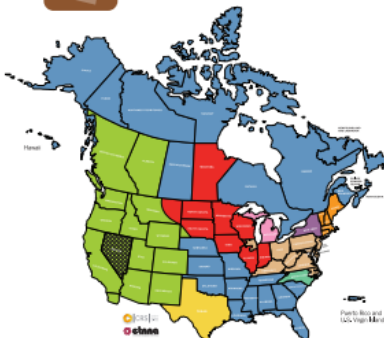


Electronic tracking systems are a useful tool for tracking ownership of RECs:



Renewable Energy Certificate Tracking Systems in North America

- SROPT: Electric Reliability Council of Texas
- MIRECS: Michigan Renewable Energy Certification System
- AMETS: The Midwest Renewable Energy Tracking System
- NAR: North American Renewable Registry
- NCARTS: North Carolina Renewable Energy Tracking System
- NEPOOL-RTS: New England Power Pool Generation Information System
- MIRECS: Nevada Tracks Renewable Energy Credits
- NYGATS: New York Generation Attribute Tracking System (in development)
- PNM-GATE: PNM's Generation Attribute Tracking System
- WREGS: WECC's Western Renewable Energy Generation & Information System



Example Claims for a Solar Panel Owner or Leaseholder

- Example 1**

Keeps and retires RECs and is the only party to make claims about using the renewable energy.
Claim: "We use renewable energy."
- Example 2**

Does not own the RECs and makes public claims about using renewable energy.
Claim: "We use solar power."
DOUBLE CLAIM
- Example 3**

Keeps the RECs but a third party (such as a utility) makes a public claim about delivering the renewable energy to other customers, such as through a renewable portfolio standard.
Utility Claim: "All solar installations in our territory contribute to our state requirements to deliver renewable energy to consumers."
DOUBLE CLAIM
- Example 4**

Does not own the RECs but makes clear, accurate, and prominent statements about who owns the RECs.
Claim: "We host a solar PV system, and sell the renewable energy to other parties."

Payment Models



Pay Up Front / Pre-Pay Model

Subscriber purchases a subscription for a onetime fee that covers the life of



Lump sum
subscription paid
up front



Bill credit appears monthly
over 25 year project timeline.

Payment Models (cont.)

Pay As You Go

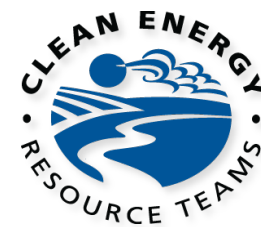
Subscriber pays in installments over time.

Subscriber receives bill credit for their share of output on their energy bill the following month.



Two separate monthly transactions for 25 year project timeline:

- Bill credit
- Subscription payment



Public Utilities Commission

Docket 13-867 – Xcel Energy Community Solar Garden docket

- 309 Responses as of May 29, 2015
- Hearing slated for June 23rd and 25th, 2015
- Key issue: co-location of projects totaling > 1 MW

Public Utilities Commission

State of Minnesota



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Calendar



Consumers



Electricity



Energy Facilities



Natural Gas



Telecom

CERTs Resources



COMMUNITY SOLAR GARDEN SUBSCRIBER QUESTIONS

This document begins by briefly introducing Community Solar Gardens and what you should know as a potential subscriber. It then continues with questions that you can ask operators as you move forward. Let's go!



Community Solar Garden Subscriber Disclosure Checklist

The Public Utilities Commission issued an Order on April 7, 2014 on Xcel Energy's Community Solar Garden Public Utilities Docket No. E002/M-13-867. The Order, among other points, requires Community Solar Garden operators to disclose to prospective subscribers the project information listed below. Subscribers and Xcel Energy's service territory can contact the Community Solar Garden operator to obtain more information as part of any Community Solar Garden project. All prospective Community Solar Garden subscribers should use this as a tool to review subscriber agreements.

Check to indicate they have reviewed this item. On the far right, operators and/or subscribers should indicate page numbers in the subscriber agreement the item is addressed.

Item	Page #:
Terms of the Subscription including: (i.e., one-time) charges	_____
Terms of service	_____
Costs may increase during the course of service, and if so, how much is provided to the Subscriber	_____
Subscriber is required to sign a term contract	_____
Penalty for early termination	_____
Community Solar Garden may charge to the Subscriber	_____
Shipping and any associated costs	_____
Community Solar Garden Operator and the Utility will work with each other	_____
Responsibility of the Community Solar Garden Operator	_____
Notice by what method will notice to Subscribers be issued if the garden is out of service, including notice of estimated	_____
Upgrades and repairs will be under direct supervision of the operator and that maintenance will be performed including the recommendations of the operator	_____
Community Solar Garden Operator is solely responsible for notifying the Subscriber about the accuracy of the	_____
Community Solar Garden Operator is responsible for resolving any disputes with the Subscriber and is required to determine the amount of the Bill Credit	_____

Q What's the point of this document?

To assist potential subscribers in their decision making about which project might be right, CERTs and the Minnesota Department of Commerce – Division of Energy Resources have developed a document outlining the basics any Subscriber Agreement should address and highlighting the questions a potential subscriber may ask up front to ensure a clear understanding of their subscription and its terms.

Q What should you know before subscribing?

Before subscribing to any particular project, all subscribers should ask for and review the operator's subscriber agreement. All subscriber agreements should address elements included in the Community Solar Garden Subscriber Disclosure Checklist (see link at left). Additional questions that subscribers can ask are on the pages to come.

GET THE CHECKLIST

See what Community Solar Subscriber Agreements should include by downloading our subscriber checklist at MnCERTs.org/CSG-Disclosure

Next pages: Important subscriber questions & info



COMMUNITY SOLAR DEVELOPER & OPERATOR QUESTIONS

Community Solar Gardens (also called Community Solar and Community-Shared Solar) are centrally-located solar PV systems that provide electricity to multiple subscribers. They are a new and exciting way for people in Minnesota to benefit from solar photovoltaic (PV) systems without having to own their own stand-alone project.

QUESTIONS COMMUNITIES SHOULD ASK

- 1. How long have you been in business? How many installations have you done? Do you have a strategic advantage in this new Minnesota market?
- 2. How do you contact your strategic advantage in this new Minnesota market?
- 3. How do you comply with local, state, and federal laws and regulations, including tax, insurance, finance, install, operate, and maintain the system? Do you have a set of policies for these tasks? Do you plan to do them yourself?
- 4. How do you respond to an RFP with the opportunity for local contractors to be involved? Do you have a set of policies for performing the work NABCEP certified?
- 5. How do you plan or a pay-as-you-go plan (or a combination)?
- 6. How do you handle long-term subscription? Penalty for early termination?
- 7. How do you see when a subscriber might be asked to pay additional charges? How do you engage with your model?
- 8. How do you engage lower income customers in your projects? Do you have a plan for less than 10 subscribers?
- 9. How do you discuss the garden's financial health and future? Will there be an annual report to subscribers and/or the community? If so, what will be included in the report to subscribers and activities? Voting rights of the subscribers?
- 10. How do you ensure that the project will be intact for the duration of the subscription? What happens if anything happens to your company?





CERTs Resources

1. The Basics

Just getting started? This is the place to begin with key resources.

- What are they?
- Guide to CSGs
- Workshop video

2. Your Role

Walk through your options for getting involved.

- What are your goals?
- What roles suit you?
- Download Questionnaire

3. Finer Details

Dig a little deeper into community solar gardens.

- Frequently Asked Questions
- Guidance from Xcel Energy
- Renewable Energy Credits

4. Developers

Find developers, and ask them the right questions at the right time.

- Lists of questions & tips
- Find CSG developers
- Evaluating financials

5. Ready to Act

Steps you can take to move forward with community solar.

- Talking to council & community
- RFP examples
- Hosting agreements

6. Share Stories

We want to share your experience with other local governments!

- Blog posts
- Case studies
- Media outreach

CERTs: Minnesotans Building a Clean Energy Future



QUESTIONS?

<http://SolarGardens.MnCERTs.org>

