



HOW MINNESOTA IS SUPPORTING COMMUNITY BASED RENEWABLES

CASE STUDY I MINNESOTA'S COMMUNITY SOLAR GARDENS

This case study shows how the State of Minnesota is supporting the expansion of solar power through Community Solar Gardens that provide electricity to participating subscribers. The case study is part of the **Energy Transition Platform**, a global initiative supporting highly industrialized, carbon-intensive state and regional governments in developing and implementing innovative clean energy policies to accelerate the low carbon transition.

The partner regions of the Energy Transition Platform – Alberta, the Basque Country, California, Hauts-de-France, Lombardy, Minnesota, North Rhine-Westphalia, Silesia, South Australia, Upper Austria and Wales – come together to learn from their global peers, build strong partnerships and to jointly overcome barriers to the adoption of clean energy models. The Energy Transition Platform is part of the **States & Regions Policy Innovation program** and was launched by The Climate Group, alongside the initiative's lead government, North Rhine-Westphalia and Stiftung Mercator in early 2016.



“SOLAR DELIVERS POSITIVE RESULTS FOR BOTH OUR ENVIRONMENT AND OUR ECONOMY, REDUCING OUR DEPENDENCE ON POLLUTING FOSSIL FUELS IMPORTED FROM OUTSIDE THE STATE. THIS CLEAN ENERGY OPPORTUNITY IS NOW RISING FAST FROM THE HORIZON, AND THE CLASSIC BEATLES SONG SAYS IT BEST: HERE COMES THE SUN.”

- Mike Rothman, Minnesota Commerce Commissioner

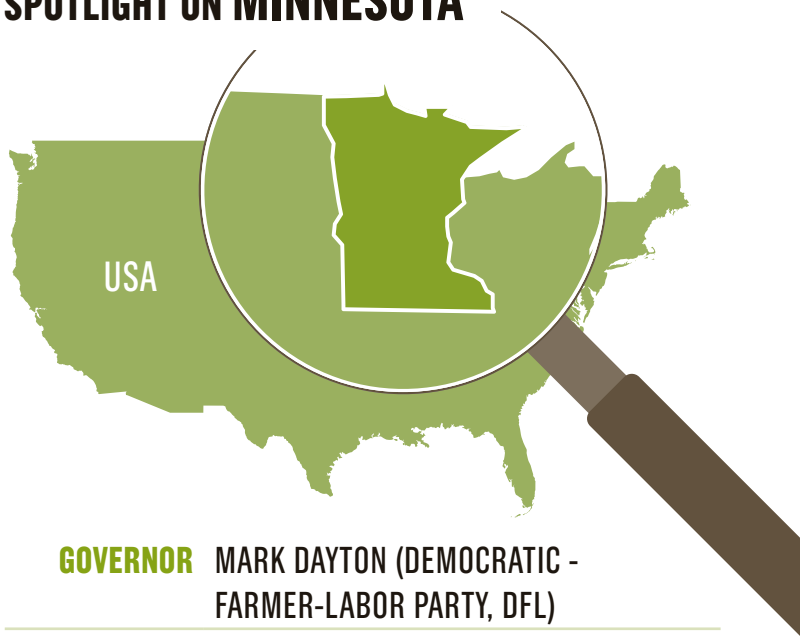
JUMP-STARTING SOLAR DEVELOPMENT THROUGH COMMUNITY INVOLVEMENT

Minnesota has seen development of renewables at all scales – from small rooftop solar systems and wind installations of under 40kW, to utility-scale wind and solar farms. Interest in ownership of small renewable systems by homeowners and farmers has been especially strong, bolstered by various government incentives targeted to this ownership class. One example is support for community based renewables, as this is an effective way to make the energy transition more inclusive, as well as to increase public support for renewable energy.

At least twelve states in the US have dedicated policies and programs incentivizing shared renewables. Four states in particular are expected to install the majority of community solar in the next couple of years: California, Colorado, Massachusetts and Minnesota.¹ Minnesota is a prime example for other states with favorable solar conditions that want to jump-start their solar markets, including those states that haven't had much exposure to solar energy development.

In an online Peer Forum of our Energy Transition Platform in July 2016, Bill Grant, Deputy Commissioner of Division of Energy Resources from Minnesota State presented their model for Community Solar Gardens, as a way of supporting community-based renewables.

SPOTLIGHT ON MINNESOTA



GOVERNOR MARK DAYTON (DEMOCRATIC - FARMER-LABOR PARTY, DFL)

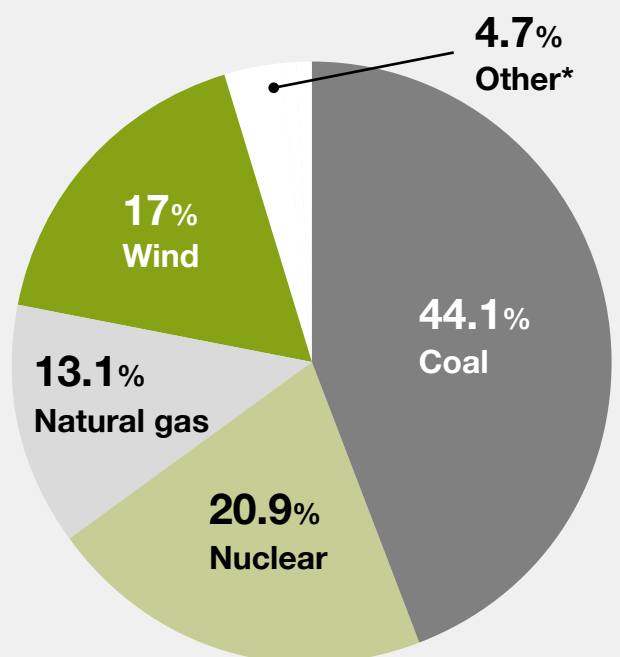
ASSEMBLY COMPOSITION DFL – SENATE MAJORITY PARTY | R – HOUSE MAJORITY PARTY

POPULATION 5.49 MILLION (2015)

GDP US\$312 BILLION (2014)

SPECIFIC FEATURES “Land of 10,000 Lakes”, the remainder being prairies now being used for agriculture. Strong civic society. Economic hub with 18 Fortune 500 companies

ELECTRICITY GENERATION MIX (2015)²



* 3.1% biomass, 0.9% hydroelectric, 0.7% other

¹ <http://www.seia.org/policy/distributed-solar/shared-renewablescommunity-solar>

² EIA, 2015 Net Generation by State by Type of Producer by Energy Source

COMMUNITY SOLAR GARDENS: MINNESOTA HAS IMPLEMENTED A LEGISLATION MAKING IT EASIER FOR CONSUMERS TO ACCESS SOLAR ENERGY, WHEREBY UTILITIES PROVIDE AN ON-BILL CREDIT FOR CUSTOMERS THAT SUBSCRIBE TO COMMUNITY SOLAR PROGRAMS – SMALL-SCALE AND CENTRALLY-LOCATED PHOTOVOLTAIC SYSTEMS.

BENEFITS

- Support for **clean energy**
- **Accessible model**, as little financial barrier to enter and no need to have own location with good solar conditions
- Supporting **local economy and development**, targeting smaller customers (residential and small business) rather than large investors
- **Long-term fixed utility rates** with bills mostly same or lower than before
- Way to take more **control of own energy use**

RESOURCES PROVIDED

Clean Energy Resource Teams:

- Information and FAQs
- Interactive map of community solar projects
- Consumer calculators to estimate costs and savings
- Subscriber disclosure checklists
- Technical assistance and outreach

Minnesota Department of Commerce: Checklist for consumers “[10 Questions You Should Ask](#)”

STAKEHOLDERS

Developer: Non-profit entities, including churches, schools, hospitals; business and private investors; community groups; local governments

Customer/subscriber:

Residential, commercial, non-profits, state and local governments

Utility/electricity provider:

Xcel Energy (main utility in Minnesota) +18 voluntary solar community programs

Public Utilities Commission/ Department of Commerce:

Sets policy, resolves disputes, establishes bill credit rate

FRAMEWORK

Legislation (2013): Biggest utility in Minnesota (Xcel Energy) mandated to develop Community Solar Garden program; voluntary for other public utilities.

Capacity: No project limit or aggregate capacity, individual projects limited to 1MW.

Billing: On-bill credit for subscribers equaling their portion of Solar Garden's generation. For applications filed after December 31, 2016, rate will be calculated according to 'Value of Solar' methodology.

Subscription: Minimum of 200W; maximum 120% of average annual energy use to prevent profit-making; garden must be in contiguous county.

Subscribers: Minimum of 5 per garden ensuring involvement of small customers; maximum single subscriber share of 40% to avoid domination of one.

Development: Solar energy developers submit project to utility; Xcel Energy has to accept projects, unless there are technical or financial issues.

Contract models for subscribers: 25-year contract (life of project) and “pay-as-you-go” with periodic fee; some up-front subscription models or mix of both.

STRUCTURE OF THE PROGRAM

POLICY TIP

It's important to resolve project size and rate issues early in the process. It's also important for the utility to have sufficient resources to deal with a large number of interconnection requests.

PROCESS

1. Solar developer applies for solar project with an utility, once approved and installed, the utility receives the output;
2. Solar developer signs up subscribers, who sign-up/ buy share of Community Solar Garden;
3. Subscribers receive electric bill credit, with a renewable energy credit adder if the developer transferred them to the utility.³

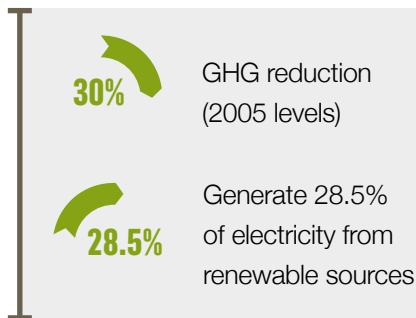
³ [Renewable Energy World](#), July 2016

CLIMATE ACTION

BY 2050



BY 2025



The **Renewable Portfolio Standard** (2007) sets the mandatory targets applying to public utilities, generation and transmission electric cooperatives, municipal power agencies and power districts. In 2013, solar generation targets were included.

TIME FRAME OF IMPLEMENTATION

From legislation to first transfer it took about 3 years, and it is expected to take another 1-2 years for the program to be fully implemented and overcome early-stage challenges.

After the legislation was enacted in early 2013, Xcel Energy filed an initial concept plan in September 2013. The program opened for applications in December 2014, while the first solar projects have just been connected to the grid recently. The development was initially slow because of the high volume of applications and the process of entering into interconnection agreements.

MINNESOTA'S COMMUNITY SOLAR GARDENS

WHAT IS THE POLICY AIMING TO SOLVE?

Traditionally, Minnesota has not had much solar energy development, even though it has good solar resources. In 2013, Minnesota enacted a new solar legislation **requiring Investor Owned Utilities to procure 1.5% of retail sales from solar electricity by 2020 and setting a goal of 10% solar by 2030**. To achieve this target, as well as to support the state's economy and give citizens the option of purchasing clean energy, several policies incentivizing solar energy were developed.

One of the policies enacted in 2013 was Community Solar Gardens, a model where development takes place in **locations ideal for solar power generation and the purchase of the power is open to anyone** (either as subscriber or developer). This policy is designed to make solar energy available to those who don't have a reliable solar resource at their site but want to invest in solar energy.

HOW IS IT INNOVATIVE?

A wider group (i.e. customers without favorable sites for solar) gets the opportunity to participate in distributed solar projects. Minnesota has continued to refine Community Solar Gardens by using the 'Value of Solar' methodology⁴ as a bill credit rate. Subscribers continue to pay for all of the energy they consume, and they are credited according to the energy that their subscription generates.

HOW IS THE PROGRAM FINANCED?

Projects are financed using a combination of tax and other financial incentives through private equity investors.

RESULTS TO DATE

The current solar capacity in Minnesota is 35 MW and is expected to grow to at least 500MW by 2020 thanks to its solar legislation.

The interest in Community Solar Gardens, both from developers and customers, has exceeded all expectations. On the **first day it opened the program, Xcel Energy received over 400 applications for installations**.

To date, **2GW of solar projects have been proposed for solar gardens** and while not all will be developed, it is still a sign of great success for the program. So far, only three projects are running and producing power with a total capacity of 0.37MW. However, there are a large number of projects expected to be operational in the next 6-18 months with 55MW under construction, 389MW in the design phase, and a total of 821MW of active applications.⁵

Another promising sign is that in addition to the major utility, **18 voluntary solar community programs** have been developed.

⁴ A value-of-solar tariff (VOS) is a rate design policy that gives customers with solar installations credit for the electricity generated by a photovoltaic system. The tariff clarifies how much energy is sold in each direction and at what rate the energy is valued. Currently, customers continue to purchase all of their energy at the utility's retail rate, but are compensated for solar PV generation at a separate VOS rate in dollars per kilowatt hour. Read more at NREL.

⁵ Midwest Energy News, 22 July 2016 and Xcel Energy, August 2016.



“THE SOLAR GARDENS HAVE GENERATED A LOT OF INTEREST, AS IT IS A MUCH MORE FLEXIBLE WAY OF PARTICIPATING IN RENEWABLE ENERGY.”

- Bill Grant, Minnesota Deputy Commissioner of Division of Energy Resources

Utilities may be overwhelmed by too many applications in a short time, making it difficult for them to plan and handle technical issues. An annual cap of how much a utility is required to take on may make it easier to deal with the process efficiently.

WHAT WERE THE MAJOR CHALLENGES AND HOW WERE THEY OVERCOME?

This is still a very new model and the initially overwhelming number of projects (about 1,000) have led to a number of challenges that Minnesota State is currently managing:

- **Project financing:** securing investment for projects was slow in the beginning, due to the newness of the program and solar development in Minnesota itself.
- **Interconnection:** delays led to interconnection disputes between utilities and solar project developers, so that mediation from the government was required. The Department of Commerce hired four independent engineers to evaluate disputes and issue recommendations. Most disputes are being resolved at the moment, which is expected to speed up the installation process.
- **Subscription offers:** for customers it is difficult to compare different offers. The Department of Commerce provides resources and a list of questions that subscribers should ask, to support customers in making informed decisions.

DID YOU LEARN FROM OTHER JURISDICTIONS IN DEVELOPING THE POLICY?

Minnesota is closely watching similar community solar developments in Colorado and other states.

LESSON LEARNED

C-BED MINNESOTA: LESSONS LEARNED FROM A REPEALED COMMUNITY ENERGY MODEL

Minnesota enacted the front-loaded ‘Community-Based Energy Development’ (C-BED) tariff in 2005 with the aim of **supporting local participation in wind energy projects** and to mitigate potential local opposition to renewable energy projects. Public utilities were required to create 20-year power purchase agreements, where the C-BED tariff was higher in the first 10 years than the last 10 years. The idea was to make it easier for C-BED projects to overcome financing barriers and increase demand for local services to develop wind projects.⁶

C-BED was repealed in 2016 because of lack of activity:

- Fewer projects were built than intended due to the higher costs of small projects, even after incentive payments. C-BED projects could not compete with large-scale wind power development.
- Keeping ownership truly local was difficult, as shares were often sold to non-local owners after contract conclusion, defeating the intended purpose of the tariff.
- Not as many interested local ownership groups as envisioned, as the complexity of implementation reduced its appeal.

⁶ Energy.gov and [Clean Energy Resource Teams](http://CleanEnergyResourceTeams)

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CONNECT WITH US IF YOU WANT TO KNOW MORE ABOUT OUR ENERGY TRANSITION PLATFORM

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