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# Community Solar Gardens in Minnesota (and Beyond)

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The Urban Sustainability Accelerator (USA) at Portland State University helps cities implement sustainability projects, to move their proposals from a concept, a plan, a policy or action item, to reality. USA focuses on *implementation* of adopted sustainability policies, plans, and goals. The assistance USA provides is of every type: technical, strategic, administrative, legal and political. The USA team believes urban sustainability projects should naturally and logically incorporate economic development as well as social justice dimensions. The project is made possible by the generous support of the Summit Foundation and the Institute for Sustainable Solutions at Portland State University.

## Introduction

This report addresses the need for a “knowledge base” about community solar options for Duluth, Minnesota. This study was commissioned by the Duluth Energy Futures team as technical assistance for their project in conjunction with the Urban Sustainability Accelerator.

The recent Minnesota Public Utilities Commission’s decision to enable community solar gardens was passed into law by the Minnesota Legislature in 2013. [Minnesota Statute § 216b.1641](#) (Article 10, Section 2) is the basis for the Community Solar Garden (CSG) Program, but it only applies to Xcel Energy, Minnesota’s largest electric utility. It prompted the establishment of their Solar Rewards Program as per [Minnesota Statute § 116C.779](#).

Xcel Energy received an overwhelming response to the announcement of its CSG program, with 427 applications for 420 megawatts of total capacity in just two weeks after its December 12<sup>th</sup>, 2014 launch date. Once constructed, these community solar gardens will allow energy consumers to subscribe to solar gardens and receive credits on their bills for their portion of energy produced by the PV systems, ranging anywhere from 200 watts to 120 percent of their annual electricity usage.

Duluth’s electric utility, Minnesota Power, unlike Xcel, is not mandated to purchase electricity generated from community solar gardens. Therefore, other strategies may be pursued. This report provides background for the numerous models that exist for community solar: Virtual Net-Metering or State Legislation Model; Utility-Sponsored Model; Special Purpose Entity Model; Non-Profit Model; and other emerging models. It follows the US Department of Energy evaluation criteria guidelines for community solar along three dimensions: Cost & Benefit Allocation, Tax and Finance Considerations, and Other legal issues.

## Community Solar Program Models

Community Solar is defined as a solar-electric system that, through a voluntary program, provides power and/or financial benefit to, or is owned by, multiple community members. Rooftop systems are not an option for everyone, and only 22 to 27% of residential rooftop area in the US is suitable for hosting an on-site photovoltaic (PV) system due to structural, shading, or ownership issues.<sup>2</sup>

There are a number of different models or approaches for developing a community solar project, including:

- **Utility-sponsored projects**
- **Special-purpose entity**
- **Non-profit projects**

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<sup>2</sup> See [www.nrel.gov/docs/fy09osti/44073.pdf](http://www.nrel.gov/docs/fy09osti/44073.pdf), p. 4 .

And there are several other emerging approaches which are permutations of the above, or different models altogether:

- Virtual net metering via state-level legislation
- Bulk purchase programs
- Group billing
- Joint ownership
- Crowd funding

Each model/approach is described below.

## 1. Utility-sponsored Projects

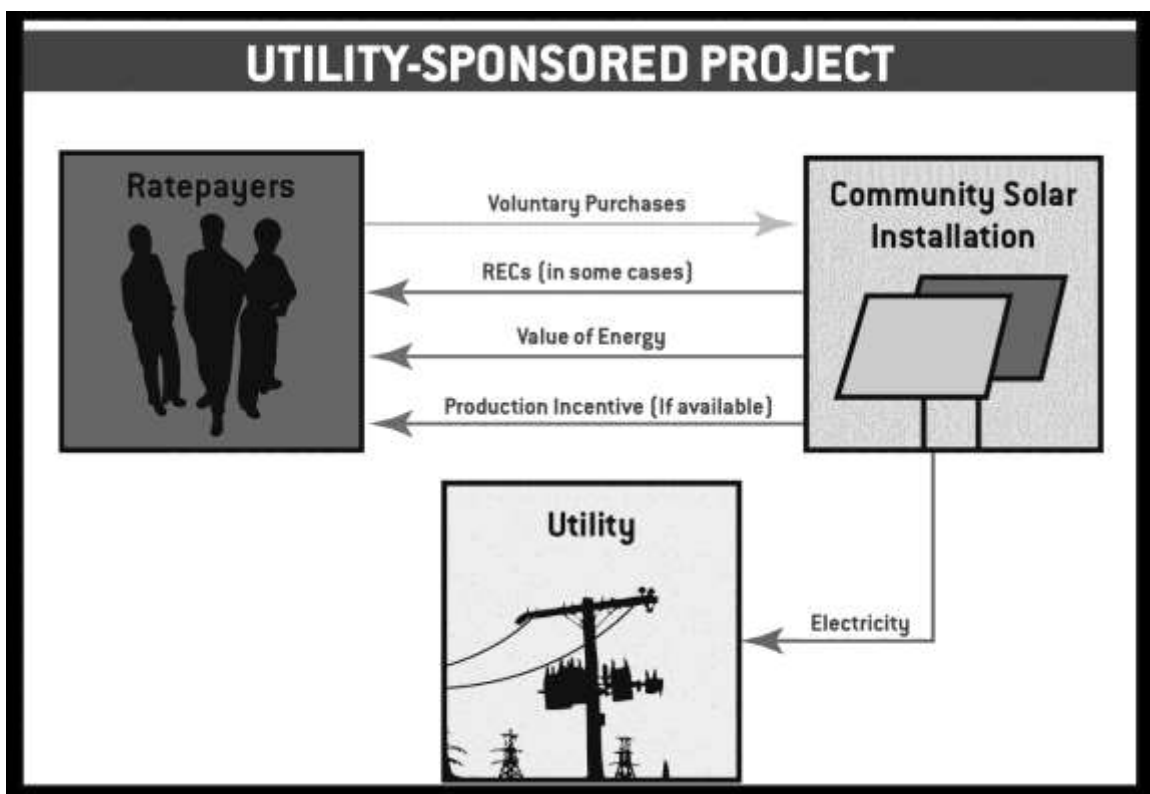


Figure 1: Utility Sponsored Project. Please see <http://www.nrel.gov/docs/fv11osti/49930.pdf>, p. 8

- **Utility-Sponsored Model:** A utility owns or operates a project that is open to voluntary ratepayer participation. These often have different enrollment options: Single upfront payment, payment spread out on an installment plan, or a monthly subscription with no upfront fees. The participating customer has no ownership stake in the solar system. Rather, the customer buys rights to the benefits of the energy produced by the system.<sup>3</sup> Examples include:

<sup>3</sup> Note that utility-sponsored community solar programs are distinct from traditional utility “green power” programs in that “green power” programs sell RECs (Renewable

- **[Tucson Electric Power- Bright Tucson Program](#) (Tucson, AZ)**  
A program in which utility customers purchase solar power in "blocks" of 150 kilowatt hours (kWh) per month. Customers can buy some or all of their power through the program, reducing or eliminating their energy use from conventional resources.
- **[Farmers Electric Cooperative's Solar Garden Program](#) (Kalona, IA)**  
The cooperative invites its customers to buy part of a "solar garden" located at its main office building in exchange for a reduction on their monthly bill.
- **[Inland Power & Light](#) (Spokane, WA)**  
Developed a program for Community Solar in which customers are able to purchase a one-time, up front stake in the PV system and are then issued monthly credits and State financial incentive payments for the life of the PV project.
- **[Sacramento Municipal Utility District's Solar Shares](#) (Sacramento, CA)**  
A fixed monthly price program for customers who want to offset their electricity use with locally produced solar energy via a "solar farm" or solar garden. Unlike Xcel's program, SMUD Solar Shares PV systems are owned by the municipal utility, not a solar service provider.

***Discussion:*** Minnesota Power may take on this sort of community solar program; however, most examples of utility-sponsored projects are in cooperative or municipal utilities. Minnesota Power may want to meet at least a part of their required solar resource load through this approach. The City of Duluth and UMD could advocate for this approach as it provides opportunities for utility customers to purchase and support renewable energy through Minnesota Power.

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Energy Credits) from a variety of renewable energy resources, whereas utility community solar programs sell energy or rights to energy from a specific solar installation, with or without the RECs.

## 2. Special Purpose Entities

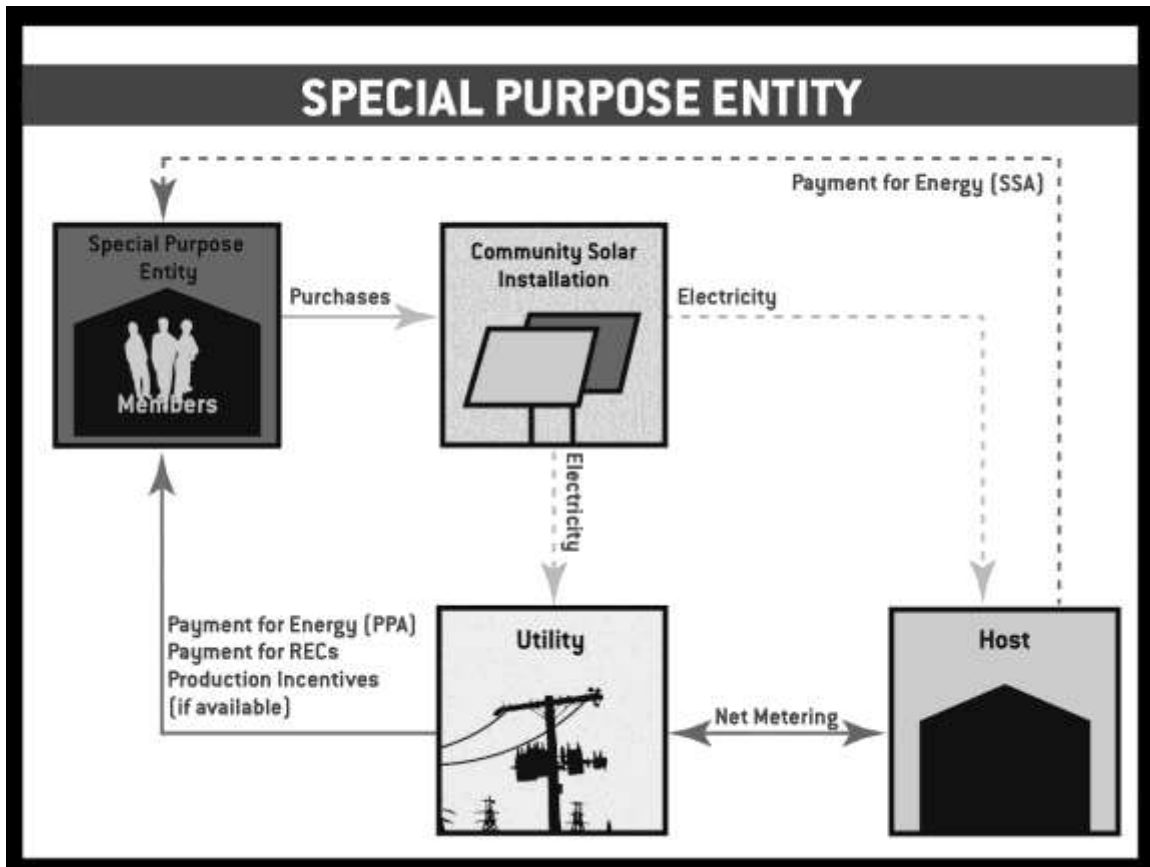


Figure 2: Special Purpose Entity. Please see <http://www.nrel.gov/docs/fy11osti/49930.pdf>, p. 13

- **Special Purpose Entity (SPE) Model:** In an SPE model, individuals join in a business enterprise to develop a community shared solar project. It allows the group to take advantage of tax incentives available to commercial solar projects. A number of business entities are able to be a participant-owned community solar project. Examples include:
  - [University Park Community Solar LLC](#) (University Park, MD) and [Greenbelt Community Solar](#) (Greenbelt, MD)  
Both are limited liability companies of Maryland residents that developed a solar power generation site on buildings in their community.
  - [Sidwell Friends School](#) (Washington, D.C.)  
A project in which members of the community invested in a solar system installed on the Sidwell Friends School by purchasing “solar bonds.”
  - [Clean Energy Collective, LLC](#) (Carbondale, CO)  
A for-profit company that develops community-owned renewable energy solutions for electric utilities and their customers.

- [\*\*My Generation Energy, LLC \(South Dennis, MA\)\*\*](#)  
A different example formed from existing business endeavors.

**Discussion:** SPEs are a broad category for many different approaches to community solar. The City and UMD may be interested in advocating for a Power Purchasing Agreement (PPA) in which the SPE sells the electricity to the utility; a Solar Services Agreement (SSA) in which the SPE sells the electricity to the system host (landowner, City, etc); a Virtual Net Metering approach wherein the SPE assigns kWh to utility accounts per agreement with utility; or a group billing approach wherein electricity produced is netted against SPE members' group bill.

An example of an SPE approach including 3 or 4 congregations in Duluth was discussed by Bret Pence of Ecolibrium<sup>3</sup>. Between these sites, only 1 has good characteristics (solar insolation, no shading, etc) for siting a PV system. An SPE may be developed to allow the 4 churches to each get the benefits of the system. One approach is discussed by [AIRE](#) to allow this sort of SPE to work. However, they will need to be aware of financing, tax and legal issues.

SPEs can be financed in several ways. For a *community SPE*, potential financing structures that maximize federal tax incentives include:

- **Self-financing:** A community SPE finances the project with equity invested by community members. In order to fully use federal tax benefits, the SPE needs to have enough community investors that have sufficient tax appetite to use federal tax incentives.
- **Flip Structure:** In this scenario, the community SPE partners with a tax-motivated investor in a new special purpose entity that owns and operates the project. Initially, most of the equity comes from the tax investor and most of the benefit (as much as 99%) would flow to the tax investor. When the tax investor has fully monetized the tax benefits and achieved an agreed-upon rate of return, the allocation of benefits and majority ownership (95%) would “flip” to the community SPE (but not within the first five years). After the flip, the community SPE has the option to buy out all or most of the tax investor’s interest in the project at the fair market value of the tax investor’s remaining interest. To be considered an accredited investor, an individual must have either: 1) a net worth of more than \$1 million or 2) an annual income of \$200,000 (\$300,000 jointly with a spouse) in each of the most recent two years and a reasonable expectation of having the same income level in the current year.
- **Sale/Leaseback:** In this scenario, the community SPE (as the developer of the project, the site host, or both) installs the PV system, sells it to a tax investor and then leases it back. As the lessee, the community SPE is responsible for operating and maintaining the solar system and has the right to sell or use the power. In exchange for use of the solar system, the community lessee makes lease payments

to the tax investor (the lessor). The tax investor has rights to federal tax benefits generated by the project and the lease payments. The community SPE may have the option to buy back the project at 100% fair market value after the tax benefits are exhausted.

### 3. Non-profit Projects

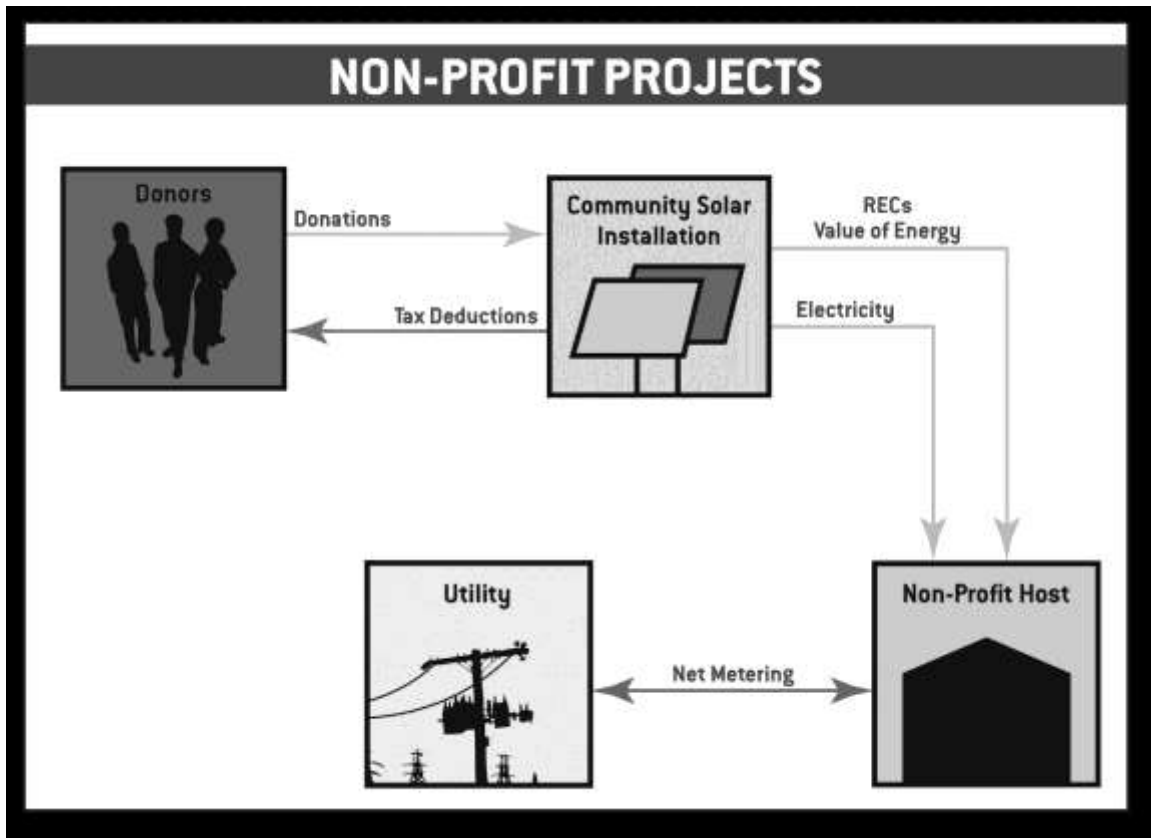


Figure 3: Non-Profit Projects. Please see <http://www.nrel.gov/docs/fy11osti/49930.pdf>, p. 19

- **Nonprofit (“Buy a Brick”) Model:** A charitable nonprofit corporation administers a community shared solar project on behalf of donors or members. Examples include:
  - **[Grid Alternatives](#) (Oakland CA, and multiple states)**  
A nonprofit that helps multi-family apartment buildings go solar and allows residents to save money on their utility bills.
  - **[DC Solar United Neighborhoods](#) (Washington, D.C.)**  
A coalition of neighborhood solar coops that organize neighborhood solar bulk purchases to help neighbors save money and navigate the installation process.

**Discussion:** This approach will apply to Duluth only if projects are identified with nonprofits with significant funding and donors willing to participate.



**Table 1: Overview of Program Models (adapted from**

	Utility	Special Purpose Entity	Non-Profit
Owned By	Utility or 3 <sup>rd</sup> party	SPE members	Non-profit
Financed By	Utility, grants, ratepayer subscriptions	Member investments, grants, incentives	Donor contributions, grants
Hosted By	Utility or 3 <sup>rd</sup> party	3 <sup>rd</sup> party	Non-profit
Subscriber Profile	Electric rate payers	Community investors	Donors
Subscriber Motive	Offset personal electricity use	Return on investment, offset personal use	Philanthropy, return on investment
Long-term Strategy of Sponsor	Offer solar options Add solar generation (RPS)	Sell system to host Retain for electricity production for life of system	Retain for electricity production for life of systems

Other emerging approaches include:

- **Virtual Net Metering via State-level Legislation**  
States legislate that utilities must provide customers with the option of virtual net metering, with implementation varying between states. Virtual net metering allows multiple homeowners to participate in the same metering system and share the output from a single facility that is not physically connected to their property (or their meter). This scheme goes a step beyond net metering, which allows individuals to sell excess energy produced by their on-site solar system back to the utility grid and receive credits on their electric bill. Examples include:
  - [\*Xcel Energy's Solar\\*Rewards Community Program\*](#)  
As referenced above, this is the primary program for Minnesotans interested in Community Solar. It provides incentives to stimulate the development of community solar gardens in Xcel's Minnesota (and Colorado) service territory where existing state-legislation mandates Xcel to purchase energy produced from CSGs. Please see Figure 4 below.

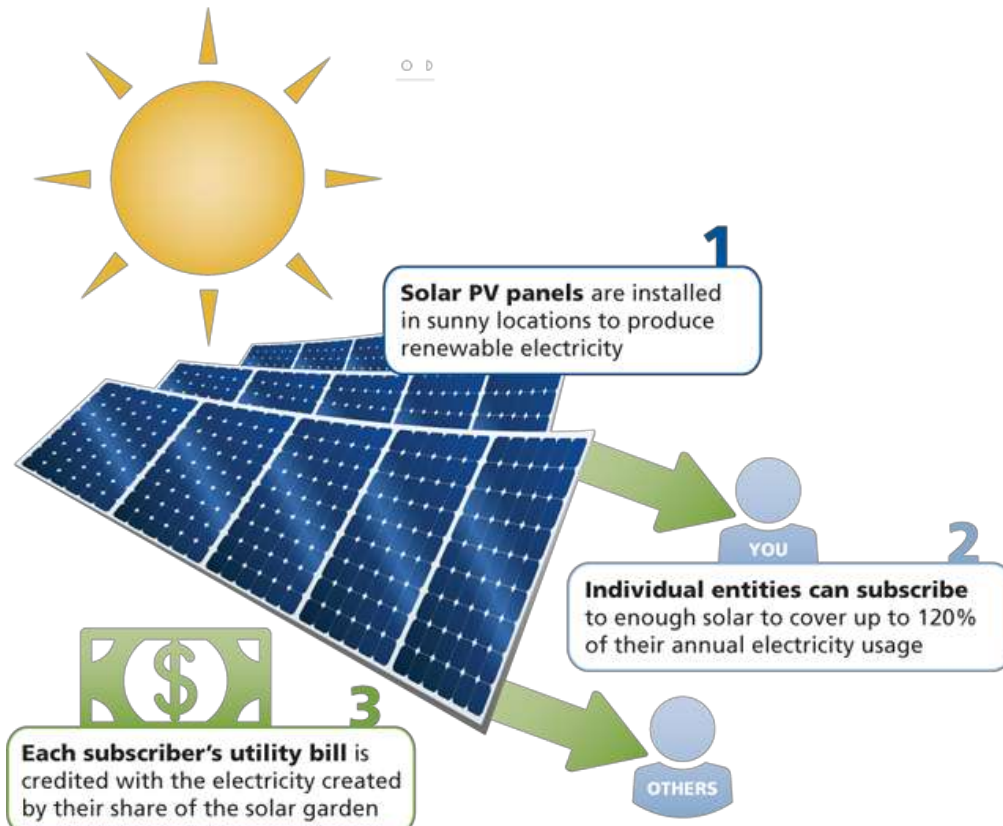


Figure 4: Diagram of Minnesota's CSG Program for Xcel Customers. Please see <http://www.cleanenergyresourceteams.org/solargardens> .

- [Washington, DC's Community Renewables Energy Act of 2013](#)  
Legislation in DC that allows virtual net metering throughout the District. DC Solar United Neighborhoods worked to pass this legislation.

There are also state virtual net metering laws in Massachusetts, Minnesota, and Delaware. Details are available at <http://www.sharedrenewables.org/>. Research Minnesota's policies on net-metering through the [DSIRE website](#). (From DSIRE home page, click on your state, then scroll down to the Net Metering section under "Rules, Regulations & Policies".)

- **Group Billing**

This emerging strategy for funding solar projects works through the utility. The utility produces group bills for all participants in the community solar project including all relevant charges. Then, output from the PV system is netted against the group bill and the remaining costs are split between participants according to their agreement. Similar to virtual net-metering CSGs, this approach allows multiple participants to receive net-metering credits from a single renewable facility. However, group billing is enabled by a different legal mechanism than virtual net-metering. Examples:

- [\*Green Mountain Power and Central Vermont Public Service Territory\*](#)  
This approach enables 22 groups in Central Vermont Public Service and Green Mountain Power service territories have formed to share the output of a renewable energy system with system sizes ranging from 1.5 to 199 kW.
- **Bulk Purchase Programs**  
A bulk purchase is when community members form a group and use their collective buying power to save on the total cost of going solar. Typically, a group of homeowners or organizations goes through the process of purchasing solar systems together. The group selects a single contractor to install systems on each of their buildings, but each participant owns their own system and has their own contract with the installer. Another approach is for a group to purchase a batch of solar panels in bulk solar directly from the manufacturer. They can then contract an installer to install the panels, or complete the installation themselves.
  - [\*Solarize Portland \(Portland, OR\)\*](#)  
A solar panel volume-purchasing program led by three Portland-area [neighborhood associations](#) from 2009 to 2012. This volunteer-driven community effort brought renewable solar energy and the benefits of weatherization to almost 1000 Portland homes. The City of Portland’s Bureau of Planning and Sustainability, Energy Trust of Oregon and Solar Oregon offered strategic and technical assistance to neighborhood organizations that were interested in operating a Solarize project. Communities interested can [download the Solarize Guidebook](#) to learn how to start a Solarize campaign in their neighborhood.
- **Joint Ownership**  
Similar to successful wind farm projects, this approach makes use of wholesale power sale arrangements usually available only to industrial customers.
  - [\*Maine’s Community-Based Renewable Energy Pilot Program\*](#)  
Allows “locally owned electricity generating facilities” with at least 51% ownership by “qualifying local owners” to elect one of two incentive mechanisms:
    1. Qualifying local owners can enter into a long-term contract to sell output from a facility to a transmission and distribution utility. The contract price for energy on average, weighted based on the expected output of a facility, may not exceed \$0.10 per kWh. This price does not include a purchase of RECs. A significant downside of this approach is that a payment for power sales to a wholesale or retail purchaser results in taxable income at a federal level and possibly at a state level.
    2. Generation is virtually net metered to joint owners in proportion to the owners’ stake in a system. For example, a 50% owner would

receive 50% of the net metering credits generated by a system through virtual net metering.

- **Crowd Funding**

[Mosaic](#) is a “crowdsourcing” energy program that gives individuals, institutions, and other investors the opportunity to invest in a portfolio of solar or renewable energy projects. Mosaic functions like a “virtual renewable energy bank,” soliciting investments for solar projects and making loans to be paid back, typically, over about 10 years. Mosaic collects a fee on every loan. It is similar to the crowdfunding platform [Kickstarter](#), a Web site that matches creative ventures with financial supporters. In the case of Mosaic, with a minimum of \$25, investors can earn a return. Mosaic crowdsources pools of money from individuals and institutional investors to invest in solar projects, with the goal of making them steady, risk-weighted returns. Co-founder of Mosaic, Dan Rosen, explains that although crowdsourcing has a warm, fuzzy, community-like sound to it, Mosaic is simply another innovative financial vehicle for bringing cold, hard cash into the solar industry.

- **Innovative Financial Products for Individuals**

Many homeowners are looking into options for rooftop solar, but lack the upfront capital or access to loans or financing needed to get the system purchased and installed. Many new programs such as [Solar City](#) and [Dividend Solar](#) provide homeowners options to take advantage of financial instruments backed by various parties to get the PV system they desire. Solar City offers full-service-options, whereas, Dividend Solar is an example of an investment and financing platform that interlinks homeowners who want solar power and investors who want returns on their investment. Solar City offers [Solar Bonds](#)—a corporate bond backed by Solar City—very similar to Dividend Solar’s financial product. These products allow individuals the opportunity to invest in solar, an opportunity that was usually only accessible to large investors, corporations, and institutions.

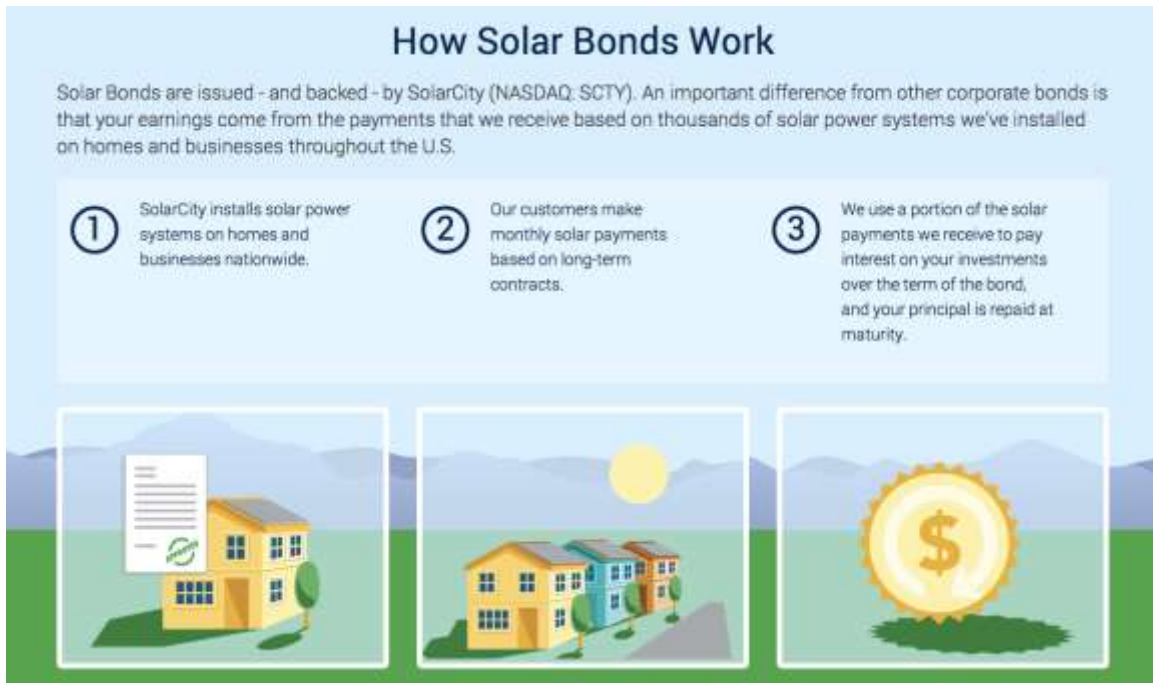


Figure 5: Solar City's "How Solar Bonds Work." Please see <https://solarbonds.solarcity.co>

**Discussion:** These emerging and alternative approaches show the wide range of creative and innovative ways communities are financing and implementing solar. Of these, virtual net-metering approaches seem to have gained the most momentum for community solar, whereas, innovative financial products such as Solar Bonds seem to be gaining momentum for rooftop solar with individual household users. The location of projects, local and state level regulations, and numerous other tax and finance issues necessitate numerous models for implementation of PV systems at the rooftop, community, or utility scale.

## Evaluation Criteria

Not all of these program models are designed to benefit the same groups of people equally. Decisions will have to be made regarding model choice based on who is involved and who is able to finance or fund the project. A number of criteria should be considered:

**(1) Allocation of Costs and Benefits.** Who will pay to plan, construct, and operate the solar system? Who will have rights to benefits, including the electricity produced, RECs, revenue from electricity sales, tax benefits, other incentives, and ownership of the project's assets (such as the solar system itself)? A table at the end of this section summarizes the options for allocating benefits within the structure of each sponsorship model. (See Table 2)

**(2) Financial and Tax Considerations.** Will money be raised through a solar fee on electricity bills, by equity or debt financing of a business entity, through charitable donations, or various other options? What kind of tax implications will there be for participants—e.g., will the project generate taxable income for participants? Will it generate tax credits or deductions for participants? (See Table 3)

**(3) Other legal issues.** How will the project design address securities regulation, utilities regulation, business regulation, and the complexity of agreements between various project participants? (See Table 4)

Numerous other criteria may be posed depending on Duluth's primary concerns. Of these, size, siting and design issues are central. These influence the costs, financing, ownership, organizational model, and efficiency of the PV system. Other technical criteria should be considered to enhance production efficiency and cost reduction.

**Table 2: Allocation of Costs and Benefits** (reproduced from <http://www.nrel.gov/docs/fy12osti/54570.pdf>, p. 32)

	Utility	Special Purpose Entity	Non-Profit
<b>Electricity From Solar System</b>	<ul style="list-style-type: none"> <li>Participant receives an estimated or actual kWh credit for their portion of project</li> <li>Participant receives a monetary credit for the value of production for their portion of the project</li> </ul>	<ul style="list-style-type: none"> <li>SPE sells the electricity to the utility (<b>PPA</b>)</li> <li>SPE sells the electricity to the system host (<b>SSA</b>)</li> <li>SPE assigns kWh to utility accounts per agreement with utility (<b>Virtual Net Metering</b>)</li> <li>Electricity is netted against SPE members' <b>group bill</b></li> </ul>	<ul style="list-style-type: none"> <li>Nonprofit owner uses on-site and net meters</li> <li>Nonprofit owner assigns to utility accounts per agreement with utility (virtual net metering)</li> <li>Electricity from the system is netted against a group bill</li> </ul>
<b>Renewable Energy Credits</b>	<ul style="list-style-type: none"> <li>Assigned to participants</li> <li>Retired on participants behalf</li> <li>Retained by utility</li> </ul>	<ul style="list-style-type: none"> <li>Rights to RECs sold upfront</li> <li>RECs sold on an ongoing basis</li> <li>Retained for participants</li> </ul>	<ul style="list-style-type: none"> <li>Rights to RECs sold upfront</li> <li>RECs sold on an ongoing basis</li> <li>Retained for nonprofit</li> </ul>
<b>Federal Tax Credits and Deductions</b>	<ul style="list-style-type: none"> <li>Neither the commercial ITC nor the residential renewable energy tax credit is available</li> <li>If the utility has a tax appetite, it may use the commercial ITC</li> <li>Normalization accounting rules will impact the value of the ITC for regulated utilities</li> </ul>	<ul style="list-style-type: none"> <li>SPE can pass benefits of Commercial ITC through to participants</li> <li>Only of use if participants have a tax appetite for passive income offsets</li> </ul>	<ul style="list-style-type: none"> <li>Project donors can deduct the donation on their taxes</li> <li>Nonprofits are not eligible for federal tax credits</li> </ul>
<b>Accelerated Depreciation (MACRS)</b>	<ul style="list-style-type: none"> <li>Not available to participants</li> <li>An IOU may be able to use MACRS, provided they own the system</li> <li>To qualify for MACRS, regulated utilities must use normalization accounting</li> </ul>	<ul style="list-style-type: none"> <li>SPE passes depreciation benefits through to the participants, subject to passive activity rules</li> </ul>	<ul style="list-style-type: none"> <li>Not useful to nonprofits</li> </ul>
<b>State and Utility Rebates and Incentives</b>	<ul style="list-style-type: none"> <li>Utility may qualify and use rebates/incentives to buy down the project costs; benefits are indirectly passed on to participants</li> </ul>	<ul style="list-style-type: none"> <li>SPE may qualify and use rebates/incentives to buy down the project costs or pass through to participants</li> </ul>	<ul style="list-style-type: none"> <li>Nonprofit may qualify and use rebates/incentives to buy down the project costs</li> </ul>

**Table 3: Tax, Finance, and Other Legal Issues for Community Solar Models**

	Utility	Special Purpose Entity	Non-Profit
<b>Ability to Use Tax Incentives</b>	<ul style="list-style-type: none"> <li>• Dependent on utility characteristics</li> <li>• Co-ops, municipal, and public utilities are exempt, but can use Clean Renewable Energy Bonds</li> <li>• For-profit, investor-owned or privately held utilities can use ITC and depreciation</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on type of business structure, SPEs need to be careful to fully use available tax benefits because community investors have limited tax appetite</li> <li>• Federal tax benefits are of limited use</li> <li>• Most investors/participants are passive and are subject to IRS passive activity rules</li> </ul>	<ul style="list-style-type: none"> <li>• Not eligible in general because tax exempt</li> <li>• Taxpayers can use deductions for charitable contributions to qualified organizations who may implement PV system</li> </ul>
<b>Securities Compliance</b>	<ul style="list-style-type: none"> <li>• Customer participation with utilities require careful consideration of customer-participant benefits in exchange for financial contribution</li> <li>• The receipt of credits on electric bills may constitute a return on investment and fall within blue sky laws (state laws that regulate the offering and sale of securities)</li> </ul>	<ul style="list-style-type: none"> <li>• Working within limits on the number of unaccredited investors if the project is to be exempt under securities laws is a major challenge</li> <li>• Exemptions require limits on the number of “accredited investors” and limits on number of participants</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Allocation of Incentives</b>	<ul style="list-style-type: none"> <li>• Utilities must consider whether and how these federal and state incentives/benefits will be passed on to customer participants and the tax implications of how the incentives are handled</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on type of SPE and financing model</li> </ul>	<ul style="list-style-type: none"> <li>• Project donors can deduct the donation on their taxes</li> <li>• Nonprofits are not eligible for federal tax credits</li> </ul>
<b>RECs</b>	<ul style="list-style-type: none"> <li>• Customer-participants can only claim environmental benefits if they receive RECs</li> <li>• Utilities, however, have incentive to keep RECs to RPS compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Rights to RECs sold upfront</li> <li>• RECs sold on an ongoing basis or Retained for participants</li> </ul>	<ul style="list-style-type: none"> <li>• Rights to RECs sold upfront</li> <li>• RECs sold on an ongoing basis</li> <li>• Retained for nonprofit</li> </ul>



## Community Solar Garden Service Providers in Minnesota

In Minnesota, there are already several CSG providers. A list of providers has been compiled by the organization, [Clean Energy Project Builder](#) and includes:

- [Able Energy Co.](#)
- [Forteva Solar](#)
- [Innovative Power Systems](#)
- [Minnesota Community Solar \(MNCS\)](#)
- [Minnesota Renewable Energy Society](#)
- [Novel Energy Systems](#)
- [Rural Renewable Energy Alliance](#)
- [Solar Farm, LLC](#)
- [Sundial Solar](#)
- [TruNorth Solar](#)

One example is [Minnesota Community Solar \(MNCS\)](#) who played an important role in advocating for the 2013 Clean Energy & Jobs legislation (mentioned at the start of this paper) that mandated that Xcel and other utilities purchase subscribers' electricity from CSGs. Their subscription model provides an excellent starting place to evaluate the possibilities for CSG's in Duluth. MNCS sold out both of the first two CSGs in Xcel's territory. They worked to use Minnesota solar panels, labor, and financing and have a commitment to focus on Minnesota development.

MNCS acts as an *intermediary* between the utility company, regulators, property owners (hosts), and customers/subscribers. Subscriptions are service contracts, not ownership of the physical panels. Subscribers purchase credits from MNCS and these are added to their electric bill over the length of the contract. Subscription amounts are based on current energy usage. Subscribers can choose how much of their energy use they would like to cover through the solar credits.

MNCS's subscription service for solar is based on a unit called a 'leaf'. Leaves are solar credits that are added to a subscriber's electric bill and are adjusted to the utility's rate changes.

Another organization, [SunShare](#), provides a similar model. SunShare designs, builds, operates, and maintains CSGs, and customers simply buy energy in the same way they would from a utility. They offer custom energy plans and options for consumers based on their energy usage, then consumers choose and get a space reserved at a solar garden.

## Xcel Energy Solar Rewards Program

[Minnesota Statute § 216b.1641](#)(Article 10, Section 2) is the basis for the Community Solar Garden (CSG) Program, but it only applies to Xcel Energy, prompting their Solar Rewards Program as per [Minnesota Statute § 116C.779](#). Legislation regarding rebates for Solar PV Modules is [Minnesota Statute § 116C.7791](#).

The new statute mandates the following:

**Ownership.** As detailed in [Minnesota Statute § 216b.1641](#), the owner of the community solar garden may be a public utility or any other entity or organization that contracts to sell the output from the community solar garden to the utility under section [216B.164](#). There shall be no limitation on the number or cumulative generating capacity of community solar garden facilities other than the limitations imposed under section [216B.164, subdivision 4c](#), or other limitations provided in law or regulations.

**Subscribers.** As detailed in [Minnesota Statute § 216b.1641](#), "subscriber" means a retail customer of a utility who owns one or more subscriptions of a community solar garden facility interconnected with that utility. Subscribers may live in a county adjacent to county where the solar garden is located.

**Subscriptions.** As detailed in [Minnesota Statute § 216b.1641](#), "subscription" means a contract between a subscriber and the owner of a solar garden.

**Credits.** Subscribers receive a bill credit for the electricity generated in proportion to the size of their subscription. Each subscription shall be sized to represent at least 200 watts of the community solar garden's generating capacity and to supply, when combined with other distributed generation resources serving the premises, no more than 120 percent of the average annual consumption of electricity by each subscriber at the premises to which the subscription is attributed.

**Grid Interconnection & Rates.** The public utility must purchase from the community solar garden all energy generated by the solar garden. The purchase shall be at the rate calculated under section [216B.164, subdivision 10](#), or, until that rate for the public utility has been approved by the Commission, the applicable retail rate. A solar garden is eligible for any incentive programs offered under either section [116C.7792](#) or section [216C.415](#). A subscriber's portion of the purchase shall be provided by a credit on the subscriber's bill.

**CSG Design.** The solar garden must have a nameplate capacity of no more than one megawatt.

## Definitions

**Accelerated Depreciation.** After ITC, this approach is the most important solar incentive. Depreciation is an accounting method to adjust for the fact that assets become less valuable over time. Typically, it provides value worth about 25% of the system cost. A nice discussion of depreciation is available at [Carbon Lighthouse's website](#).

**Investment Tax Credit (ITC).** Section 48 of the Internal Revenue Code details how commercial, industrial or utility owners of PV systems can take a one-time tax credit equivalent to 30% of qualified installed costs. The federal government provides a tax credit worth 30% of the cost of your system. So if your solar project costs \$1,000,000, you receive a tax credit worth \$300,000. To use it you must have “*tax appetite*,” that is, owe at least \$300,000 in federal taxes. To owe \$300,000 in taxes, you need to have a very sizeable income. That’s why large companies are the ones who own the solar projects. For 2009 and 2010, the ITC became a cash grant instead of a credit, so you didn’t need to be hungry for tax credits. But the grant program ended in 2012.

**Normalization Accounting.** Normalization rules require regulated utilities to spread the benefits of investment tax credits throughout the useful life of the solar project in the ratemaking process. The utility’s incentive for investment is the difference between the value it receives from the tax credit up front and the value it passes on to customers over time (i.e., the time value of money).

**Power Purchase Agreements.** A PPA is an agreement between a wholesale energy producer and a utility under which the utility agrees to purchase power (under particular rate structures and at particular times).

**Solar Services Agreement.** An SSA is an agreement between the system owner and the system site host, for the provision of solar power and associated services including design, installation, operation and maintenance, and other services to continue solar power production.

**Securities.** A security is an investment instrument or product issued by a corporation, government or other organization that offers evidence of debt or equity. Any transaction that involves an investment of money in an enterprise, with an expectation of profits to be earned through the efforts of someone other than the investor, is a transaction involving a security. Community solar organizers must take care to comply with both state and federal securities regulations, and preferably, to steer clear of inadvertently offering a security. (Further information on securities is provided in Section 4, Tax Policies and Incentives.)<sup>4</sup>

## Further Resources

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<sup>4</sup> See <http://www.nrel.gov/docs/fy11osti/49930.pdf> pg 4.

- Through [DOE's SunShot Initiative](#), local governments are working to accelerate the adoption of solar energy technologies for a cleaner, more secure energy future. The website offers case studies, policy updates, and news of solar activities across the country.
- The [Database of State Incentives for Renewables and Efficiency \(DSIRE\)](#) is a comprehensive source of information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency.
- The [Office of Energy Efficiency and Renewable Energy \(EERE\)](#) works to strengthen the United States' energy security, environmental quality, and economic vitality in public-private partnerships.
- [USDA Rural Development](#) provides funding for the development and commercialization of renewable energy technologies in rural communities. The Rural Energy for America Program (REAP) offers grants and loans to help small rural businesses deploy renewable energy projects.
- The [Bonneville Environmental Foundation \(BEF\)](#) supports the development of renewable energy and watershed restoration and empowers people to shrink their carbon footprints. BEF's Project Management Group assists with the funding and construction of solar installations in communities throughout the Northwest.
- The [American Solar Energy Society \(ASES\)](#) is a nonprofit organization dedicated to increasing the use of solar energy, energy efficiency, and other sustainable technologies in the United States. This website is a good source for information about solar technology and professionals.
- The [Interstate Renewable Energy Council \(IREC\)](#) is a nonprofit membership-based organization that provides a national forum in which public and private organizations involved with renewable energy may gather, disseminate and exchange information and engage in cooperative efforts. IREC's website offers the latest policy and practical solutions for tough renewable energy issues.
- The [Vote Solar Initiative](#) works at the state, federal and local level to implement programs and policies that allow strong solar markets to grow.

## Publications and Online Tools

- The [Online Community Solar Tool](#), University of Oregon and The Resource innovation Group, is an online decision tool that provides a framework for making program development and design decisions.
- The [Community Power Network](#) offers examples and inspiration for community scale projects across the United States. The site includes a wiki to learn and share from other projects.
- [Solar Resource Guide: An Overview for Congregations](#), California Interfaith Power & Light Network, July 2011.
- [Solar Powering Your Community: A Guide for Local Governments](#), U.S. Department of Energy (DOE), 2012, includes case studies and lessons learned from Solar America Communities.
- [“A Guide to Community Shared Solar: Utility, Private, and Nonprofit Project Development” \(NREL\)](#), provides excellent information about implementing community solar and is the basis of much of this report.
- Community Solar Power: Obstacles and Opportunities, [Institute for Local Self-Reliance](#), September 2010, profiles community shared solar projects, the policies that enabled them, and the barriers that remain.
- [Financing Non-Residential Photovoltaic Projects: Options and Implications](#), Lawrence Berkeley National Laboratory, January 2009, examines the role of financial innovation in PV market penetration. This report looks at how financing structures currently being used to support nonresidential PV deployment have emerged as a way to extract the most value from a patchwork of federal and state policy initiatives.
- [Lex Helius: the Law of Solar Energy \(3rd Edition\)](#), Stoel Rives, 2009 (See especially, Chapter 7: Financing)
- [Distributed Generation Interconnection Collaborative \(DGIC\)](#), an excellent resource on interconnection and utility interfacing.