



COMMUNITY SHARED SOLAR: POLICY AND REGULATORY CONSIDERATIONS

ABSTRACT

Shared solar, also called community solar, is an increasingly popular business model for deploying distributed solar technology. Shared solar projects allow customers that do not have sufficient solar resource, that rent their homes, or that are otherwise unable or unwilling to install solar on their residences, to buy or lease a portion of a shared solar system. The participant's share of the electricity generated is credited to their electricity bill, as if the solar system were located at their home.

The shared solar model expands the availability of distributed solar to a broader customer base, offers economies of scale to project developers, and may reduce the cost of incentive programs and address concerns of cross-subsidization across utility ratepayers. Increasing numbers of utilities, cities, and community groups across the United States are hosting shared solar projects. In some cases, however, policy or regulatory barriers present challenges to program implementation.

This paper explores the ways in which the shared solar business model interacts with existing policy and regulations, including net metering, tax credits, and securities regulation. It presents some of the barriers that shared solar projects may face, and provides options for creating a supportive policy environment.

BACKGROUND

Several business models have recently arisen that bring community stakeholders together to deploy distributed solar projects. These community solar models include aggregated/group purchasing, crowd-funding, and shared



Photo by Western Area Power Administration, NREL 08822

solar projects. Aggregated or group purchasing refers to multiple stakeholders coming together to purchase individual solar systems in order to take advantage of bulk pricing. Crowd funding solar projects (e.g., Mosaic) allow investors to finance a solar project and benefit from the return on their investment. In shared solar projects,¹ participants buy or lease a portion of a large distributed solar system and are able to use that solar generation against their demand on their electricity bill, just as if they had a solar system on their own rooftop.²

This paper focuses solely on shared solar projects. Shared solar projects give customers who cannot or do not want to install a PV system on their rooftop the opportunity to benefit from a solar installation. Given that approximately three-quarters of residential rooftops are not suitable for solar systems, shared solar significantly expands the distributed solar market.³

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HOSTS OF COMMUNITY SHARED SOLAR

Utilities, businesses, local governments, and community groups can host shared solar projects. The shared solar systems may be located on public buildings, private land, brownfield sites, or any location with suitable solar resources. Various program designs and contract terms can be used.⁴ Program design elements include ownership structure, product offering, length of contract, eligibility rules, subscription pricing, and how bill credits are calculated. Different program designs offer their own benefits and balance of risks between stakeholders. For this reason, program design elements should be consciously decided upon, based on the particular situation.⁵

Drivers for public sector entities to offer shared solar projects include meeting local sustainability goals and supporting community members that face barriers to participating in traditional rooftop solar.

Compared to other utility incentive types, shared solar projects may result in fewer costs to non-participating ratepayers. All of the program costs may be covered by participating customers.

For utilities, the shared solar model may contribute to customer engagement and satisfaction. Utilities in states with renewable energy mandates may also be able to apply the renewable energy credits from shared solar projects toward their requirement. In addition, there is increasing interest and research to understand how to locate solar systems in order to provide distribution system benefits, such as reducing congestion or providing ancillary services.

Compared to other utility incentive types, shared solar projects may result in fewer costs to non-participating ratepayers, depending on the pricing structure used.⁶ The costs of traditional utility incentive programs are often spread across all ratepayers. For shared solar, all of the program costs may be covered through the customer participation payment, or deducted from the participant bill credits. The cost of electricity integration and delivery may also be deducted from bill credits.

Colorado, Minnesota, and California have passed requirements that certain regulated utilities develop shared solar projects, and there is similar movement in other states, including New York.^{7,8,9} The state-level policies include direction regarding various program elements, such as customer eligibility and how bill credits will be calculated.

One consideration is the potential impact of proposed policy on the existing solar market and associated solar developers. In addition, providing for ownership structures that allow hosts to make use of tax credits or other incentives should also be considered. The interplay of shared solar and tax incentives is discussed more below.

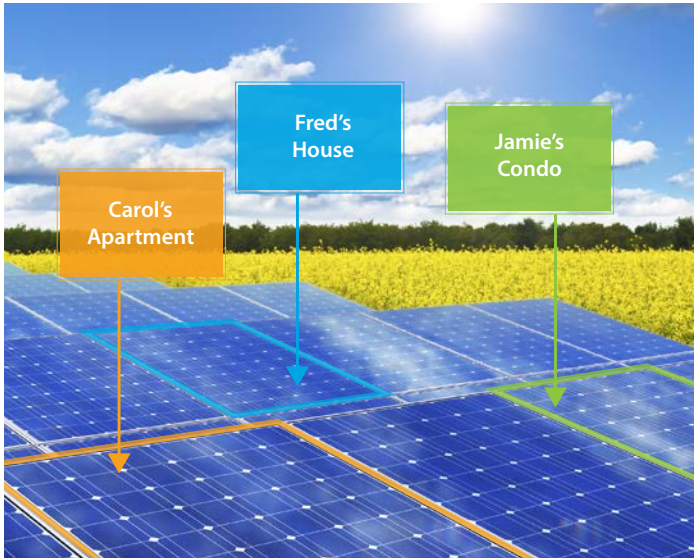
PARTICIPANTS IN COMMUNITY SHARED SOLAR

Shared solar projects can offer a variety of benefits to participants, including increased electricity rate stability and potential bill savings.¹⁰ Homeowners with shaded roofs or historic buildings, residents of multi-tenant buildings, and those who rent apartments may be unable to install rooftop solar systems, but can participate in shared solar projects. Shared solar can also expand access for lower-income energy customers, who are prevented from having their own systems due to lack of credit. Decision makers may choose to set aside portions of shared solar projects for particular customer classes, or facilitate the participation of customers that otherwise would not have access to solar.

Colorado has supported the availability of shared solar for low-income customers as part of the Community Solar Garden Act. By regulation, eligible utilities must reserve five percent of new shared solar projects for low-income participants and waive the minimum level of participation for these customers.¹¹ By providing all customers, despite their circumstances, the opportunity to participate in a distributed solar project, shared solar can address some of

the concern about cross-subsidization between customers who can and cannot have rooftop solar.

In order to ensure that more customers can participate in a shared solar project, maximum single subscriber levels may be set to limit any one participant from holding a majority of the interest in the project. Minimum or maximum participant limits and limits to administration fees may also be defined through state policy.



Shared solar projects allow customers to buy or lease a portion of a shared solar system. *Photo by iStock, 28099878*

INTERACTIONS WITH OTHER POLICIES AND REGULATIONS

This section describes how existing state and federal policy may impact the development of shared solar projects, and provides policy options for decision makers who want to support the shared solar business model.

Net Metering Policy

Net metering is a primary state-level policy that supports the development of distributed solar systems for the excess power they feed onto the electricity grid. Forty-four states have net metering policies.¹² Certain elements of these policies that are relevant to shared solar projects are discussed below.

Virtual Net Metering

A distinguishing characteristic of shared solar is that the solar system is not at the same location as the load of the project participants. Virtual net metering allows

participants in shared solar projects to subtract their portion of the off-site generation from the load at their own residences.¹³

The ability to develop shared solar projects may be inhibited or prohibited if state regulations do not allow for virtual net metering. Some net metering policies do not specify whether shared solar projects are eligible, and some implicitly exclude them by specifying that net-metered generation must serve on-site load. Some states, including California, Delaware, Minnesota, Maine, Massachusetts, New Hampshire, and Vermont have specifically allowed for virtual net metering through legislation.¹⁴

Net Metering Caps

Of the 44 states with net metering policies, 24 set a cap on the total capacity eligible for net metering. In some cases, there are separate caps for public and private facilities. Making sure that policies clarify to which cap shared solar projects apply provides more certainty to project developers.¹⁵

Although the majority of states with net metering caps are currently substantially below their existing caps, five states could reach their program limit in the 2015-2018 time frame, if development predictions are correct and the caps are not increased.¹⁶ In these states, there is a possibility that net metering will not be available by the time a proposed project is completed. This increased risk may significantly slow or halt solar project development, as the net metering limits are approached.¹⁷

To reduce this risk to the developer, Massachusetts has developed a system of assurance for net metering eligibility. The application process is a mandatory requirement for mature projects, and provides a limited time guarantee that the project will be eligible for net metering once it is interconnected. This reduces uncertainty for developers, informs investment decisions, and creates more stability in the market as net metering caps are approached.

Limits to Project Size or Participant Class

Most net metering rules include eligibility criteria that define individual system capacity limits and eligible customer classes. For example, residential customers may be allowed to have net-metered systems up to 10kW, while commercial customers may be allowed

to have larger systems. Rules that limit project size or prohibit residential customers from obtaining credits from commercial-scale projects can create significant barriers to shared solar projects. One benefit of shared solar is that the larger capacities offer economies of scale, which can make the projects more economically attractive for residential customers. It may be necessary to review and adjust state net metering language in order to ensure that shared solar projects can be efficiently designed and that all relevant customers are eligible to obtain net metering from the project.¹⁸

Interconnection Policy

The time and effort required to obtain utility approval for net metering and interconnection varies widely across the states. Some states have implemented simplified application processes for small-scale solar projects or for projects that use certified equipment.¹⁹ Ensuring that shared solar projects are not subject to unnecessarily complex application processes or interconnection approval timelines will help open the market to these projects and reduce the risk that participants will become impatient and drop out of the project during the development phase.

It may be necessary to review and adjust state net metering language in order to ensure that shared solar projects can be efficiently designed and that all relevant customers are eligible to obtain net metering from the project.¹⁸

Federal Tax Credit

The federal government provides a 30% residential investment tax credit for qualifying solar projects through Section 25D of the Internal Revenue Code (IRC).²⁰ In order to be eligible for the credit, the solar system must “generate electricity for use in a dwelling ... used as a residence by the taxpayer.” This language led some to believe that the tax credit was not available to shared solar projects or their participants since the solar system in these cases is not located at the taxpayer residence. However, in 2013, the IRS issued a clarification (Notice 2013-70), stating that shared solar projects that satisfy all other requirements in the IRC do, in fact, qualify for the tax credit.²¹

If a shared solar project offers participants actual ownership of the solar panels (rather than offering the



Photo by Dennis Schroeder, NREL 26962

output of the system), the participant claims the tax credits in proportion to their percentage of the system. Under models in which participants lease panels or have a power purchase agreement for the generation output, the host or developer of the solar project claims the tax credits and the economic benefit is passed through to individuals in the cost of participation.

State regulators have a role to play in assuring that hosts, developers or participants in shared solar projects can obtain these federal tax credits. The IRC requires that solar systems have manufacturer certification. The criteria for this certification are defined at the state level. Defining and supporting the manufacturer certification process at the state level provides important backing for shared solar projects.

State Incentives

If a state tax credit, rebate, or other incentive is provided for solar generation projects, clarification may be necessary to ensure that shared solar projects are eligible to receive the benefits. Doing so ensures a level playing field for all customers, whether or not they are able to install solar on their own property.

The way in which state incentives are distributed can potentially impact the economic viability of shared solar projects. Depending on their design, state-level incentives may or may not be considered taxable income under federal and state tax laws. Some states have designed incentives to avoid the tax issue by avoiding the issuance of government payments directly to residential solar customers.²² State guidance may be necessary to clarify

whether state-level incentives are considered taxable income under state code and the relevance to shared solar projects.

Renewable Energy Credits/Certificates (REC)

In states that have strong REC markets, the generation of RECs by shared solar projects can contribute to the economic viability of the project. The RECs can be handled in a variety of ways, with different benefits for hosts and participants. Some considerations are whether the host or the participant retains the RECs generated by the project, and whether or not the RECs are retired. Individual customers may not understand how to cash in RECs, preferring that the host pass through the value of the RECs in the participation cost.

State guidance may be necessary to clarify whether state-level incentives are considered taxable income under state code and the relevance to shared solar projects.

Securities Compliance

Caution must be taken in the design of shared solar projects in order to avoid structures that make the project subject to securities regulation under the Securities Exchange Commission (SEC). Potential shared solar hosts can submit a request to the SEC describing the business model being used and presenting a technical and legal analysis of why the host believes the business model is not a security. In the past, the SEC has issued a No-Action Letter to one developer,²³ but since there are a variety of business models for shared solar projects, the issuance may not be applicable to other projects.

Preparing a No-Action Letter Request is a significant cost and time burden on project developers. Projects initiated by community groups, for example, may not have the resources to overcome this barrier. Work is underway, sponsored by the Department of Energy's SunShot Initiative, to bring clarity to the securities issue for shared solar projects at the federal level. However, the Securities Exchange Act of 1934 preserves much of the states' actions with regards to securities.²⁴ For this reason, state regulators will need to provide similar clarity at the state level.



Winthrop Community Solar Project. Photo by Ellen Lamiman, Energy Solutions

CONCLUSIONS

Community shared solar provides increased public access to solar technology and helps expand the distributed solar market. The shared solar model may offer economies of scale, reduce the cost of solar incentive programs, and address some of the concerns of cross-subsidization among utility ratepayers. State-level policymakers and regulators wanting to support shared solar projects may need to revise state policy and regulation to remove barriers that are specific to this business model. These include issues related to net metering and interconnection policy, and the ability of project hosts and participants to benefit from federal or state incentives. Decision makers may also consider the option of requiring regulated utilities to offer shared solar projects to customers or otherwise including shared solar within renewable energy mandates.

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For additional information and questions, please contact Joyce McLaren (NREL) at joyce.mclaren@nrel.gov

ENDNOTES, REFERENCES, AND RESOURCES

(1) Often, the term "community solar" is used to describe this business model. This document uses the Department of Energy (DOE) preferred term: shared solar. In Colorado, the term "solar gardens" has been adopted to represent the shared solar business model.

(2) While the focus here is on homeowners participating in shared solar, businesses, non-profits and any other organization with a utility account can participate as well.

(3) Denholm, P. and Margolis, R. "Supply Curves for Rooftop Solar PV-Generated Electricity for the United States." NREL/TP- 6A0-44073. Golden, CO: National Renewable Energy Laboratory, 2008. Accessed 2014: www.nrel.gov/docs/fy09osti/44073.pdf

(4) A model contract between hosts and participants is provided in: "Community Shared Solar: Implementation Guidelines for Massachusetts Communities." Boston, MA: Massachusetts Department of Energy Resources, 2013. Accessed 2014: www.mass.gov/eea/docs/doer/renewables/solar/community-shared-solar-implementation-guidelines-with-contracts-032913.pdf

(5) This report does not aim to provide a complete list or discussion of the many program design elements. For more information on shared solar program design, see the following resources:

Community Solar Scenario Tool (CSST), Version 1. Golden, CO: National Renewable Energy Laboratory, 2014. www.nrel.gov/tech_deployment/tools_community_solar.html (This tool provides a first-cut analysis of the economics and program design options for a potential shared solar project.)

Barth, B.; Campbell, B.; Krishnamoorthy, B.; Siegrist, C.R.; Taylor, M. "Utility Community Solar Handbook: Understanding and Supporting Utility Program Development," Version 1. Washington, D.C.: Solar Electric Power Association (SEPA), 2013. Accessed 2014: www.solarelectricpower.org/media/71959/solarops-community-solar-handbook.pdf

Barth, B.; Campbell, B.; Krishnamoorthy, B.; Siegrist, C.R.; Taylor, M. "Utility Community Solar Handbook: A Development Guide for Utility-Managed Community Solar Programs," Version 1. Washington, D.C.: SEPA, 2013. Accessed 2014: www.solarelectricpower.org/media/8189/sepa-utility-community-solar-handbook_final-1-.pdf

Coughlin, J.; Grove, J.; Irvine, L.; Jacobs, J.F.; Johnson Phillips, S.; Sawyer, A.; Wiedman, J. *A Guide to Community Shared Solar: Utility, Private, and Non-Profit Project Development*. NREL/BK-5200-54570; DOE/GO-102012-3569. Golden, CO: National Renewable Energy Laboratory, 2012. Accessed 2014: www.nrel.gov/docs/fy12osti/54570.pdf

"Increasing Community Access to Solar: Designing and Developing a Shared Solar Photovoltaic System." NREL/FS-7A20-55319/GO-102012-3644. Golden, CO: National Renewable Energy Laboratory, 2012. Accessed 2014: www.nrel.gov/docs/fy12osti/55319.pdf

(6) Barth, B.; Campbell, B.; Krishnamoorthy, B.; Siegrist, C.R.; Taylor, M. "Utility Community Solar Handbook: Understanding and Supporting Utility Program Development," Version 1. Washington, D.C.: SEPA, 2013. Accessed 2014: www.solarelectricpower.org/media/71959/solarops-community-solar-handbook.pdf

(7) Colorado Community Solar Gardens Act. H.B. 10-1342. Second regular session, Sixty-seventh General Assembly.

Colorado Public Utilities Commission Solar Gardens Rule Making Notice. Decision No. C10-1061

Minnesota Solar Energy Jobs Act. H.F. 729. 88th Legislature.

California Green Tariff Shared Renewables Program. S.B. 43.

(8) In June 2014, the Assembly passed A.9931 to establish a shared solar program in New York. The same day, the New York senate introduced the same bill as S.7727.

(9) An interactive map of existing shared solar projects and state actions to support the business model is available at www.sharedrenewables.org/.

(10) The cost of electricity in a solar garden is usually fixed for the life of a subscriber's participation. However, high administration fees currently reduce the level of benefit for participants in some projects.

(11) Colorado Community Solar Gardens Act. H.B. 10-1342. Second regular session, Sixty-seventh General Assembly.

(12) Barnes, J.; Culley, T.; Haynes, R.; Jackson, R.; Passera, L.; Wiedman, J. "Freeing the Grid: Best Practices in State Net Metering and Interconnection Practices." Latham: New York: Interstate Renewable Energy Council, 2013. Accessed 2014: freeingthegrid.org/wp-content/uploads/2013/11/FTG_2013.pdf

(13) Other common terms for virtual net metering are community net metering and shared net metering. They all typically refer to the provision for a participant in a shared solar project to net meter their portion of the generation of the system against their load.

(14) Summaries of state legislation relevant to shared solar are available at www.sharedrenewables.org. The details of California Public Utility Commission's virtual net metering regulations and program are summarized in: "Virtual Net Energy Metering at Multitenant Buildings." San Francisco, CA: SF Environment, 2013. Accessed 2014: www.sfenvironment.org/sites/default/files/fliers/files/virtual_net_energy_metering_at_multitenant_buildings_0.pdf

(15) In Massachusetts, shared solar projects are counted under the public cap for net metering only if: (a) they are owned or operated by a municipality or other government entity, or (b) if a government entity is assigned all of the output from the project and is the host customer and only allocates credits to other government entities.

(16) According to an analysis by Bird, L.; Heeter, J. "Assessing the Potential to Reach Net Metering Program Caps," (forthcoming), California, Delaware, Massachusetts, Nevada, and New York may reach the existing net metering caps in the 2015-2018 time frame. Hawaii has already restricted net metering availability and determines eligibility on a case-by-case basis. New Jersey has passed the trigger point for state review of net metering eligibility limits, although it has not taken action to restrict availability.

(17) For more details on the Massachusetts System of Assurance of Net Metering Eligibility, see www.massaca.org.

(18) For example, in Massachusetts, any net metered project greater than 60 kWAC and owned by a public entity is in the Public Net Metering category. However, credits from publicly net metered projects cannot be credited to non-public accounts. As a result, shared solar projects cannot be more than 60kW in capacity. See Beavers, D.; McGuckin, J.; Sweet, E. "Community Shared Solar: Review and Recommendations for Massachusetts Models." Boston, MA: Massachusetts Department of Energy Resources, 2013. Accessed 2014: www.mass.gov/eea/docs/doer/renewables/solar/community-shared-solar-model-frameworks-032813.pdf

(19) The Interstate Renewable Energy Council points to emerging best practice of breaking the application process at 25 kW, 2 M, 10 MW, and 20+ MW of system capacity. Barnes, J.; Culley, T.; Haynes, R.; Jackson, R.; Passera, L.; Wiedman, J. "Freeing the Grid: Best Practices in State Net Metering and Interconnection Practices." Latham: New York: Interstate Renewable Energy Council, 2013. Accessed 2014: freeingthegrid.org/wp-content/uploads/2013/11/FTG_2013.pdf

(20) Internal Revenue Code Section 48 provides for a federal investment tax credit for commercial enterprises that install distributed solar systems.

(21) Internal Revenue Service Notice 2013-70. (November 18, 2013). www.irs.gov/irb/2013-47_IRB/ar09.html

(22) Gillette, L.; Gouchoe, S.; Herig, C. “Are solar rebates and grants for homeowners and business taxable?” American Solar Energy Society Conference Proceedings. 2004, Portland, OR. Accessed 2014: www.lambentenergy.com/Taxability_ASES_2004.pdf

(23) Office of the Chief Counsel Division of Corporation Finance Securities and Exchange Commission. “Re: CommunitySun, LLC™.” Washington, DC, August 29, 2011. www.sec.gov/divisions/corpfin/cf-noaction/2011/communitysun082911-2a1.htm

(24) The Securities Exchange Act of 1934, 15 U.S.C. § 78bb(a) states, “[n]othing in this chapter shall affect the jurisdiction of the securities commissioner (or any agency or officer performing like functions) of any State over any security or any person insofar as it does not conflict with the provisions of this chapter or the rules and regulations thereunder.”

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