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Community Solar For Opportunity States

An exploration of development models for community solar projects in states that lack explicit enabling policies

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This report identifies and analyzes alternative models for developing community solar projects in states lacking enabling policies, what we call "opportunity states."

Background:

- Traditional community solar models rely on third-party ownership and subscription-based benefits delivered through virtual net metering (VNEM).
- Opportunity states often lack the regulatory framework to support these models, hindering community solar development.

Key Findings:

- This report explores three alternative models for opportunity states:
  - **Community Benefit Funds:** Solar energy is converted to cash and distributed to beneficiaries (e.g., low-income energy assistance programs).
  - **Cooperative Ownership Model:** A member-owned cooperative develops and owns the solar project, with members receiving benefits through dividends.
  - **Project Configuration & Technology:** Projects are reconfigured or utilize new technologies to deliver benefits within existing net metering rules (e.g., solutions for multifamily buildings).

Introduction

Most states lack policies that enable community solar. As of April 2024, 22 states and the District of Columbia had specific statewide community solar policies, while the majority of states and territories do not.[1] We refer to states that lack community solar enabling policies as "opportunity states."

Yet community solar projects are still being proposed and developed in these states. In many cases, publicly-owned utilities, such as municipal utilities and rural electric cooperatives (which may not be subject to rate regulation by state utility commissions) develop or facilitate community solar projects. In other cases, third-party developers are exploring innovative models that work under existing policies to deliver meaningful benefits to a wide set of participants. This paper examines some examples of innovative projects and how they function within a state policy environment.

[1] US DOE, States Collaborative, Community Solar, https://www.energy.gov/communitysolar/states-collaborative

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Lawrence Berkely National Lab (LBNL) conducted this research in response to a National Community Solar Partnership (NCSP) technical assistance request from Canal Line, LLC. Canal Line is a community solar developer in Idaho aiming to develop a 1MW solar project in Marsing, Idaho to benefit the city's public schools. NCSP is a coalition of community solar stakeholders working to expand access to affordable community solar to every U.S. household and enable subscribers and their communities to realize meaningful benefits, such as reduced energy burden, increased resilience, community ownership, and equitable workforce development.

Canal Line's proposed project site is a quarter mile from the Marsing public schools, served by the local investor-owned utility Idaho Power, making it infeasible to connect behind the schools' electric meters. Idaho allows net metering but has no statewide policy enabling community solar, such as virtual net energy metering (VNEM) and Idaho Power does not offer a community solar program in the state. The only existing community solar programs in Idaho are run by cooperatives, which are not subject to the same regulation as investor-owned utilities like Idaho Power.[2]

Canal Line is considering alternative project models that will allow the schools and the project to take advantage of the solar installation to provide meaningful benefits to the community. This brief provides examples of third-party owned projects that have used—or are in the process of setting up—alternative models to offer the benefits of community solar in opportunity states.

Summary of Findings

The U.S. Department of Energy defines community solar as any solar project or purchasing program, within a geographic area, in which the benefits of a solar project flow to multiple customers such as individuals, businesses, nonprofits, and other groups.[3] The ability to provide these benefits through community solar often relies on a set of enabling policies, including the possibility of ownership of the community solar project by a third-party (i.e., not the utility or the customer), a way to deliver benefits to subscribers (such as virtual net energy metering or VNEM), and adequate compensation for generated energy (i.e., adequate remuneration to the project owner). Many states lack these provisions, making it difficult to develop community solar projects.

Nonetheless, several organizations have found innovative models for developing community solar projects that work within an opportunity state's regulatory environment to provide meaningful benefits to multiple stakeholders. In most cases, these innovative models strategically leverage existing behind-the-meter net energy metering policies or to convert energy into cash or other benefits that can then be disseminated to subscribers or to other community uses.

This brief highlights three such models, demonstrated by community solar projects that are either already energized or in development. The models are:

1. The creation of community benefit funds,

[2] See for example offerings from Kootenai Electric Cooperative at https://www.kec.com/kec-community-solar-project, the Northern Lights cooperative at https://www.nli.coop/programs-and-services/community-solar/about/, and Fall River Rural Electric Cooperative at https://www.fallriverelectric.com/cooperative-solar.

[3] US DOE, National Community Solar Partnership, https://www.energy.gov/communitysolar/community-solar

2. Developing community solar through a cooperative business model, and
3. Technological solutions that take advantage of existing utility programs and policies

Even in states that lack enabling policies, these models may offer pathways to provide the benefits of community solar to utility customers.

Prerequisites for a third-party owned community solar model

Part of DOE's definition of community solar says that "benefits of a solar project flow to multiple customers."[4] The most common way to share solar benefits is to have a central solar array that customers ("offtakers") can subscribe to, receiving the value—through virtual net energy metering (VNEM)—as a credit on their utility bill. This model is often referred to as a 'subscription model'.

There are three policy prerequisites to a third-party-owned, subscription-based community solar model:

1) **Third-party ownership**: In many states, the owner of a solar project does not have to be a utility, nor does it have to be owned by the customer. While since the 1990s independent power generation companies have been allowed to compete in wholesale power markets, only some states allow retail customers to directly purchase their power (sometimes called "direct access"). States with full retail competition, such as Texas, have no limits on access, while fully regulated states often maintain monopolies on retail electric service. In some cases, policymakers have created a special class of retail access from third parties just for community solar, such as Minnesota's Community Solar Garden program.[5] In addition, some states do not allow 3rd party solar power purchase agreements (PPA) with only 29 States the District of Columbia and Puerto Rico explicitly authorizing such agreements.[6]

2) **Delivering value to remote participants**: To implement the subscription model, there must be a way to deliver benefits from a centrally located community solar installation to the beneficiaries. This can be done through the use of VNEM or bill credits. As discussed above, virtual net metering allows a customer that is not located on the same site as the array to subscribe to the community solar project and receive the value of that energy on their utility bill. This is the most common method used to deliver community solar benefits. But other forms of "benefits" exist, and other pathways of delivery, as discussed in the examples below.

3) **Compensation for generated energy**: The developer of a community solar project needs to recover their costs, primarily by raising revenue through sales of energy.[7] Selling energy directly to retail customers is one way to raise revenues, but revenues may also come from selling energy to the utility as a wholesale supplier. The value of the energy can vary dramatically: state policy may set the compensation rate for solar energy generation as high as the full retail rate or may set it as

[4] US DOE, National Community Solar Partnership, https://www.energy.gov/communitysolar/community-solar

[5] MN Public Utilities Commission, Community Solar Garden, https://mn.gov/puc/activities/economic-analysis/community-solar-gardens/

[6] NC Clean Energy Technology Center, 3rd Party Solar PV Power Purchase Agreement, https://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2023/11/DSIRE_3rd-Party-PPA_Nov_2023.pdf

[7] To a lesser extent, community solar project developers can raise revenue by providing capacity and ancillary services, as well as through tax credits, depreciation, and other incentives.

low as a wholesale rate or "avoided cost." Lower compensation rates could make a project financially unfeasible.

In states that do not currently have these policy mechanisms, it can be highly challenging to develop third-party owned, subscription-based community solar projects. In those 'opportunity states' developers have sought other avenues for sharing the benefits of community solar.

Alternatives to subscription-based community solar models

An initial review of solar projects in opportunity states finds three strategies that may be used to successfully fund projects and deliver meaningful benefits to residents, even without the support of enabling legislation. Below are high-level descriptions of each. The deployment of the models is described in the subsequent case studies.

Community Benefit Funds

In the first strategy, the community solar project owner converts the value of generated energy into cash and distributes the cash to the beneficiaries, bypassing the need for VNEM or bill credits. This can be done by using project revenues to create a community benefit fund which then pays out to community solar program participants. In one example, a community solar participant hosts a behind-the-meter solar project, by signing a solar lease or PPA that reduces the amount of electricity they buy from their utility. The community solar host forgoes some of the savings from the project and allows the additional funds to be used to deliver benefits to others. The donated funds may be used to cut energy bills for low-income households (an "energy assistance" fund) or to provide grants or other community benefits (a "green fund").

Cooperative ownership model

The second strategy focuses on delivering benefits through ownership rather than through subscriptions. All states allow the formation of cooperative businesses of some form, in which individuals can become members and owners of the cooperative, entitled to dividends and other benefits. Cooperatives are common in certain fields, such as agriculture, groceries, and banking.[8] They have been applied to community solar as well.[9] In states with enabling policies, the community solar cooperative simply acts as a third-party developer and owner and can sell energy subscriptions to its members or others. In opportunity states, the cooperative can be a developer and third-party owner of behind-the-meter projects that deliver energy savings to host customers. The benefits to cooperative members come from dividends paid out by the co-op.

Project Configuration

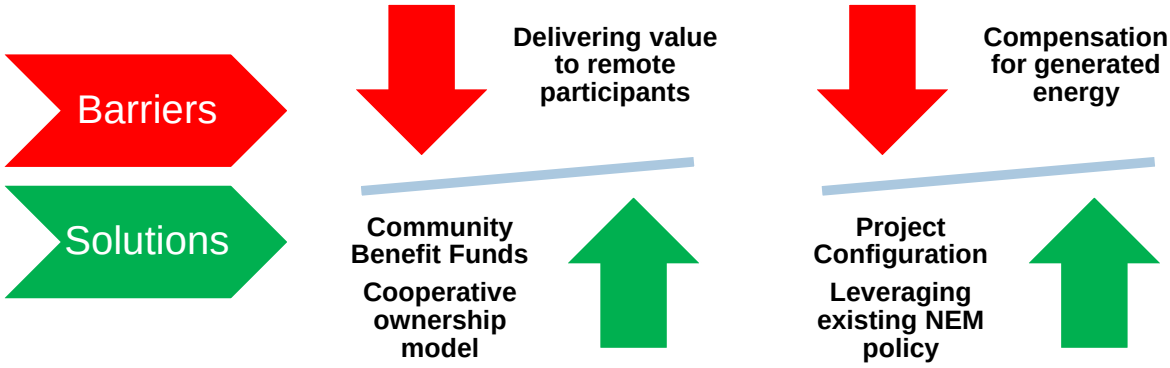
Other innovative models use state net energy metering (NEM) rules as a pathway for delivering community benefits to LMI households, particularly when a large number of customers live in the same building or nearby. Behind-the-meter solar generation that is consumed on site is valued at the full retail cost of electricity, while the value of excess energy exported to the grid varies from state to state, from full retail to

[8] National Cooperative Business Association, "What is a cooperative?", https://ncbaclusa.coop/resources/what-is-a-co-op/.

[9] Note that, although some cooperative utilities—such as rural electric cooperatives—have developed community solar programs, this section refers to non-utility cooperatives which are third-party owners of community solar projects.

a lower wholesale rate.[10] In states or utility territories that don't allow the use of virtual net metering to distribute benefits to multiple tenants, project developers have reconfigured the solar project and the wiring of a building to take advantage of NEM rules in master-metered apartment buildings or avoided export to the grid by using solar and storage. Some emerging technologies can directly distribute the solar energy to tenants in a multifamily building (see the **Error! Reference source not found.** case study below), allowing them to benefit from reduced consumption from the electric grid. Alternatively, a solar project can supply just common areas of a facility and the building owner can pass the savings on to all tenants in the building or community.

Figure 1: Common barriers to community solar projects in opportunity states with potential solutions



The barriers faced by community solar projects in opportunity states as well as potential solutions are explored further below.

Case Studies

This section documents projects that have been built or planned in opportunity states. In each case, the project is structured to conform with state and local regulations and does not necessarily follow the typical subscription model. These projects use innovative approaches to deliver the benefits of community solar to multiple recipients.

Mississippi: Mendenhall Bible Church, Son Solar

State	Mississippi
Project	Mendenhall Bible Church
Developer	Son Solar
Barrier(s)	Delivering value to remote participants and compensation for generated energy
Solution	Community benefit fund
Status	In development

Project Summary

The State of Mississippi has no community solar enabling legislation and has no VNEM allowance, making the third-party owned, subscription-based model unfeasible unless directly supported by a utility.

[10] According to the Solar Energy Industries Association, Net energy metering "credits solar energy system owners for the electricity they add to the grid." See more at https://www.seia.org/initiatives/net-metering.

Mississippi does allow third-party solar lease agreements. Son Solar, Inc. (Son Solar), a community-based organization and nonprofit developer, plans to develop 1.8 MW of community solar with Battery Energy Storage Systems (BESS) located at six church-owned businesses to provide access to energy bill savings for low- and moderate-income (LMI) residents. To accomplish this, Son Solar created a consortium of three churches which collectively own six buildings that they have made available for solar development.

Son Solar will install arrays behind the meters at each location, reducing electric bills at each site. Pairing solar and BESS on site will allow the churches to take advantage of all energy produced by the arrays, regardless of time of production and facility demand. This should allow the church buildings to replace most or all of their electricity consumption with generation from their solar panels (saving the retail rate for each kWh generated). The churches will pay Son Solar (through a PPA) for the energy produced at a 20% discount compared to the sites' current utility rates. Son Solar will therefore be able to collect 80% of retail rates on each kWh.

Together Son Solar and the participating churches will use a portion of the community solar revenue to create an Energy Assistance Fund (EAF) to help LMI families each month. The EAF will be funded by a portion of Son Solar's revenues, combined with the participating churches forgoing a portion of their total energy savings from the project. Son Solar will manage the EAF and, with input from the participating churches, will establish qualification guidelines for LMI assistance. Each church will refer qualifying members of their congregation or the community at large to the EAF. Son Solar then plans to become a co-signer on the utility accounts of potential EAF recipients, enabling them to pay a portion of the monthly bill directly to the utility company.

Mississippi: Belhaven Residential

State	Mississippi
Project	Belhaven Residential Apartment Homes
Developer	Belhaven Residential
Barrier(s)	Compensation for generated energy
Solution	Project configuration: A technology solution that allows for dynamic sharing of solar production with tenants in a multifamily building
Status	In operation

Project Summary

Belhaven Residential (Belhaven) is a ten-unit multifamily rental property located in a low-income, historic neighborhood in Jackson, Mississippi. In 2023, Belhaven installed a 22 kW solar array on an existing, multi-family rental building. Belhaven worked with Allume Energy[11] who engaged a broad range of stakeholders—including policy makers, the incumbent local investor-owned utility (Entergy Mississippi), the utility regulator, the building owner, and the Mississippi Development Authority—to bring the project to fruition.

Mississippi has no VNEM or community solar enabling legislation, so the project utilized a technological solution (Allume's SolShare) to distribute the solar energy from the single rooftop system to multiple apartments within the building. This technology allows on-site consumption of the solar energy produced by the array reducing the participants' monthly electric bill. Tenants are able to opt into a "solar addendum" on the lease for a small fee which allows them to see reduced electric bills. Using this behind

[11] Allume Energy works with developers and building owners to create a behind-the-meter approach to allocate solar energy in multi-tenant buildings. See https://allumeenergy.com/.

the meter technology allows tenants to benefit from solar without additional submetering or reconfiguration of the building's electrical meters.

Michigan: HOPE in the Village

State	Michigan
Project	HOPE Village Community Solar
Developer	HOPE Village Revitalization
Barrier(s)	Compensation for generated energy and delivering value to remote participants
Solution	Project configuration and community benefit fund
Status	In development

Project Summary

Michigan's state policy for community solar does not allow projects to deliver value to remote participants through VNEM. Furthermore, the compensation rates allowed for community solar-generated power under the existing tariff are not sufficient to cover the Hope Village project's costs. While utilities can grant an exemption to the VNEM restriction for projects in their jurisdiction, in this case, they have not (nor did they allow the use of their grid to transfer electricity).

HOPE Village Revitalization is a 501(c)(3) focused on combatting neighborhood deterioration and creating access to opportunity for residents of HOPE Village in Detroit. To deliver benefits to residents through solar energy, HOPE Village collaborated with Soulardarity and the Cooperation Group[12] to create and own a modified community land trust structure. The community land trust will have long-term ownership of roof rights and solar arrays on the building. In this structure a building owner enters into a solar PPA with the newly developed community land trust, allowing the building owner to buy energy at a discount (compared to utility retail rates).

HOPE Village Revitalization is renovating several vacant apartment buildings for long-term use as affordable housing and identified several buildings to serve as a pilot for this project. They plan to install rooftop solar on each building (which will connect to the master meter), and sell all of the power to the building owner through a PPA (at a discount compared to retail rates). The building owner will submeter and bill each apartment for electricity separately, passing on the energy savings attributed to the solar array. This option is only possible if the building owner takes on the responsibility of billing the residents individually.

Once the costs of the installation are recouped by the community land trust, the financial benefits – delivered through the PPA –would flow to the community land trust entity. These benefits can then be made available for other solar projects in the neighborhood.[13]

[12] The Cooperation Group is a nonprofit that supports cooperative businesses (https://www.modeldmedia.com/features/cooperation-group-detroit-innovation-061218.aspx). Soulardarity is a membership-based 501(c)(3) nonprofit working "together with our neighboring communities to build a just and equitable energy system for all." https://www.soulardarity.com/about

[13] U.S. Department of Energy. (Oct. 2021). "Moment in the Sun: HOPE Village Revitalization". https://www.energy.gov/communitysolar/articles/moment-sun-hope-village-revitalization.

Michigan: North End Woodward Community Coalition

State	Michigan
Project	North End Woodward Community Coalition
Developer	North End Woodward Community Coalition
Barrier(s)	Delivering value to remote participants
Solution	Community benefit fund
Status	In development

Project Summary
North End Woodward Community Coalition (NEWCC), a Detroit-based social justice/community development organization, plans to install rooftop and ground-mounted solar arrays at homes, nonprofits and small businesses within a targeted area. It plans for its first 50 projects to be 100% grant-funded residential solar arrays with no initial cost to the LMI homeowners (subscribers). NEWCC will own the systems and subscribers will pay NEWCC monthly through a power purchase agreement (PPA) at a 50% discount compared to their utility rate.

PPA revenues plus revenues from federal tax incentives will go into a "Green Fund" and NEWCC will reinvest the funds to serve additional households in the targeted development area. The Green Fund will pay for the expansion of renewable projects and help disseminate the benefits from additional projects to new subscribers.

Washington: Merritt Manor, Olympia Community Solar

State	Washington
Project	Merritt Manor[14]
Developer	Olympia Community Solar
Barrier(s)	Compensation for generated energy
Solution	Project configuration: Building behind the meter to take advantage of net metering compensation rates; using export revenues to provide meaningful benefits for low- and moderate-income residents
Status	In operation

Project Summary
Merritt Manor is a four-story housing complex in Olympia, Washington that hosts 82 income-eligible apartments. A local solar developer, Olympia Community Solar (OCS) sought to develop solar to help reduce energy burdens for the residents.

Each apartment unit in the building had its own individually metered utility account. Washington net-metering regulations[15] do not require utilities to offer VNEM, and NEM is ill-suited for individually metered multi-family housing. While utilities can transfer bill credits voluntarily, the local utility was not willing to. So, OCS proposed to add a single rooftop solar installation, reconfigure the building's utility accounts to eliminate the 82 individual unit accounts and deliver the bill savings to tenants as bill credits.

To do this within Washington's net-metering rules, Merritt Manor reconfigured the building's utility service as a single commercial customer with master meters at two points of service. The project now uses

[14] Rolf, M., January 2023, *Overcoming Barriers to Solar Energy for Multi-family Buildings,* https://olysol.org/wp-content/uploads/2023/02/Multifamily-Housing-Solar-Case-Study_OCS_4_3_2023.pdf

[15] Chapter 80.60 RCW found at https://app.leg.wa.gov/rcw/default.aspx?cite=80.60

net metering for a single commercial customer, as allowed under state regulations. The building owner, Grandview Management Services, takes responsibility for payment of the electric bill and includes the discounted electricity costs as part of the rent payments it collects from each unit. Tenants are charged a *pro-rata* share of the utility bill based on the number of bedrooms in their apartment.

Reconstituting Merritt Manor as a single commercial customer created two additional savings streams. First, the utility now collects fixed charges from only one account (it formerly collected from 82 accounts). This saves residents over $6,700 per year. Second, it reduces utility taxes, which the utility charges on a per-customer basis, saving nearly an additional $ 2,700 per year. Altogether, the combination of solar credits, reduced fixed charges, and reduced taxes saves about $23,400 per year, or $285 per household.

The building owner's willingness to take over utility billing for the tenants is imperative to this strategy. A potential risk to this strategy is using a rough estimation of each unit's consumption. Some units may use more electricity than they pay for while others may pay for more than they use. If that is a concern, it may be possible to install a sub-metering system (not utility-grade) to unofficially track consumption among tenants as discussed above at the HOPE in the Village project.

California: People Power Solar Cooperative

State	California
Project	Dividends Return Commons Model
Developer	People Power Solar Cooperative
Barrier(s)	Delivering value to remote participants
Solution	Cooperative ownership model
Status	In operation

Project Summary

Although California has had community solar policies in place for several years, the policies have made it challenging for third-party developers to operate (e.g., compensation rates that do not support favorable project economics). Indeed, regulators recently revised the state's community solar policy and rules in response to state legislation adopted in 2023 (AB 2316), which may make third-party development more viable.[16]

Although the previous community solar policy in California was challenging for third party developers, the state's net energy metering rules for behind the meter (BTM) projects have been more generous (though have also been recently revised).[17] People Power Solar Cooperative (PPSC) offers the "Dividends Return Commons Model" for community solar in Oakland, California. Through the model, cooperative members can buy a share of the solar projects built and owned by PPSC. PPSC has used the investment to build BTM solar at three sites (three different projects). For example, in one project, about 50 cooperative members invested in building a 7 kW system on a duplex (none invested more than $1,000).

[16] California Public Utilities Commission (CPUC), "CPUC Expands Existing Community Solar Programs and Launches New Community Solar Program," May 30, 2024, https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-expands-existing-community-solar

[17] CPUC, "NEM Revisit Proceeding (R.20-08-020)," https://www.cpuc.ca.gov/nemrevisit.

Through a PPA, each host customer pays reduced rates (compared to utility rates) to PPSC for the solar-generated electricity they consume. These payments plus compensation for exported electricity reimburse project investors (i.e., PPSC cooperative members). Any surplus over project cost payments goes to cooperative members in the form of dividends at the end of the year.

This arrangement allows for community ownership (through the cooperative, the members/investors are part owners of the solar arrays) and provides members meaningful benefits (wealth building) without the need to own property or even have access to a roof. It disconnects the ownership of property and the ownership of power generation.

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