USDN Equity in Energy Transformation and Innovation Case Study:

Cooperative Energy Futures Community Solar Gardens

Snapshot

Cooperative Energy Futures (CEF) is an energy services cooperative (co-op) in Minnesota that develops community solar gardens (CSGs). Their model prioritizes increasing access to solar for low-income residents and renters by offering pay-as-you-go subscriptions and utilizing backup subscribers to eliminate the need for credit scores during customer enrollment. Backup subscribers are large community organizations, such as local governments or houses of worship, that volunteer to receive credits from the garden in the event of a default. This model enables the system to be offered to a wider diversity of subscribers than comparable systems throughout the state. In addition, on-the-job installation training programs for low-income residents are focused on developing a workforce for CSG projects. To expand the model regionally and nationally, CEF has worked to define a set of equity goals through its role as a founding member of the Minnesota Just Solar Coalition, composed of developers, nonprofits, and advocacy organizations.

Key Information:

- ***Technology:*** Solar PV
- ***Funding Sources:*** Tax equity investment, private investment, and co-op member investments
- ***Financing Mechanism:*** Backup subscribers and member subscriptions ("Preferred shares")
- ***Ownership:*** Third-party and community ownership (hybrid model)
- ***Location:*** Minnesota

STAGE 1—PROGRAM DESIGN PROCESS

Program Genesis

In 2009, the CEF co-op was founded to provide local ownership options for energy efficiency and clean energy solutions to its membership.

- CEF is based in South Minneapolis and is **composed of community members from across the state.** Prior to the development of CSGs, CEF programs included bulk procurements for air sealing and installations, a group purchase program for energy conservation measures, and trainings in weatherization techniques.
- The co-op has always had a vision to **create clear and accessible pathways to clean technologies.** In 2012, CEF shifted its member offerings to be more solar-oriented, including organizing a bulk-buy for rooftop solar and supporting individual rooftop installations and leasing models to reduce costs.[1] CEF realized that these solar initiatives were only providing renewable energy access for the 10–15 percent of their members who had access to capital, owned property, and had buildings that allowed for installation.[2] After the Minnesota legislature enabled community solar in 2013, CEF saw this as a natural evolution of their solar programing, given high member interest in solar energy.
- As the Minnesota community solar market evolved, CEF observed that many gardens were requiring credit scores of 680–700 to participate, limiting the accessibility of the market.[3, 4] CEF, and its long-term collaborator, Minnesota Interfaith Power and Light (MNIPL), were among two organizations who saw an **opportunity to increase equity in community solar projects.**
- Both organizations were founding members of the Just Community Solar Coalition (now known as the Just Solar Coalition), an organization whose goal is to **make CSGs more accessible to low-income households while creating jobs and local economic development opportunities.**[5] Together with other partners, they developed a "north star" or guiding principles for their projects: **improving access, addressing the racial employment gap, protecting natural systems, and creating pathways for community ownership.**[6]
- The development of CEF's first CSG coincided with a request for proposals (RFP) from MNIPL seeking developers with an interest in linking community solar with social equity principles. CEF was one of two successful respondents, which led to the organization's **first collaboration on a CSG at Shiloh Temple, an African American congregation in North Minneapolis**, with MNIPL leading the outreach.[7] From this successful collaboration, CEF is currently developing and implementing **numerous CSGs in other communities around** the state (six CSGs are being constructed between August and October 2018).

Figure 1: Program Development Timeline

Key Actors and Partnerships

As of July 2018, **CEF has partnered with three community organizations for its CSG projects.** These organizations have expansive local knowledge and long-term relationships with low- and moderate-income communities. MNIPL is CEF's most involved community partner—the organizations have a history of collaborating with each other on other clean energy topics in Minnesota prior to the first CSG. Through CEF's continued networking within communities, they have met other partners organically as they have expanded. Table 1 summarizes key partner organizations involved in the CSGs.

Key Actors	Who They Are	Role in the Program
CEF	The implementing co-op	Administers and manages CSG project development and subscriptions
Xcel Energy	Utility company serving more than 900 communities around Minnesota[8]	Provides energy data for interested participants and administers credit transfers, but otherwise uninvolved in project details
Community Partners: MNIPL,[9] Northcountry Cooperative Foundation, and Community Power	Community organizations where current CSG projects are being constructed	Conducts outreach through trust relationships within community—partners are compensated for successful recruitment of subscribers[10]
Co-op Members	Residents from around the state	Play an active role in co-op's decision making and actions
Backup Subscribers	Typically, public buildings and other organizations in the community	In the event of a default by a subscriber, the offtaker of last resort absorbs any available community solar credits

Table 1: Program Partners

Stage 1: Core Equity Components

Listen and Respond: As members of the co-op, participants are involved in the project and select the co-op's governing board. This control provides an additional incentive for **members to actively participate.** CEF works one-on-one with residents to ensure that their **priorities are being met.** These priorities include the contractors they select for each CSG—contractors are selected by considering factors such as **social equity goals, affordable pricing, and local hiring.**

Partner with Trusted Community Organizations: In a specific example, MNIPL's outreach focused on door-to-door interactions, tabling and holding lunches at community events, and **targeting congregations and congregants who could serve as community champions** for the CSGs. In one instance, a mosque, Masjid An Anur, assisted with subscriber outreach and hosted a solar camp for its youth. MNIPL's outreach followed their "Be the Spark" model, which **empowered volunteers and interested community members and organizations** to conduct their own independent outreach about community solar. During each of its sessions with volunteers, MNIPL placed a repeated **emphasis on their core equity values** and the principles of the Just Solar Coalition. During the canvasing and outreach campaign, the values of energy ownership and workforce development resonated strongly with community members.

STAGE 2—PROGRAM STRUCTURE

User's Perspective:

- To be eligible to join the co-op, all subscribers must receive their utility bill from Xcel Energy, live in or near the county where the CSG is located, and **buy a one-time co-op membership share** of $25.[11]
- After joining, **members can run for or elect the governing board, vote on important co-op decisions, attend regular member meetings, and receive a portion of the energy savings from the CSG.**
- Co-op members **subscribe to a specific** CSG for 25 years and in return, receive energy credits from the community solar system at a discount from retail electricity rates, proportional to the member's subscription size. The subscriptions are designed to provide year 1 discounts of 6–11 percent off the retail rate the consumer pays, while lifetime savings are expected to be much higher. Subscriptions can be as high as 120 percent of a household's historical electricity usage.[12, 13]
- **All subscribers receive a credit on their utility bill each month.** Members have two subscription options: pay-as-you-go and paying up-front.

- If a member moves to a location that is still served by Xcel and in the same or neighboring county to the CSG, they can simply **apply the subscription to their new address.** If they move outside of that area, they or the co-op can transfer the subscription to someone else.[14]
- Members also receive monthly updates on the CSG projects and other CEF activities, and have access to educational materials.[15]

Administrator's Perspective: CEF is responsible for managing the CSG projects, including design, panel selection, construction, insurance, maintenance, energy metering, and interactions with Xcel. They also provide **subscriber management services** including customer enrollment and sharing energy savings estimates from subscriptions. CEF selects contractors for each CSG, and bases its decisions on member priorities, such as encouraging local economic development.

To begin a new CSG, CEF identifies and selects community partners or organizations, who can assist with targeted outreach, and initiates an agreement to **compensate community partners** for their assistance in recruitment.

Outreach partners market the program through outlets such as **canvasing, attending local events, and hosting information sessions within the community.** Community partners identify interested individuals and work with CEF to have potential subscribers complete a release form to **collect their energy usage information from Xcel.** This information is used to develop a subscription offer for the CSG. The offer uses the individual's energy usage to determine **financial projections, the size and type of their subscription, and expected energy savings.**[16]

What is a CSG?

CEF Solar Garden

A solar garden, or farm, is an array of solar panels connected to a utility grid, with multiple subscribers. This allows residents access to the environmental and financial benefits of solar without having solar panels on their roofs. Subscribers receive a credit from the power produced on their electric bill from the utility.

A CSG can be owned by a project developer, the utility, or community-owned, meaning interested community members pool their resources to build the solar garden and then receive credits. CSGs can also make use of common roof space, such as the rooftop of a public facility.

(Photo Credit: Julia Nerbonne, MNIPL, Shiloh Temple community solar array).

Funding and Financing Delivery

- CEF utilizes federal tax incentives and partnerships with community finance networks to fund its CSG projects. The co-op also uses **backup subscribers to eliminate the need for credit scores in customer enrollment processes and improve the projects' bankability for investors.**
- Through the backup subscriber model, CEF **mitigates the perceived investment risks of the CSGs and low- to moderate-income subscribers.** The backup subscribers serve as offtakers of last resort for the energy credits produced by the CSG. In practice, these backup subscribers are local organizations **that agree to pay for and offset their energy with credits from the CSG, should a participant default.** This ability to quickly absorb the system's capacity is an essential factor to proving economic constancy for outside financiers.
- An ideal offtaker of last resort must show that they are **economically stable, willing to participate, have a load large enough to absorb the energy use, and have long-term interests in the community.**[17] As a result, institutions like cities are well-suited to fit these criteria. Any kilowatt hours that the original subscriber cannot pay for are transferred directly to the backup subscriber. **The backup subscribers benefit from the subscription discount whenever they receive a transfer.** Revenue from the CSGs covers operation, development, and administrative costs. Any profit is distributed back to the community subscribers.[18]
- CEF also launched a "Preferred Shares" opportunity for members to **directly invest in the gardens.** As of the end of December 2017, CEF had secured $501,000 in investments from its members. It is using these investments to pay for Xcel fees to launch its six CSG projects, initial contractor payments, legal fees, land use permits, and creation of a subscriber management system.[19] **Preferred shareholders receive dividends** based on their investment amount and the project's success.

Stage 2: Core Equity Components

Reduce Financial Burdens: The co-op increases accessibility to low-income residents in several ways:

- The qualification pathway for CSG participation **eliminates credit score or income requirements,** allowing energy users at all income levels to participate.
- Minnesota's community solar legislation **attaches the utility bill credit to an energy meter** instead of the property, so **renters are eligible to participate.**
- For the CSGs that are currently being constructed, CEF estimates that 50 percent of subscribers are low-income, including many **residents from affordable housing complexes and manufactured housing parks or mobile homes.**
- CEF observed that **backup subscribers were essential in convincing financiers to support a CSG with many low- to moderate-income participants** and also allowed subscribers who want to subscribe up-front to help reduce financing costs.
- In the first CSG in North Minneapolis, 50 percent of subscribers are local residents using the pay-as-you-go model, 20 percent of the subscribers paid up-front and are from surrounding neighborhoods, and 30 percent are local houses of worship, with a mosque providing backup subscription support.

Protect Consumer and Workers: CEF has prioritized workforce development in its programming. Their efforts are focused on improved racial and social equity in industry hiring. For their CSGs, there is a 50-percent minority hiring requirement for installation work. CEF also **connects trainees of affiliated solar job training programs with the selected installation partners for the CSGs.** The goal of these workforce development efforts is to create a shift in the racial makeup of the industry.

STAGE 3—IMPLEMENTATION AND EVALUATION

Impact

- At present, the first CSG projects are under construction. CEF expects that its first eight CSG projects will have a total financing of $15.7 million.
- The projects have **scaled in size** since the first CSG. For example, the MNIPL-initiated CSG at Shiloh Temple was 205 kilowatts (kW) in size, served 28 subscribers, and was hosted on the church's roof.

- The second CSG was 664 kW, served 68 subscribers, and was hosted on the public works building of the City of Edina. **Edina was very involved in outreach and recruitment** because the City was both the site host and backup subscriber. The City also restricted recruitment to residents only. **The backup subscriber model was successful in both communities,** which represented low-income and upper-middle-income participants, respectively.[20]
- Two other CSGs in the Cities of Eden Prairie and Saint Cloud are fully subscribed. There are an additional three CSGs that are still open for subscriptions, and these are focused in more rural and low-income areas.[21]
- In addition, CEF has other related accomplishments, including 34 completed residential solar installations from 2013 to 2016, 42 in-home energy efficiency trainings focused on do-it-yourself installations, and 24 insulation and air sealings retrofits. Beyond the individuals served by these projects, CEF has succeeded in **increasing awareness about energy opportunities and developing systems for profit sharing with communities.**[22]

TOOLS FOR CITIES AND PARTNERS:

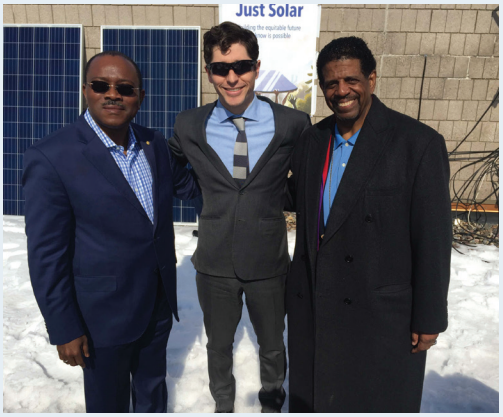
CEF refers its community members to the following Clean Energy Resource Teams (CERT) tools:

1. Local Government Customizable Slide Deck
2. Community Solar Garden Calculator
3. Guide to Community Solar Gardens
4. Local Government Toolkit: includes RFP Examples, Subscriber Agreement Disclosure Checklist, and Host Site Agreements

IMPACT:

- Co-op Members:
  - 2015: 121
  - 2018: More than 450
- Four fully subscribed projects, using the backup subscriber model as of January 2018

Spotlight



Bishop Howell of Shiloh Temple and Imam Mohommed Dukuly of Masjid An Nur with Minneapolis's Jacob Frey. Shiloh Temple and Masjid An Nur are the two institutional partners subscribed to the Shiloh array. Masjid An Nur is the backup subscriber, and Shiloh Temple is the host location.

(Photo Credit: Julia Nerbonne, MNIPL, Institutional partners subscribed to the Shiloh array)

Stage 3: Core Equity Components

Make it Easy: As part of its community outreach, the co-op has hosted in-home workshops, including many in Spanish. These workshops were designed to **promote awareness and increase basic home energy efficiency education.** Working with trusted community organizations with meaningful connections to residents also allowed CEF to have **more in-depth and successful outreach.** CEF's community partners are currently conducting **outreach to target low-income residents,** in East African, Native American, and Latino communities across different cities around the state.

Beyond Carve-outs: Brett Benson, the Operations Director of MNIPL, stated that when participants join a community solar project, "you're not just subscribing to a solar garden, you're **participating in a movement**." CEF is open to all community members but places an emphasis on helping low-income residents participate and **gain access to energy savings.**

Community Context

CEF is based in South Minneapolis and the organization works with communities around Minnesota that have varying contexts. These communities are diverse in terms of race, income, and density. This variation has led CEF to make changes to its program structure based on the unique circumstances of each community.

Challenges

1. **New Concept:** CSGs are a new concept to many communities. Because of the novelty, residents **were reluctant to participate** in the first CSG cohort. During outreach, MNIPL found that residents were hesitant to join the garden when **they could not see past project results or speak to prior participants.**

2. **Administrative Complexity:** Even if outreach successfully solicited interest, subscribers had to sign a release form for their energy data and a contract. There was **some resistance to signing a complex, long-term contract.** Participants also expressed concerns about the need to pay a separate bill to CEF in addition to paying their Xcel bill.[23]

3. **Project Scale and Finance:** Engaging financiers to invest in a single CSG project was challenging because the project was **perceived as a transaction with high risks and administrative costs relative to its size.** These perceived risks **were increased because of CEF's focus on low-income subscribers.** The backup-subscriber approach provided risk mitigation for the investors. Developing a portfolio of CSGs also helped CEF attract private-sector partners. This contrasts with CEF's initial approach, where they were focused on developing a small test project. As Timothy DenHerder-Thomas from CEF explained, "As backwards as it sounds, **starting at a large enough scale is necessary to make your pilot work**."[24]

Future Plans

Community solar is increasing in scale throughout the United States. CEF's first CSG at Shiloh Temple has provided strong momentum and interest in future projects. Additionally, partnerships with public-interest organizations through the backup subscriber model has enabled broader flexibility in community solar subscription options and improved subscriber diversity. Elements of the model may be replicable in other markets. For example, CEF is actively exploring work with local governments outside of Xcel Energy territory.

In addition, the Just Community Solar Coalition has expanded its mandate to consider rooftop solar, under a revised name, the Just Solar Coalition. CEF, MNIPL, and the other coalition members are working to scale the coalition's principles and values nationally by creating a Just Solar certification program for different aspects of solar projects, such as workforce development or community solar. The group is also investigating pathways to increase access to both on-site and community solar programs by working with additional developers to hire talent from workforce training programs and investigating on-bill financing for rooftop solar. By focusing on advancing social justice, CEF, MNIPL, and the Just Solar Coalition have built a movement around equity in the community solar market in Minnesota.

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Interviewees:

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- Julia Nerbonne, MNIPL (photographer). *Shiloh Temple community solar array.*
- Julia Nerbonne, MNIPL (photographer). *Institutional partners subscribed to the Shiloh array.*

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