Grow Solar A Midwest Partnership to Move Markets

Powered by SunShot U.S. Department of Energy

Overview of Shared Solar Opportunities in the Midwest

Created through the Grow Solar Partnership, a DOE SunShot Initiative (Rooftop Solar Challenge II) grant recipient

December 4, 2015

BUSINESS CONSULTANTS

DEEP TECHNOLOGISTS

westMONROE

The Grow Solar Partnership works to reduce the barriers to solar generation across the Midwest

- Funded through the U.S. Department of Energy SunShot Initiative's Rooftop Solar Challenge Phase II grant, the Grow Solar Partnership is a network of regional partners working to leverage private, local, and state support to build an open and advantageous solar market across the 3-state region of Illinois, Minnesota, and Wisconsin

- The Grow Solar Partnership is comprised of a team of core partners that work collaboratively with a wide range or regional organizations
  - **Core Partners:** Midwest Renewable Energy Association, West Monroe Partners, Environmental Law & Policy Center, Great Plains Institute, City of Milwaukee, Clean Energy Resource Teams, Illinois Green Economy Network
  - **State Energy Offices:** Illinois Department of Commerce and Economic Opportunity, Minnesota State Energy Office, Wisconsin State Energy Office

- West Monroe Partners is leading the Utility Interconnection Process workstream:
  - **Complete:**
    - Current State Findings Report, which highlighted current utility- and stakeholder-identified pain points and best practices across four major target areas: application, information access, processing time, and inspections
  - **Next Steps:**
    - **Evaluating shared solar program enrollment processes, with an actions roadmap and leading practice examples**
    - Creating pilot utility multi-year Solar Adoption Roadmaps with technology / process improvements for six utilities

Table of Contents

Shared Solar Background

Shared solar expands access to solar energy

Shared solar (or community shared solar) is a photovoltaic electric system that provides power and/or financial benefit to multiple community members

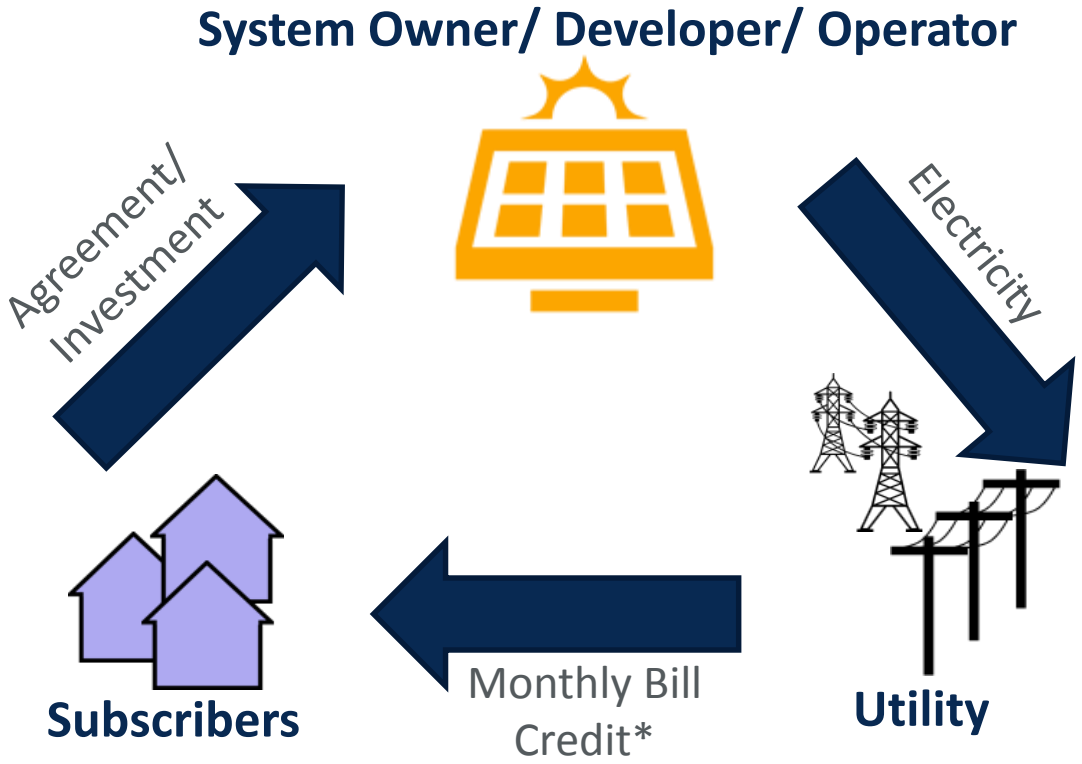
- The Grow Solar Partnership is focused on growing solar in the Midwest region. Whereas we have previously looked at solar as 1 system serving 1 end-user, shared solar allows 1 system to serve multiple users
- According to the National Renewable Energy Laboratory (NREL), **only about one-quarter of residential rooftop area** is suitable for solar photovoltaic systems
- Shared solar expands access to solar power to renters, condominium owners, those with shaded roofs, and those with financial barriers to installation, which is the vast majority of households

Source: National Renewable Energy Laboratory, Supply Curves for Rooftop Solar PV-Generated Electricity for the United States, 2008. Available at: http://www.nrel.gov/docs/fy09osti/44073.pdf

Shared solar offers many benefits to utilities and their customers

- Value proposition for utilities
  - Increases customer satisfaction and engagement—addresses customer demand for clean energy
  - Reduces carbon exposure (in anticipation of Clean Power Plan)
  - Increases utilization of larger centralized (and potentially utility-controlled) renewable energy generation as opposed to small distributed generation resources
- Potential financial benefits for subscribers
  - Depending on business model structure and prices:
    - Can provide positive revenues to subscribers
    - Can serve as a hedge against rising electricity prices
- Environmental benefits
  - By displacing fossil fuel generation, these projects:
    - Lower criteria pollutant emissions, leading to improved public health
    - Lower greenhouse gas emissions
- Economic development/ local jobs
- Reduced dependence on fossil fuels

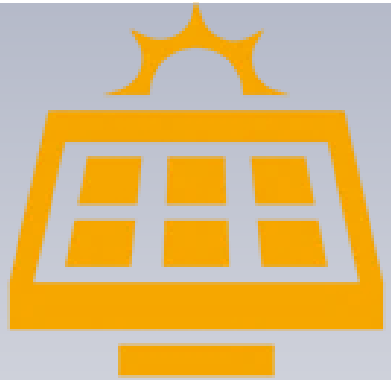
There are three main stakeholder groups in a shared solar system—the system owner, the utility, and the subscribers



Shared solar participant responsibilities

Subscriber

- Pay upfront or ongoing subscription fees
- Pay any ongoing administrative fees



System Owner or Developer

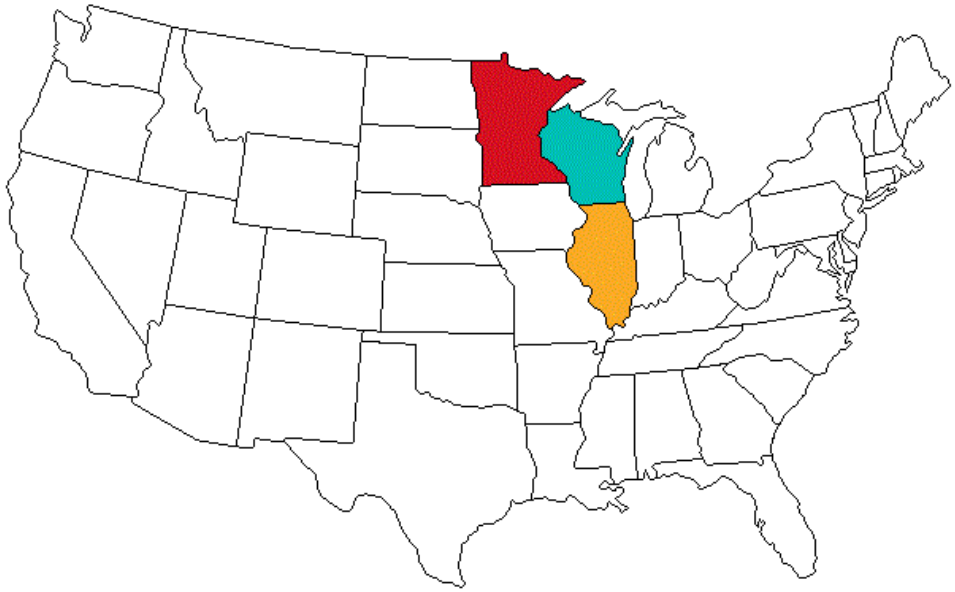
- Arrange for the engineering, procurement, and construction of the project
- Secure tax equity financing, if applicable
- Ensure permitting and interconnection
- May be responsible for customer acquisition, bill crediting, subscriber management services, and/or system operations & maintenance

Utility

- Review interconnection application
- Negotiate and enter into Power Purchase Agreement with system owner or purchase solar array
- Enter into bill crediting arrangement with customers
- Ensure on-bill crediting to customers

Midwest Shared Solar Programs

There are over twenty pioneering shared solar programs in IL/MN/WI



Illinois

- Jo-Carroll Electric Cooperative

Minnesota

- Agralite Electric Cooperative
- Arrowhead Electric Cooperative
- Beltrami Electric Cooperative
- Connexus Energy
- Itasca-Mantrap Cooperative
- Kandiyohi Power Cooperative
- Lake Region Electric Cooperative
- McLeod Cooperative Power
- Minnesota Power
- Moorhead Public Service
- Redwood Electric Cooperative
- Runestone Electric Association
- South Central Electric Cooperative
- Stearns Electric Association
- Steele-Waseca Electric Cooperative
- Tri-County Electric Cooperative
- Wright-Hennepin Cooperative
- Xcel Energy

Wisconsin

- Barron Electric Cooperative
- Clark Electric Cooperative
- Eau Claire Energy Cooperative
- St. Croix Electric Cooperative
- Taylor Electric Cooperative
- Vernon Electric Cooperative

Shared solar programs may be required by state legislation

- An example of shared solar initiatives mandated by law is the case of Xcel Energy in Minnesota
  - In 2013, Minnesota passed a law that requires utilities to produce 1.5% of their electricity from solar energy.
  - The legislation also required Xcel Energy specifically to develop a program for shared solar installations up to 1MW in size.
  - The program started in December 2014, and Xcel was immediately overwhelmed by hundreds of applications.
  - Many of the applications exploited a loophole in the law, allowing multiple adjacent 1MW installations, thus reaching utility-scale
  - In June of 2015, the law was modified to limit applications to 5 installations per location
  - As of October 2015, Xcel had received approximately 1,500 applications and had approved around 100.
  - Minnesota was well on the way to becoming the nationwide leader in shared solar.

- Shared solar programs can also be indirectly allowed through friendly legislation. The net-metering laws in Illinois are such an example.
  - Illinois has net-metering laws that allow any level of interconnection with no caps.
  - The law also allows for community net-metering. Currently, utilities can allow virtual net-metering as well based on their own discretion, but the legislature is still considering a bill to mandate it.
  - Thus, installers have the freedom to subscribe customers into the project in multiple ways, and the customers would see the energy credit on their electric bill.

Shared solar programs may also be started on a voluntary basis

- Developers and utilities can voluntarily create shared solar programs for a variety of reasons; customer interest, financial incentives, or green initiatives. This is more common among municipal and cooperative utilities.
  - **Vernon Electric Cooperative** – The first shared solar project in Wisconsin was installed by Vernon Electric. Their installation of 1001 panels and a total capacity of 305kW was fully subscribed within a few weeks due to the economic incentives for customers. They were able to sell the subscription at heavily subsidized rates of just $600 per 300W panel through a deal with the developer.
  - **Jo-Carroll Electric Cooperative** – Jo-Carroll Electric Cooperative in rural Illinois installed 456 panels and a total capacity of 126.5 kW. They sold the panels to their customers at the rate of $890 per panel, with all subscribers expected to break even within the 20-year life of the project. Unlike several other similar projects, Jo-Carroll manages and administers the shared solar farm themselves.
  - **Minnesota Power** – Larger utilities are also taking the initiative; Minnesota Power plans to install over 1MW of shared solar for their customers. They hope to complete the installation in 2016, provided they receive approval from the Minnesota Public Utilities Commission. The biggest benefit of larger utilities installing a community solar garden is that more customers can participate.

There are a few regional programs to kick-start shared solar in the Midwest

Cook County Community Solar Project

- Cook County (along with project partners including the City of Chicago, Commonwealth Edison, Elevate Energy, the Environmental Law & Policy Center, and West Monroe Partners) is working on a project through the U.S. DOE's SunShot Initiative Solar Market Pathways Program to:
  - Identify and establish models for community shared solar in Cook County
  - Address barriers to implementing community shared solar in Cook County and provide options for resolution
  - Engage a diverse group of stakeholders to inform the analysis and deliverables
  - Conduct analysis on the opportunity, best practices, policies and impact of community solar

Solar for Midwestern Colleges and Universities

- MREA is working with stakeholders at four universities to create solar investment proposals for consideration by university governance boards. This campus stakeholder engagement is led by student solar deployment teams and builds off of past program success with the U.S. Department of Energy Solar Decathlon and similar student-led projects. This effort showcases the potential of university solar photovoltaic (PV) investments, advances favorable board policies to govern PV investments, and provides a roadmap for universities across the country to deploy PV—advancing their sustainability goals.

Shared Solar Enrollment Best Practices

Shared solar enrollment process best practices

Program Design—defining subscription terms, ownership model, tax considerations, bill crediting, program length, and participation term

Project Approval—working with developer to site project, establish interconnection, and enter into a Power Purchase Agreement

Subscriber Enrollment—customer education and acquisition, marketing enrollment, implementing bill crediting, subscription transfers

Program Management—bill settlement, closeout criteria, ongoing project management

Program design

Active engagement of stakeholders for feedback on program design is critical to ensuring the success of a new shared solar program.

- Identify the program goals
  - Meet renewable energy or environmental mandates?
  - Increase customer access to clean energy?
  - Create economic value for subscribers or utility?
- Select a program design that makes sense
  - Use surveys, focus groups, and other methods of outreach to solicit feedback on design elements
- Program design considerations
  - Subscription structure
    - Upfront or ongoing payment
    - Energy or line item crediting
    - Participation limits (minimum and maximum subscriptions)
    - Term of subscriptions
    - Subscription transferability
  - Ownership model, considering access to incentives and capital
    - Utility-owned/sponsored
    - Third-party-owned
  - Program size/scale

Project approval

Overall, the project approval process for a shared solar project is similar to that for other commercial-scale solar arrays.

- Net metering agreement/ power purchase agreement negotiation
  - Dependent on policy landscape (e.g., can the utility own generation or enter into a PPA)
- Site acquisition
  - Should align with program design goals (e.g., is visibility important for subscribers?)
- Permitting
- Financing, incentive applications
- Interconnection
  - Application
  - Information Access
  - Technical evaluation
  - Processing
  - Inspection
- Construction

Subscriber enrollment

The effort involved in customer acquisition, marketing, system changes, and ongoing support for subscribers is often underestimated.

- The subscriber enrollment process depends on customer education of shared solar and solar, generally, but will likely include the following
  - Customer education (through online campaigns, traditional advertising, events, workshops, etc.)
  - Financial analysis from the subscriber perspective
  - Targeted marketing
  - Developing and negotiating a subscriber power purchase agreement or lease agreement
  - Updating bill credit systems
  - Processing subscriber deposits
  - Enrolling subscribers for on-bill crediting
  - Ongoing customer satisfaction outreach
  - Ongoing call-center support

Program management

A shared solar program establishes a long-term relationship with subscribers; it requires project and program management for the lifetime of the program

- Once a program is operational, there are a number of ongoing tasks that must occur
  - Subscriber management
    - Providing call-center support
    - Ensuring correct on-bill crediting
    - Collecting any ongoing administrative/service fees
    - Creating a mechanism for transfers of subscriptions
    - Reporting generation information
  - Project management
    - Monitoring solar project operations and ensuring desired performance
    - Performing operations and maintenance

For more information, please visit:

www.GrowSolar.org

PAUL AUGUSTINE
Manager, Energy & Utilities
312.447.6537
paugustine@westmonroepartners.com

ROHIT AGARWAL
Consultant, Energy & Utilities
312.447.8800
ragarwal@westmonroepartners.com

JEFF SMITH
Principal, Energy & Utilities
312.846.9949
jsmith@westmonroepartners.com