Access for All: Pathways to Expand Solar Options to Renters and Multifamily Households in the City of Seattle

Credit: Center for Sustainable Energy

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Across the United States, residential solar installations have soared, averaging a 68 percent annual growth rate for the last 10 years.[1] The environmental and economic benefits of this growth are substantial, as solar installations generate clean renewable energy, reduce fossil fuel use, provide financial savings to consumers, and create local jobs. However, while an historic number of Americans are benefiting from solar energy, many households and communities are still unable to access and benefit from solar due to policy gaps. Many of the federal, state, and local policies that have helped to accelerate solar energy's growth are targeted towards homeowners and taxable enterprises, and not available to a large and growing subset of the U.S. population, namely renters and/or those who live in multi-unit residential housing.[2] Additionally, renters and residents living in affordable multifamily housing that qualify as low- to moderate-income (LMI) are further restricted from accessing clean energy options due to additional financial, educational, and other barriers.

In Seattle, Washington, apartments make up nearly 40 percent of occupied housing,[3] and renters make up over 50 percent of the City's residents.[4] Seattle's proactive energy policies have helped residents access clean, efficient, and renewable energy resources, but current programs are largely geared towards single-family homeowners.[5] Washington's Renewable Energy Cost Recovery Incentive Payment program, which allowed project owners to receive a production incentive of up to $5,000 per year, also did little to incentivize larger shared solar projects due to the incentive cap. Seattle City Light and the State of Washington have provided "community solar" options to expand the reach of solar energy; however, those offerings are limited (see Seattle Community Solar Pilot Projects). With the passage and enrollment of Senate Bill 5939, and the renewal of state solar incentives, there is now a new window for implementing solar projects to increase access for LMI households in Seattle and throughout the State of Washington.[6]

Seattle is widely recognized as a national leader in sustainability, clean energy, and climate action.[7]

Seattle Community Solar Pilot Projects

Customers of Seattle City Light currently participate in five off-site shared solar projects, located at the Seattle Aquarium, Jefferson Park on Beacon Hill, two sites on Phinney Ridge in North Seattle, and an affordable housing apartment on Capitol Hill. These projects have expanded solar access for Seattle residents, but enrollments are already sold out for all five sites, with no additional capacity anticipated. Broader offerings will ensure all residents of Seattle have the opportunity to access and benefit from community solar.

To achieve clean energy objectives and environmental justice goals, policies and programs must also encourage equitable access to clean, locally-generated solar energy, to include those who live in multifamily affordable housing and LMI communities.[8]

The Green Divide

$6.8m
$6.8m in state production incentives paid out in 2015

$6.7m (99%) → Single family homeowners

$80K (1%) → Multifamily affordable housing

In King County:
3,400 single family homes served
20 MW solar deployed
$2.1 million annual savings
Median income: $90,000 for homeowners household

In King County:
4 affordable housing properties served
0.1 MW solar deployed
$15,000 annual savings
Low income eligibilty: at or below $56,250 for average household (2.4 persons)

This graphic, developed by Spark Northwest, illustrates how financial incentives affect multifamily access to solar, making it a priority to develop policies that expand benefits to multifamily residents.

Spark Northwest

Credit: Center for Sustainable Energy

Pathways to Expand Solar Access, Increase Benefits to Renters and Multifamily Residents

This document outlines two potential pathways to enable greater solar access for renters and multifamily residents and LMI communities in Seattle, as well as the necessary elements and key stakeholders for each: (1) on-site shared solar and (2) off-site/remote shared solar. Both on-site and off-site/remote "shared solar" programs can enable multiple customers to share the economic benefits of a single renewable energy system and to receive credits on their utility bills for the electricity generated by that common system.

⚙ Pathway 1: On-Site Shared Solar

With on-site shared solar, the generation from a single solar installation on the roof of a multifamily building is allocated across multiple electric meters, including individually metered tenant loads, in the same building.

Credit: US Department of Energy SunShot Initiative

Credit: Center for Sustainable Energy

Primary Enabling Policy Mechanism: Virtual Net Metering

- **Net metering (NEM)** is a flexible policy tool that has successfully encouraged the growth of distributed renewable energy systems across the country. NEM allows a customer who has installed a solar system on their property to recoup their investment by receiving credits on their utility bill for the electricity their system produces.

- **Virtual net metering (VNM)** extends NEM to allow multiple customers to receive utility bill credits for the energy produced from a single facility located on-site.[9] One common arrangement is the installation of a system on top of a multi-unit apartment building, as pictured. Customers' bill credits are typically valued at retail rates (or at least incorporate most components of that rate), which makes participation simple to understand and more attractive to customers.

- On-site shared solar policies can be voluntary or mandatory for utilities, depending on the decision of the state legislature, city council, or public utility commission.

✓ What's Needed?

Utility Billing Software
Utilities simplify the administration of on-site shared solar programs using billing software that electronically credits customers for the energy produced by systems.

Bill Crediting Mechanism
On-site shared solar policies typically require the revision of the existing utility tariff, or the creation of a new tariff, to delineate how utilities will compensate customers for the energy produced by their solar subscriptions.

Clear Procedures & Requirements
On-site shared solar policies succeed when there are clear procedures and requirements for both installing metered systems, connecting customers' systems to the grid, and allocating credits across multiple meters.

Education & Outreach
Raising awareness among all involved stakeholders about the opportunity and value of on-site shared solar is critical to getting building owners to go solar. Useful resources include the Solar Market Pathways Multifamily and Contractor Toolkits (http://energycenter.org/solar-market-pathways/toolkits) and the EnergySage Online Marketplace for Contractors and Owners (https://www.energysage.com).

Financing Tools & Mechanisms
Enabling a wide array of financing tools and mechanisms can help remove many barriers to solar, such as high upfront costs, insufficient lines of credit, competing economic priorities, or participation in discounted electricity rate assistance programs. Financing options that are especially helpful for LMI customers include direct incentives, loan programs, credit enhancements, and alternative and hybrid underwriting criteria. Similarly important are financing options that target LMI facilities and LMI participant organizations, including "anchor" subscriptions, back-up guarantees, direct incentives, loan programs, credit enhancements, and low-cost public financing.

Power Purchase Agreements (PPAs) & Other Agreements
The relationships between community solar participants, providers, and utilities need to be formalized in PPAs or other agreements (or utility tariffs, in some cases).

Case Study

California has two complementary programs geared towards on-site shared solar—its "Virtual Net Metering" program and its "Multifamily Affordable Solar Housing (MASH)" program—which enable both general market and affordable housing customers to share in the benefits of an on-site renewable energy facility. Soon the new Multifamily Affordable Housing Solar Roofs Program, established by AB 693, will replace the MASH program, which has depleted its incentive funding.

Credit: Center for Sustainable Energy

Credit: GRID Alternatives

👥 Who is Involved?

Multifamily Residents
The residents of multifamily buildings can receive credits on their monthly utility bills for the energy generated by on-site solar systems.

Multifamily Building Owners & Property Managers
Landlords, property managers, and homeowners' associations, who generally make the decision to install on-site solar systems, may be able to offset their buildings' common loads while also providing solar access to their tenants, which can be an enticing feature to attract and retain tenants. See Multifamily Owner Toolkits available at https://www.energysage.com/cse-multifamily/.

Solar Installers & Providers
Companies that develop shared solar projects on multifamily buildings serve as a key liaison between residents, property owners, and/or managers as well as project financiers, local government permitting and code officials, and the utility.

Community Groups & Advocates
Community non-profit organizations and individuals can help raise awareness about shared solar options, guide policy and program improvements, and support education and outreach efforts.

Solar Jobs Programs
A skilled workforce is necessary to serve increased demand for solar, while also ensuring quality workmanship. Job programs may be implemented as part of shared solar programs to offer training and/or apprentice opportunities.

Financiers
Third parties may help fund the installation of larger solar systems, especially where upfront costs can be significant.

Utilities
Utilities may administer or manage on-site shared solar projects. They also are responsible for electronically allocating credits on customers' monthly bills and processing the interconnection applications to approve grid connections.

Policymakers
The city council, state legislature, and/or Washington Utilities and Transportation Commission may enable and/or oversee the adoption and implementation of on-site shared solar programs as well as the financing tools, incentives, and other policy mechanisms that support broad participation, especially among LMI customers.

Keep in Mind

Building owners and residents have different motivations for participating in on-site shared solar. Policymakers should consider how policies or programs might be designed to help building owners, who usually make the decision to install projects, recoup their investment.

For example, California's MASH program offered upfront per-Watt incentives for systems that offset common area load, and somewhat higher incentives for systems that offset tenant load. In this way, direct tenant benefits are encouraged, but property owners' motivations are also recognized.

⚙ Pathway 2: Off-Site/Remote Shared Solar

With off-site/remote shared solar, electric generation from a remote solar installation is allocated across multiple customer meters.

Primary Enabling Policy Mechanism: Community and Shared Solar

- The terms community solar and shared solar are often used interchangeably, or even combined as one ("community shared solar"). For the purposes of this roadmap, **community solar** is a program that enables multiple customers to share the economic benefits of a renewable energy system that is off-site or remotely located from where participants live.

- Community solar participants purchase or subscribe to an interest in a common solar system—sometimes referred to as a subscription—and receive the proportionate value of the energy generated via credits on their utility bills.

- While an existing NEM or VNM program may serve to enable a community solar program's bill credit valuation and allocation, community solar programs may rely on separate bill credit valuation and allocation mechanisms that do not have a direct tie to NEM or VNM rules.[10]

✓ What Else is Needed?

In addition to the key elements of on-site shared solar listed above, community solar projects entail a few other components.

Anchor Subscribers or Hosts

Community solar projects may enlist an "anchor" subscriber or host—such as a big box store or school where the project is sited. These parties frequently take a significant percentage of the energy produced by the project, and they may offer to buy and sell subscriptions for others as customers join or leave the project. Anchor subscribers can help facilitate greater LMI customer participation in the projects by offsetting some of the perceived or actual financial risk associated with those customers.

Suitable Project Location

Popular sites for community solar projects include the rooftops of large buildings, parking structures, brownfields, and landfills. Private or public land can be used for community solar projects.
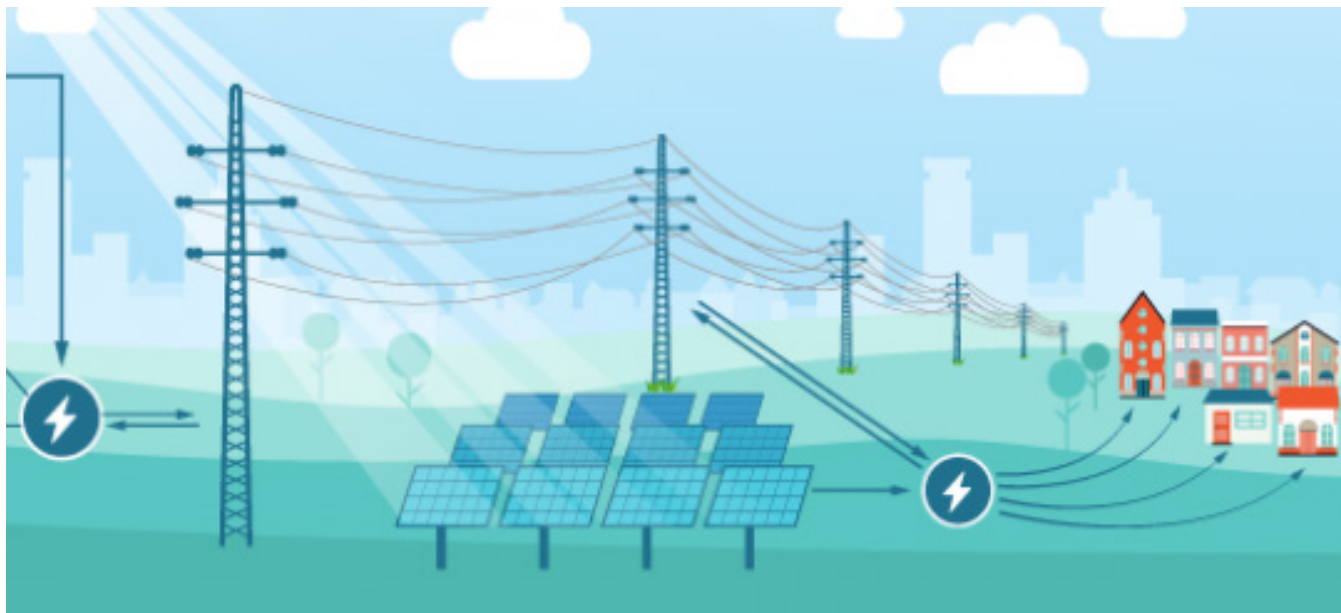
Credit: US Department of Energy SunShot Initiative

👥 Who is Involved?

Off-site/remote shared solar projects involve many of the same stakeholders as on-site shared solar projects, but the roles and relationships of some stakeholders may vary. For example, the owners of the sites where community solar projects are installed are different—as the sites may be large commercial buildings or schools—and they will have indirect relationships with subscribers, because they will not, for instance, be the landlords or property managers for the buildings where subscribers live.

Program Design Considerations

- Flexiblity is one of the major draws for customers participating in community solar projects; it is important that participants can move within their utility's service territory and take their subscription with them **("portability")**, or leave the program and/or service territory and transfer their subscription to someone else, or back to the project owner **("transferability")**.

- Another key consideration in community solar program design is system ownership and management. It will be important to decide whether a community solar facility will be owned and managed by a utility, a non-utility (including customers and third-party providers), or some combination of the two.

Case Study

In Massachusetts, multiple, disperse customers can share the bill credits generated by a remotely located solar facility. The state's "Virtual Net Metering" program simply requires an off-site facility and its subscribers to be located in the same load zone and utility distribution territory. (This is distinct from the state's "Neighborhood Net Metering" program, which requires that the off-site facility and its subscribers be in the same "neighborhood" or geographic area.)

A Quick Comparison of On-Site and Off-Site/Remote Shared Solar

📈 Opportunities

On-Site Shared Solar

Establishes direct connection between consumers and building use, creating value within the community.

Does not require finding a separate, suitable project location (lower transaction costs, optimizing urban infill opportunities).

Off-Site Shared Solar

Promotes flexibility, allowing customers to take their subscriptions with them when they move.

Does not require as much buy-in from building owners (no on-site arrangement or long-term maintenance issues, just a utility bill arrangement).

Increases consumer access & enhances energy equity.

Serves underserved markets.

Expands environmental benefits of clean energy (and supports related goals).

Creates direct economic benefits (e.g., energy bill savings over time).

Is a viable solution, tested elsewhere.

Creates locational/grid values for certain areas.

⚠ Challenges

On-Site Shared Solar

Requires buy-in from multiple entities (e.g., owner, tenants, financiers, utility).

May be constrained by net metering limits, core network interconnection issues.

May face barriers if there is a rent control measure in place.

Requires matchmaking with contractors and building owners. Also generally can be more expensive on roof versus ground-mounted.

Off-Site Shared Solar

Requires finding a separate, suitable project location (cost, acquisition, ownership, and potential other impacts on open space, plus permitting/zoning challenges).

Requires billing system upgrades (initial cost; more cost-effective with expanded deployment).

Can be challenging to pencil out with lower electricity rates.

Faces specific hurdles in low-income/affordable housing context (e.g., utility allowances, financial, and financing constraints).

Can be complex, and important stakeholders may lack comfort or familiarity with model (e.g., solar providers, utility, financier, customer, owner).

Requires long-term maintenance and management of solar subscriptions (administrative burden).

IREC — Interstate Renewable Energy Council

On-Site Shared Solar

Mechanisms

- Virtual Net Metering
  (Or other similar mechanism for on-bill credit)
- Voluntary or mandatory

What Is Needed?

- Utility billing software
- Bill crediting mechanism
- Financing tools + mechanisms
- Clear procedures + requirements
- Education + outreach
- Power purchase agreements

Who Is Involved?

- Multifamily building owners + property mangers
- Solar installers + providers
- Multifamily residents
- Utilities
- Community groups + advocates
- Solar jobs programs
- Policymakers
- Financiers

How Is It Enacted?

- State policy
- City ordinance
- Voluntary utility program

Challenges

- Requires buy-in from multiple entities
- Frequent vacancies + tenant turnover
- Roof vs ground-mounted expenses
- Administrative burden
- Requires billing system upgrades
- Economic hurdles
- Can be complex

Opportunities

- Creates value within the community
- Clean energy benefits
- Increases consumer access + energy equity
- Serves underserved markets
- Creates locational/grid values for certain areas
- Does not require separate property
- Energy bill savings
- Proven solution

IREC
Interstate Renewable Energy Council

Off-Site Shared Solar
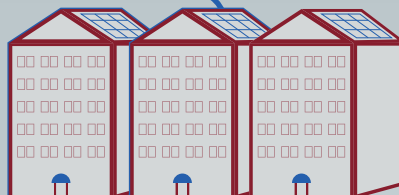
Mechanisms

- Voluntary or mandatory

- Community Solar
(Or other similar mechanism for on-bill credit)

What Is Needed?

- Utility billing software
- Bill crediting mechanism
- Financing tools + mechanisms
- Suitable project location
- Clear procedures + requirements
- Education + outreach
- Power purchase agreements
- Anchor subscribers or hosts

Who Is Involved?

- Community groups + advocates
- Solar installers + providers
- Multifamily residents
- Utilities
- Solar jobs programs
- Policymakers
- Financiers
- Off-site property owners

How Is It Enacted?

- State policy
- City ordinance
- Voluntary utility program

Challenges

- Identification of off-site location and associated property costs
- Lower electricity rates
- Economic hurdles
- Long-term solar maintenance
- Unfamiliarity with solar process
- Billing system upgrades

Opportunities

- Clean energy benefits
- Increase consumer access + energy equity
- Serves underserved markets
- Creates locational/grid values for certain areas
- Energy bill savings
- Proven solution
- Promotes flexibility
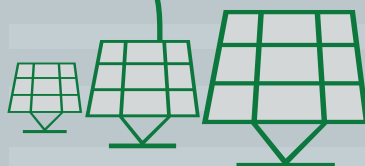
Endnotes

[1] **Solar Energy Industries Association, "Solar Industry Data"**
http://www.seia.org/research-resources/solar-industry-data (accessed 6/27/2017).

[2] **According to the National Multifamily Housing Council**
Renters constitute 37 percent of US households, and of those, 61 percent live in multi-unit buildings (2 or more units) as of 2015.
http://www.nmhc.org/Content.aspx?id=4708 (accessed 07/07/2017).

[3] **National Multifamily Housing Council, Quick Facts: Resident Demographics, "Large Cities: Population, Housing, and Renters"**
http://www.nmhc.org/Content.aspx?id=4708#Large_Cities (accessed 07/07/2017).

[4] **City of Seattle Office of Housing**
https://www.seattle.gov/housing/renters (accessed 07/07/2017).

[5] **City of Seattle, Seattle City Light, Solar FAQs**
http://www.seattle.gov/light/solarenergy/solarfaq.asp (accessed 07/07/2017).

[6] **See details of Senate Bill 5939, Renewable Energy Tax Incentives**
http://app.leg.wa.gov/billsummary?BillNumber=5939&Year=2017.

[7] **Mayor Ed Murray, "White House Names Seattle Climate Action Champion," City of Seattle Office of the Mayor, (12/03/2014)**
http://murray.seattle.gov/white-house-names-seattle-climate-action-champion/ (accessed 07/07/2017).

[8] **City of Seattle Office of Sustainability and the Environment, "Environment and Equity Initiative"**
available at: http://www.seattle.gov/environment#equityenvironment (accessed 07/07/2017).

City of Seattle Office of Sustainability and the Environment "Climate Action Plan," June 2013
http://www.seattle.gov/Documents/Departments/OSE/2013_CAP_20130612.pdf (accessed 07/07/2017).

[9] **VNM is occasionally used to facilitate off-site shared solar projects**;
See the Massachusetts VNM program highlighted in the case study on page 4.

[10] **For example, residents who subscribe to community solar projects owned and operated by Seattle City Light are reimbursed at a Community Solar Rate which is determined by**.
City Ordinance 12379

Resources

SunShot Initiative, Solar Market Pathways project website
The Center for Sustainable Energy is leading a three-year project that aims to expand the awareness, effectiveness, and use of VNM, in partnership with IREC and the California Solar Energy Industries Association.
https://energycenter.org/solar-market-pathways

IREC's Shared Renewables web page
This page highlights IREC's work on shared renewables programs and provides links to numerous tools and resources.
http://www.irecusa.org/regulatory-reform/shared-renewables/

IREC's National Shared Renewables Scorecard
Launched by IREC in May 2017, the Scorecard evaluates state shared renewables programs using objective criteria based on best practices for program design.
https://sharedrenewablesscorecard.org/

IREC's State Shared Renewables Energy Program Catalog
The Catalog lists all state shared renewables programs, detailing all major program rules and provisions.
http://www.irecusa.org/regulatory-reform/shared-renewables/state-shared-renewable-energy-program-catalog/

EnergySage
EnergySage is an online solar marketplace that allows homeowners to receive and compare quotes from a network of pre-screened solar installers.
https://www.energysage.com/

Affordable Clean Energy for All: A Guide to Installing Solar Photovoltaics on Multifamily Affordable Housing in Washington (Northwest SEED)
This guidebook is intended as a tool for Washington State affordable housing providers and their partners to use in exploring solar feasibility, identifying potential sources of funding, and deploying solar projects that meet the needs of the affordable housing sector and low-income residents.
http://www.nwseed.org/wp-content/uploads/Guidebook_FINAL.pdf

Low Income Solar Policy Guide (GRID Alternatives, Vote Solar, Center for Social Inclusion)
This guide provides information on various policies and programs that are creating access to solar technology and jobs nationwide.
http://www.lowincomesolar.org

Bringing the Benefits of Solar Energy to Low-Income Consumers (Clean Energy States Alliance)
This guide outlines the obstacles that low-income households face in accessing solar power and provides a detailed overview of strategies that policymakers and government agencies can use to encourage low-income solar adoption.
http://www.cesa.org/resource-library/resource/bringing-the-benefits-of-solar-energy-to-low-income-consumers

Lights Out in the Cold (NAACP)
This report issued by the NAACP's Environmental and Climate Justice Program (ECJP) shows lower income communities spend a greater portion of income on electricity and heating costs than high-income communities. In addition, the report outlines how utility company shut off policies disproportionately impact low-income and African American communities.
http://www.naacp.org/latest/utility-disconnections-leave-thousands-around-nation-cold-left-dark/