



LOW-INCOME **SOLAR POLICY GUIDE**

**Principles and Recommendations for
Utility Participation in Solar Programs for
Low-Income Customers**

Prepared by **The Environmental Law & Policy Center, GRID Alternatives,
and Vote Solar**



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PRINCIPLES AND RECOMMENDATIONS FOR UTILITY PARTICIPATION IN SOLAR PROGRAMS FOR LOW-INCOME CUSTOMERS

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PRINCIPLES AND RECOMMENDATIONS FOR UTILITY PARTICIPATION IN SOLAR PROGRAMS FOR LOW-INCOME CUSTOMERS

EXECUTIVE SUMMARY

Solar power is a cost-competitive, mainstream renewable energy resource that should be available to everyone, regardless of their income level or housing type. Yet America's nearly 50 million low-income households, who spend more on their energy needs as a percentage of income than their wealthier peers, are often unable to access or benefit from local solar resources. It is imperative that the country's transition to clean electricity meet the needs of underserved communities in a way that is inclusive and equitable.

Utilities are in a powerful position to facilitate the transition to clean energy for all and can play a vital role in expanding solar access and choice for low-income households. However, special care must be taken to ensure utility owned projects are designed to meet the needs of low-income households and underserved communities. In considering the roles utilities can and should play in making solar available for low-income households and underserved communities, this paper outlines three interrelated sets of guidelines and considerations for policy makers and regulators to review.

- Opportunities for Utility Facilitation of Low-Income Solar
- Considerations for Utility Development and Ownership of Solar for Low-Income Communities
- Guidelines for Successful Low-Income Solar Programs

Opportunities for Utility Facilitation of Low-Income Solar

Opportunities exist for all regulated utilities to facilitate solar access for low-income households *without* creating their own low-income solar programs. Utilities in any type of market can:

1. Facilitate customer enrollment in low-income solar programs in their service territories;
2. Facilitate customer education and engagement;
3. Facilitate on-bill payment and/or financing to increase low-income customers' access to rooftop solar;
4. Facilitate siting and interconnection for solar projects that will serve low-income customers;
5. Fully compensate low-income solar projects for the services and benefits they provide; and,
6. Facilitate donations of excess energy credits from other solar customers, and unsubscribed energy purchased by the utility from community solar projects, to low-income customers.

In the case of community solar¹, utilities can also:

7. Enable virtual net metering along with an on-bill mechanism for billing and crediting community solar subscribers;
8. Serve as a "backup subscriber;" or serve as a "passthrough purchaser" to facilitate the purchase of solar on behalf of low-income customers;
9. Facilitate the participation of other large entities as backup subscribers and/or "anchor tenants;" and,
10. Establish streamlined processes for the portability and transfer of community solar subscriptions and regular updates to subscriber lists.

¹ Community solar refers to a solar project with multiple subscribers that receive on-bill benefits directly attributable to the community solar project.



Considerations for Utility Development and Ownership of Solar for Low-Income Communities

Tasking monopoly utilities with developing and owning low-income solar can stifle low-income solar market activity by other providers, eliminating the benefits the competitive market can provide, including cost reductions, business model diversity, and the development of community-owned and operated enterprises. Therefore programmatic utility ownership of low-income solar projects should only be considered after a competitive market has had the chance, and failed, to serve the low-income market segment. A process for weighing this determination should include, at a minimum, the following:

1. Finding of low-income specific market failure;
2. Specific analysis of reasons the competitive market is failing to serve low-income customers;
3. Consideration of alternatives to utility ownership;
4. Establishment of boundaries within which the utility may act to correct a market failure, including regular re-evaluations of the original market failure finding;
5. Ongoing oversight of and reporting requirements on a monopoly utility's market participation; and,
6. Pilot project considerations.

Guidelines for Successful Low-Income Solar Programs

Finally, policy makers and regulators should ensure that low-income customers have access to solar through the development of low-income solar programs. Any low-income solar program must meet the following guidelines to provide meaningful benefits to participating households:

1. Provide immediate tangible economic benefits for low-income participants;
2. Fully compensate low-income solar projects for the services and benefits they provide;
3. Be designed as replicable, scalable programs for long-term program sustainability and opportunities for adjustment;
4. Include long-term funding to support programs, including low-income carveouts for any incentive pools;
5. Address barriers to participation for low-income households;
6. Complement existing programs to reduce overall household energy burden;
7. Drive local economic opportunity in underserved communities through workforce development and participation for minority- and women-owned business enterprises;
8. Prioritize community engagement throughout the program design, planning, implementation and ongoing operations, ideally through partnerships with local community organizations; and,
9. In the case of utility-owned projects, treat utility and non-utility owned projects equitably and follow the Considerations for Utility Development and Ownership of Solar for Low-Income Communities.

This paper provides decision makers and advocates with specific recommendations for the role of investor owned utilities in low-income solar programs, provides guidance for the type of programming that should be authorized and outlines steps to reach desired outcomes. While the guidance offered is intended to apply to programs and regulation of investor-owned utilities, many of these suggestions are applicable to municipal and cooperative utilities as well.



I. INTRODUCTION

A variety of factors, including quickly declining equipment costs and innovative financing models, have made solar easily accessible to middle income families in recent years; yet barriers remain for low-income families. The growth of solar in the United States provides a tremendous opportunity to address some important challenges faced by underserved communities: high energy burdens, unemployment, and pollution. Solar can bring long-term financial relief to families struggling with high and unpredictable energy costs; provide living-wage jobs in an industry where the workforce has increased 159% since 2010; and be a source of clean, local energy sited in communities that have been disproportionately impacted by traditional power generation.

As the nation's energy system incorporates more renewable energy and solar becomes a mainstream energy source, a key question facing the solar industry, policy makers, advocates, and regulators is how to make sure that all customers have access to solar technology and the benefits that come with it, not just those that can afford the significant upfront expense that solar can entail. The potential impact is huge. According to a 2018 NREL report, 43% of the U.S. population is at or below 80% of their area median income (the U.S. Department of Housing and Urban Development definition of low-income), representing almost 50 million low-income households in the U.S.²

Ensuring that solar energy is available for low-income households³ and communities involves a variety of challenges. Cost sensitivity and often-limited access to financing makes it difficult to pay for solar installations. Furthermore, low-income families may live in homes that are not conducive to on-site solar installations because of the need for additional investment - such as roof repair - to be solar-ready, or simply because the home is a rental. Finally, outreach and education about solar for low-income communities entails its own challenges, as does enrollment. The variety of issues involved in expanding access to low-income individuals must be approached with care and reflect greater market dynamics to maximize benefits to end users.

In policy and regulatory arenas around the country, regulated investor-owned utilities are beginning to propose their own programs to facilitate greater solar access and, sometimes, actually provide solar for low-income households directly. Proposals relating to the direct provision of solar by utilities raise challenging questions regarding solar market impact and solar market inclusiveness, but they also create opportunities to consider appropriate roles monopoly utilities can and should play. Utilities have resources that can be used to overcome the challenges involved in delivering the promise of solar to low-income communities. These resources - including customer information, access to financing, existing billing systems, long-standing customer relationships, and the utility brand itself - can be used to facilitate cost-effective low-income solar solutions and widespread adoption.

However, while utility action to facilitate greater access to solar for low-income communities is always appropriate, participation in solar programs through the direct ownership (which may include construction) of projects is not always appropriate, particularly in restructured markets. It is important to ensure utility participation does not stifle the market's ability to drive down costs through competition, or edge out community-driven and nonprofit solutions, or undermine the ability of low-income customers and underserved communities to drive projects according to their goals, own assets, and build wealth. Utilities may be able to build solar projects quickly, particularly if they are able to recover costs from ratepayers. However, quick deployment does not always mean a project is cost-effective or in the best interest of customers. In an era where underserved communities are demanding more control over their own energy resources, utility ownership may not support

2 National Renewable Energy Laboratory, Rooftop Solar Technical Potential for Low-to-Moderate Income Households in the U.S. (2018), at <https://www.nrel.gov/docs/fy18osti/70901.pdf>.

3 For the purposes of this document, we define "low-income" as at or below 80% of Area Median Income, adjusted for family size and revised every five years.



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energy democracy or the desire of communities for greater self-determination and local resiliency.

In this paper, we emphasize caution when considering utility ownership of projects, and offer thoughts relating to any utility-led programs that enable low-income solar development. We advocate special care when utilities actually build and/or own projects to ensure that these programs are in the best interest of low-income customers. Furthermore, low-income customers and underserved communities should have the ability to own and control community- or customer-sited distributed generation built through any utility-led program to avail of the same benefits enjoyed by non-low-income market participants. Additionally, utility-owned solar projects for low-income customers should not preclude efforts to spur market participation to serve this segment.

In considering the roles utilities can and should play in making solar available for low-income households and underserved communities, this paper outlines three interrelated sets of guidelines and considerations for policy makers and regulators to consider.

- Opportunities for Utility Facilitation of Low-Income Solar
- Considerations for Allowing Utility Development and Ownership of Solar for Low-Income Communities
- Guidelines for Successful Low-Income Solar Programs

After consideration of the Opportunities for Utility Facilitation of Low-Income Solar, and following the process outlined in the Considerations for Utility Development and Ownership of Solar for Low-Income Communities, and Competitive Market Considerations, policy makers and regulators should strive to ensure that **all** solar programs designed to serve low-income households meet the standards outlined in the Guidelines for Successful Low-Income Solar Programs. Special care should be given to proposals by investor-owned utilities, and especially IOUs in restructured jurisdictions, to ensure meeting these standards does not create an uneven playing field, stifle competition, or infringe on community self-empowerment.

In providing these recommendations, this paper raises various topics for consideration regarding utility ownership of solar projects and programs to serve low-income customers. The principles discussed and recommendations made are specific to serving low-income customers and will not always translate directly to utility participation in the distributed energy resources market more broadly. The authors hope that this paper is useful for decision makers and advocates in considering whether or not regulated utilities should develop solar programs and own solar projects for these customers, and the type of programming that should be authorized.

This paper begins by illustrating, in Section II, the types of actions all utilities - restructured or vertically integrated - can take to facilitate greater access to solar energy for low-income customers and households. Section III outlines important considerations for utility interactions with competitive solar markets in the process of serving low-income customers, including concerns around market failure. Section IV outlines specific recommendations for utility programs that will involve the development and ownership of solar energy systems. Finally, Section V outlines detailed guidelines for any successful low-income solar program. Two appendices compare specific utility programs to our recommended Guidelines.



II. OPPORTUNITIES FOR UTILITY FACILITATION OF LOW-INCOME SOLAR

There are a number of steps utilities can take to facilitate access to solar for low-income households short of developing an entirely new program aimed at low-income solar deployment. Policy makers and regulators should encourage regulated utilities to take these steps as relatively easy ways to break down barriers to solar access. As with the delivery of any utility-led initiative, care should be taken to ensure initiatives to facilitate solar access are streamlined, easy for customers to use, cost-effective, and do not hinder future competition. To achieve this, it is particularly important that utilities find ways to work with solar providers - who will actually build and sometimes own the solar projects - as well as community organizations.

Outlined below are a range of potential actions utilities can take to address the key barriers to low-income solar outlined at the beginning of this paper: cost-sensitivity and limited access to financing, physical/homeownership barriers, and challenges to outreach, education, and enrollment.

Utilities in any type of market can:

1. Facilitate customer enrollment in low-income solar programs in their service territories;
2. Facilitate customer education and engagement;
3. Facilitate on-bill payment and/or financing to increase low-income customers' access to rooftop solar;
4. Facilitate siting and interconnection for solar projects that will serve low-income customers;
5. Fully compensate low-income solar projects for the services and benefits they provide; and,
6. Facilitate donations of excess energy credits from other solar customers, and unsubscribed energy purchased by the utility from community solar projects, to low-income customers.

In the case of community solar, utilities can also:

7. Enable virtual net metering along with an on-bill mechanism for billing and crediting community solar subscribers;
8. Serve as a "backup subscriber;" or serve as a "passthrough purchaser" to facilitate the purchase of solar on behalf of low-income customers;
9. Facilitate the participation of other large entities as backup subscribers and/or "anchor tenants;" and,
10. Establish streamlined processes for the portability and transfer of community solar subscriptions and regular updates to subscriber lists.

1. Facilitate Customer Enrollment

First, utilities may be able to facilitate customer enrollment in low-income solar programs. Customer enrollment can be a challenging and costly element of low-income solar program delivery. Utilities often have information about customers' income level and their participation in energy assistance programs, which could help low-income solar providers more effectively target potential program participants. For example, utilities can help to ensure that low-income customers participating in utility-provided energy efficiency programs are also enrolled in low-income solar programs. Utilities may also be able to facilitate appropriate access to certain customer information for low-income solar providers, or otherwise facilitate customer enrollment, e.g. by directing low-income customers to solar providers. When directly sharing data, care must be taken to ensure privacy is adequately safeguarded; however, in most situations this is a technical challenge rather than an insurmountable barrier.⁴ Assurance that no undue preference is given to certain solar providers is also important to maintain an effective, competitive marketplace. Finally, utilities

⁴ Notably, the number of customers enrolled in energy assistance programs tends to be smaller than the number of customers eligible for assistance.



can assist in ensuring that customers' energy assistance program benefits mesh well with their participation in solar programs.

2. Facilitate Customer Education and Engagement

Likewise, utilities can facilitate customer education and engagement. Utilities are often seen as trusted sources of information. Utilities can engage in general customer education about solar and any existing low-income solar programs. Such education programs leverage the utilities' credibility and brand to enhance customer knowledge about solar and how customers can participate and benefit from it. Utilities should make any low-income solar educational material publicly available on their websites to ensure visibility and transparency, and should partner with community-based organizations to facilitate more direct forms of education. That said, care should be taken to avoid utilities acting as "gatekeepers" to solar providers and controlling the narrative about solar.

3. Facilitate On-Bill Payment and/or On-Bill Financing

Integration with utility bills can be effective for helping low-income customers pay for or finance their participation in both single-family and community solar programs. First, allowing customers to pay for their solar participation via their existing utility bill, even for third-party owned projects, streamlines the customers' experience. On-bill payment for low-income customers also mitigates perceived risk for solar providers and their financial backers. Going a step further, on-bill financing has been used successfully to finance energy efficiency measures and support expanded solar access. On-bill financing allows customers and financial institutions to use their electric bill as a means of repaying an energy-related loan. A customer will apply for a loan for a qualifying energy efficiency or other distributed energy resource or service and, upon approval, the loan payments are added to the customer's electric bill often at a level that is less than the overall savings achieved through the energy improvement. This type of program has many benefits to both customers and financial institutions. The Pay-As-You-Save model ("PAYS") is a successful example of on-bill financing. Under PAYS, customers pay a voluntary tariff on their utility bill in exchange for energy upgrades in homes and businesses. The tariff and repayment collection are implemented through the current on-bill system, limiting administrative burdens.

4. Facilitate Siting and Interconnection

Utilities are in a position to facilitate project siting and interconnection for solar projects that serve low-income customers. Utility property could be utilized to site projects, which could reduce project costs. Any co-development opportunities between utilities and solar developers or community groups to better serve low-income individuals should be considered. In addition, utilities can and should advise solar project developers about advantageous grid locations to interconnect as well as make that information publicly available.

5. Fully Compensate Low-Income Solar Projects for the Benefits and Services They Provide

Solar provides significant benefits to utility grids in terms of reliability, reduced capital investment, ancillary services, fuel diversity and fuel savings, and security. Additionally, bill savings and stability for low-income households as a result of solar participation can lead to fewer uncollectibles and fewer costs associated with disconnections, as these customers become better able to afford their electric bills. These values should be reflected in the compensation for low-income solar projects through performance incentives, rebates, compensation for excess energy generated, or other means.



6. Donations of Excess Credits and Unsubscribed Energy

Utilities can encourage and facilitate net metering customers and community solar project subscribers in donating excess energy credits they may have accrued on a monthly or annual basis. Additionally, utilities are generally required to purchase unsubscribed energy from community solar projects at an avoided cost rate. This too could be donated to low-income subscribers to help reduce their overall costs. Because of the value of offsetting grid-supplied energy costs, it would be preferable for donations to be energy (i.e. kWh). However, this method will sometimes entail more administrative work compared to an economic offset based on a monetization of the credits.

Community solar is a particularly important tool to enable low-income solar access, as it can overcome physical and homeownership barriers to solar installation. When it comes to community solar - regardless of who owns such a project - utilities can facilitate the successful development and implementation of programs and projects in a variety of ways.

7. Community Solar: Virtual Net Metering and On-Bill Crediting

Utilities should enable virtual net metering along with an on-bill mechanism for billing and crediting community solar subscribers. All subscribers, but particularly low-income subscribers, will benefit from having community solar subscriptions consolidated onto their existing utility bill to minimize the number of bills they must pay to various providers. Second, utilities must facilitate the timely and transparent application of bill credits to promote customer-friendly offerings. This allows individuals to easily understand the benefits they receive as part of any virtual net metering arrangement.

8. Community Solar: Utility as Backup Subscriber or Passthrough Purchaser

One of the major barriers facing developers of low-income community solar projects is access to financing due to potentially low credit scores and other perceived risks around low-income subscribers (e.g. turnover rates). Utilities can mitigate this financing risk by serving as a backup subscriber or passthrough purchaser, thereby facilitating access to, and a lower cost of, capital⁵. As a “backup subscriber,” the utility agrees to purchase a low-income subscriber’s energy in the event the subscriber falls off the rolls. As a “passthrough purchaser,” the utility facilitates the purchase of an entire community solar array’s output, while facilitating the application of community solar credits to participating customers’ bills.⁶

9. Community Solar: Facilitate the Participation of Large Subscribers to be Backup Subscribers or Anchor Tenants

Utility facilitation of low-income community solar projects can also involve work with state governments, local governments or large commercial and industrial customers to serve as anchor tenants and off-takers of excess energy due to under-subscription or turnover. Backup subscribers or anchor tenants are often used to increase community solar project financeability. These entities are typically institutional or creditworthy entities that financiers are confident will pay for their subscription over the contract term. Dedicating a significant portion of a community solar facility’s output to an anchor tenant (e.g. 30% - 60%) can provide more flexibility for the types of customers the remaining facility output can serve. Large subscribers participating in a project as anchor tenants not only de-risks the project, they can also voluntarily subsidize any subscription offering for low-income households to provide greater savings. In addition, these customers can also serve as backup subscribers in case low-income households fall off the subscriber list. In effect, a backup subscriber can reduce or eliminate the amount of unsubscribed energy. A backup subscriber can ensure that a community solar project is always fully subscribed, thus maximizing the value



of the facility's generation and further reducing the perceived risk of serving low-income households.

10. Community Solar: Establish streamlined processes for the portability and transfer of community solar subscriptions and regular updates to subscriber lists.

Transferability refers to the ability for shares to be transferred back to the community solar provider and from one participant to another participant. Portability refers to the ability of a participant to "bring their subscription with them" when they move within a utility's service territory. Both are important consumer protection policies in any community solar program; however, they are particularly critical policies for low-income households that are less likely to own their own home and stay in one place for long periods. Turnover of subscriptions should be expected over the 20-to-30 year lifespan of a community solar project and can often be managed at very little cost by community solar providers through a subscriber waitlist or other mechanism. To this point, it is critical that utilities establish a standardized process (e.g. an online portal) that allows for monthly updates to subscriber lists so that the project can remain fully subscribed at all times.

Coyote Ridge Community Solar Farm

Poudre Valley Rural Electric Association's (PVREA) 1.95 MW Coyote Ridge Community Solar Farm enables low-income participation through an on-bill repayment process. This approach builds upon existing cooperative utility Pay-As-You-Save (PAYS)TM models for low-income community solar. Like a PAYSTM model for energy efficiency improvements, the program offers a community solar subscription in which the savings from solar production exceeds the cost of the subscription. Low-income cooperative members have no upfront capital requirements to receive the expected solar benefit, and are required to participate in a mutually beneficial energy efficiency program to maximize impact. 700 kW of the project is dedicated to low-income customers, 500 kW to nonprofits, and the remaining 750 kW of capacity to all other utility customers, who pay a slightly higher cost for participation to help enable the low-income customer benefit. This project, developed in partnership with GRID Alternatives as part of the Colorado Energy Office (CEO) Low-income Community Shared Solar Demonstration Project⁷, was awarded a 2018 Power Player Award from the Smart Electric Power Association (SEPA).

III. COMPETITIVE MARKET CONSIDERATIONS

Utilities have a natural advantage when it comes to low-income solar deployment in many markets as large, established entities with pre-existing customer relationships. Utilities may also serve as the provider of last resort in restructured markets. Given these advantages, significant care should be taken to not default to utility-led low-income solar programs that edge out competitive market and community-driven solutions. Rather, competition should be encouraged as a way to minimize program costs and maximize benefits to end-users. Competition spurs innovation and delivers low-cost solutions that can maximize benefits to low-income households. Most importantly, it can give communities the opportunity for local control,

⁷ An initiative working to develop low-income community solar projects in Colorado that complement the state's low-income weatherization program to achieve significant energy burden reduction for low-income ratepayers.



decision-making and ownership in any low-income project.

At a minimum, utility involvement in low-income solar should enable community organizations and the solar industry to provide market-based approaches to effectively serve low-income communities. However, the best programs will actively foster innovation among community organizations and the solar industry, spurring collaboration with community groups and competitive market participants to develop new and better ways to serve low-income communities.

When considering the role of regulated utilities in making solar available to low-income communities, advocates, policy makers, and regulators should focus on enabling the broad use of assets and capabilities that utilities have access to, and which all ratepayers have paid for, rather than allowing utility monopolization of those assets. Utilities can participate in solar programs for low-income customers by facilitating appropriate access to assets such as customer lists, usage data, billing capabilities, etc. for all low-income solar market participants. Policy makers and regulators should discourage monopolization of these types of assets or other singular treatment not available to the open market, as this creates barriers to community and competitive market involvement in low-income solar. An example of monopolization of assets could include a situation where only utility-owned community solar projects were able to consolidate crediting on customer bills or utilize information about enrollment in income-limited programs to target outreach. Singular treatment extends to exceptions to rules – such as those around project size, access to subsidies and ratepayer funds, or any other unique advantage.

Regulated utilities should be encouraged to participate in low-income solar markets in ways that facilitate overall market growth of low-income solar offerings. Regulated utilities can play an important role in serving low-income customers. However, in doing so, any utility-led program should incorporate the opportunity for fair market competition to ensure that low-income individuals are obtaining the most competitive offerings and adequately compensated for the array of benefits solar projects provide to the grid. One way utilities in vertically integrated markets can do this is through their energy procurement processes. This can be achieved by structuring procurements for specific projects, for example community solar projects with a significant share or all of project capacity dedicated to low-income customers. Utilities can also drive impact and important co-benefits through these procurement processes by including minimum bid requirements or qualitative factors within procurements, including minimum bill savings or overall energy burden reduction, energy efficiency and other complementary low-income energy services, and workforce development. Utilities can expand economic opportunities through procurement by requiring or encouraging projects owned or led by disadvantaged business enterprises, or requiring a minimum percentage of labor from these types of entities within project implementation scope⁸. In restructured markets, it is not clear that this tool is available, but may be an avenue regulators could explore.

Furthermore utilities should strive to partner with the communities their programs will serve, both in the program design and delivery stages of the project, rather than delivering a ready-made solution. Doing so will help spur market innovation, support a diversity of low-income solar consumer offerings, and enable programs tailored to best serve the community. As demonstrated in Colorado, utilities can serve as helpful partners to small organizations and businesses working to provide low-income solar.⁹

8 As an example, Xcel Energy Colorado's Solar*Rewards Community Low-income Request for Proposals includes quantitative (bid price) and qualitative factors including bill savings, coordination with energy efficiency measures, and job training. The RFP also includes a weighting matrix for how these factors are evaluated.

9 See, e.g., GRID Alternatives, "Five New Community Solar Projects!" available at <http://www.gridalternatives.org/regions/colorado/news/five-new-community-solar-projects> (GRID Alternatives partners with various municipal and cooperative utilities to construct and operate community solar projects to serve low-income customers). See also "Colorado Energy Office, Energy Outreach Colorado and GRID Alternatives Colorado Collaborate to Create Milestone Low-Income Solar Access," available at <http://www.prnewswire.com/news-releases/colorado-energy-office-energy-outreach-colorado-and-grid-alternatives-colorado-collaborate-to-create-milestone-low-income-solar-access-300365336.html> ("The Xcel Energy settlement also creates a favorable market in which low-income solar offerings can thrive by providing developers access to new customers and assisting the utility in meeting its goals. The settlement



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Among other things, policy makers and regulators may want to consider the speed with which low-income solar projects are built. Utilities may be able to deploy solar in low-income communities faster and at a greater scale than any other entity. It takes time for communities to organize and competitive markets to develop, which can further delay solar access in historically underserved communities. However, a market served by many small institutions and community-based organizations provides more opportunities for community ownership and empowerment, offers the potential to maximize economic benefits, and is often more resilient to change than a single large program. The short-term and long-term tradeoffs need to be weighed carefully and should be considered during any program review and redesign period. In addition, policy makers and regulators must consider the utility's established customer relationship and trusted brand as inherent advantages to any low-income solar offering. Expanding low-income consumer choice and access to diverse business models during any program review and redesign period should be a key focus.

IV. CONSIDERATIONS FOR UTILITY DEVELOPMENT AND OWNERSHIP OF SOLAR FOR LOW-INCOME COMMUNITIES

Questions about regulated utility development and ownership of solar can raise contentious issues. *First*, in this paper, when we discuss low-income solar, we are specifying the benefits solar can bring to low-income consumers as a power generator. In restructured markets, utilities are generally prohibited from building or owning solar generation, distributed or otherwise, as the competitive market is fully able to meet generation requirements without public support via a guaranteed rate of return.¹⁰ This paper does not address the potential for solar to serve as a distribution asset or the questions about utility business model motivations or incentives that potential may raise.

Second, generally speaking regulated utilities – restructured or not – should not build or own distributed generation behind a customer's own meter unless there are compelling public policy reasons to extend the utility monopoly into the competitive private market.

Third, community shared solar is a relatively new model; with this model, there are significant questions about the appropriateness of monopoly utility ownership even in vertically integrated markets where the ownership of generation is generally allowed. The authors note that there is a burgeoning competitive community solar market in the US, which raises the question of whether there is a public interest served by regulated monopolies providing community solar. Regulators should carefully examine whether this is an arena more appropriately left to the competitive market.¹¹

However, when it comes to low-income solar, questions sometimes arise related to the competitive market's ability or willingness to serve this customer segment. Theoretically, if the provision of low-income solar is an agreed upon public policy objective and the competitive market is unable or unwilling to serve these customers, it may be appropriate to socialize the costs of that provision through a monopoly utility *even when the utility would not otherwise be eligible to develop or own generation*.¹² This paper discusses competitive market considerations in more detail below.

offers solar developers access to incentives and performance structures as in the mass market. It also provides options to overcome traditional barriers to low-income customer engagement such as access to capital, lender related risk, and new market exploration. Additionally, the settlement creates structures to encourage workforce development and job training.”)

10 Exceptions do exist, however. See, for example, Massachusetts General Laws Part 1, Title XXII, Chapter 164, Section 1A(f) which notes explicitly that the deregulation of generation facilities does not “preclude an electric company or a distribution company from constructing, owning and operating generation facilities that produce solar energy; provided, however, that such company shall not construct, own or operate more than 35 megawatts of such facilities, ...” <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter164/Section1A>

11 Vote Solar and the Interstate Renewable Energy Council developed A Checklist for Voluntary Utility-Led Community Solar Programs. This document can help regulators evaluate the merits of any voluntary utility-led community solar program and is available at www.votesolar.org/cschecklist.

12 Reference Appendix B for an analysis of a utility-owned low-income project in a restructured market.



Finally, decisions about the appropriateness of the exception from the typical norms that govern monopoly utilities' ownership of generation should happen on a case-by-case and market-by-market basis. It may be appropriate to consider singular pilot projects intended to generate learnings and identify other steps needed to facilitate the development of a low-income solar market as long as competition and an appropriate evaluation process is included as part of the pilot program.¹³ However, when considering more programmatic exceptions to norms around utility ownership, regulators should address the considerations for utility development and ownership of solar for low-income communities outlined below through a formal process that includes stakeholder input before making any such exceptions:

1. **Finding of low-income specific market failure.** The competitive solar market must have had a meaningful chance to serve the low-income market segment and failed to do so. In markets without fair compensation for energy put back on the grid, adequate incentives, or an existing community solar program structure that expands access to consumers who cannot access benefits from rooftop solar, the lack of a low-income solar market is not a reflection of a market failure, but rather of barriers to solar energy generally. These barriers must be removed and the market allowed time to develop before it is reasonable to find that the market is failing to serve low-income customers. Section V: Guidelines for Successful Low-Solar Programs of this report provides suggestions for addressing barriers.
2. **Specific analysis of reasons the competitive market is failing to serve low-income customers.** Understanding the reasons for a market failure is the key to determining how best to address that failure. For example, if the issue is low and no credit scores amongst low-income households, one solution may be to require the monopoly utility to take on credit risk on behalf of a developer, while another may be to establish a Green Bank that provides financial backstops. All policies and regulations must be considered during the analysis and must include a stakeholder process that invites third-party providers to comment on barriers that prevent low-income participation.
3. **Consideration of alternatives to utility ownership.** Notably some of the most successful low-income solar programs in the US delivering behind-the-meter solutions, including the Single-Family Affordable Solar Homes program, the Multifamily Affordable Solar Homes program, and the Low-Income Weatherization Program solar rebate programs in California, DC's single-family rooftop rebate program, and Colorado's Low-Income Community Shared Solar Demonstration Project, have involved socialized costs (i.e. through ratepayers or taxpayers) without deploying the solar projects through monopoly utilities. Therefore, it is appropriate to consider alternative strategies before determining that monopoly utilities are best positioned to correct a market failure.
4. **Establishment of boundaries within which the utility may act to correct market failure, including regular re-evaluations of the original market failure finding.** If exceptions to typical norms around monopoly utility ownership of generation (in restructured markets) are going to be made to address a market failure, the bounds of those exceptions must be clearly delineated. One of these bounds should be a time limit, after which the regulator will re-evaluate the original finding of a market failure. This re-evaluation is important because the solar market is dynamic and fast-changing, and as prices for solar continue to fall and efficiencies are gained, the competitive market may become better positioned to serve low-income customers. It's important to note that in this case, previous utility investments would need to remain in the rate base and receive full cost recovery.
5. **Ongoing oversight of and reporting requirements on monopoly utility's market participation.** Ongoing oversight is necessary to ensure appropriate use of public resources and to ensure inappropriate market advantages do not accrue to the utility (e.g. ensuring competitive bidding processes). The knowledge gained by the utility from

¹³ The pilot program can incorporate competition in a variety of ways, such as with the engineering, procurement, development or ownership of the project. In addition, pilot program metrics must be captured throughout the project to properly evaluate the success of the pilot and provide transparent reporting. This reporting and evaluation process is critical to generate learnings, facilitate the development of a low-income market, and determine the replicability and scalability of a low-income community solar pilot in a particular market.



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both successes and failures in providing low-income solar is a public resource, since it was gained using ratepayer funds. Allowing other community organizations and market players to benefit from this knowledge is not only the right thing to do, but will further the agreed upon public policy objective of expanding solar access among low-income customers. Any utility-owned low-income solar proposal and subsequent program must undergo annual regulatory review and public comment periods, with meaningful stakeholder engagement opportunities. Program effectiveness can be measured in a variety of ways, but at a minimum must include evaluation of benefits for low-income customers, number of participants including breakdown by housing type (e.g. single family homeowner, affordable housing tenant, renter, etc.), length of individual participation, strategies for education and enrollment, opportunities for fair market competition, and a review of the level of community engagement (community involvement in planning, decision making, program implementation, and through local job creation). Reviews may also evaluate the distribution of benefits and/or progress toward community-defined goals.

6. **Pilot project considerations.** While utility-owned low-income solar projects may sometimes be appropriate outside of a market failure situation if delivered through a singular pilot project, the goal of any such pilot must go beyond simply the deployment of a certain number of kilowatts or megawatts of low-income solar. Low-income solar pilot projects should seek specific learnings and/or trial innovative approaches to low-income solar deployment. Their learnings and results should create new, readily available roadmaps and tools to facilitate and catalyze further expansion of low-income solar. However, the second consideration discussed above - that utilities generally should not build or own distributed generation behind a customer's meter - should apply to a pilot scenario, as well.

V. GUIDELINES FOR SUCCESSFUL LOW-INCOME SOLAR PROGRAMS

Utilities can address the financial barriers that face low-income customers and low-income solar providers by designing new programs targeted specifically at low-income solar deployment. These programs may include incentive programs such as rebates, production-based incentives or singular low-income community solar pilot projects. More examples of successful low-income programs may be found in the Low-income Solar Policy Guide.¹⁴

Once review has been given to proposals by monopoly investor-owned utilities, and especially IOUs in restructured jurisdictions, to ensure such programs are in the public interest and do not create an uneven playing field or stifle competition, policy makers and regulators should ensure that the programs meet the following standards. We emphasize that these guidelines must be met with any low-income solar program to provide meaningful benefits to participating households:

1. Provide immediate tangible economic benefits for low-income participants;
2. Fully compensate low-income solar projects for the services and benefits they provide;
3. Be designed as replicable, scalable programs for long-term program sustainability and opportunities for adjustment;
4. Include long-term funding to support programs, including low-income carveouts for any incentive pools;
5. Address barriers to participation for low-income households;
6. Complement existing programs to reduce overall household energy burden;
7. Drive local economic opportunity in underserved communities through workforce development and participation for minority- and women-owned business enterprises;
8. Prioritize community engagement throughout the program design, planning, implementation and ongoing

14 <https://www.lowincomesolar.org>



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- operations, ideally through partnerships with local community organizations; and,
9. In the case of utility-owned projects, treat utility and non-utility owned projects equitably and follow the Considerations for Utility Development and Ownership of Solar for Low-Income Communities.

In addition, if it is determined that regulated utilities should be allowed to own low-income solar programs or projects (see Section IV, Considerations for Utility Development and Ownership of Solar for Low-Income Communities), they must be crafted so as to maximize value for low-income participants and maintain opportunities for competition. This includes maximizing bill savings to reduce the energy burden for low-income customers within state average thresholds, coupled with opportunities for meaningful community engagement and co-benefits such as coordination with job training programs while encouraging strong participation from a range of third party participants.

1. Provide immediate tangible economic benefits for low-income participants.

Ensuring immediate tangible economic benefits for participating low-income customers should be the top goal of any low-income solar program. Low-income households spend a disproportionately higher percentage of their incomes on energy, as compared to other households, more than three times higher on average.¹⁵ This problem is gaining increasing recognition: the State of New York recently established an “energy burden” target of six percent, meaning that a family’s spending on energy should not exceed six percent of their income. The energy burden for many low-income families is much higher. Low-income solar programs should target meaningful customer savings, with a goal of bringing energy bills into an acceptable range with regard to families’ energy burdens; and savings should accrue starting on day one of a low-income household’s participation. A utility proposal that offers savings of only a few dollars per month would generally not meet this standard.¹⁶ Ultimately all programs should set a minimum savings target and take into account stakeholder input and data on median local energy burdens when developing that target. For example, the Solar for All program administered by the District of Columbia Sustainable Energy Utility includes a minimum savings goal of 50% for participants.¹⁷

2. Fully compensate low-income solar projects for the services and benefits they provide.

As discussed above, to the extent that low-income solar projects provide benefits to the grid in the form of reduced investments or ancillary services, for example, these benefits should be fully recognized in any analysis of program costs and benefits and reflected in the ultimate value offered to low-income subscribers.

Additionally, utilities can be rewarded for exemplary low-income solar project design and performance, and they can reward competitive projects for the same good design and performance. For example, if projects have grid-related benefits, regulators should consider not only how to compensate project owners for those benefits, but also how the utility should appropriately account for and, in some cases, be compensated or rewarded for those benefits.

3. Be designed as replicable, scalable programs for long-term program sustainability and opportunities for adjustment.

Going hand in hand with the requirement for meaningful savings and tangible economic benefits for participating low-income households, low-income solar programs must be designed with an eye toward long-term sustainability

¹⁵ <https://aceee.org/press/2016/04/report-energy-burden-low-income>

¹⁶ See, e.g., Petition of Excel Energy of MN for Approval of a Customer Access Joint Pilot Program, Docket # M-17-527 (2017), available at 20176-133411-01, in which Minnesota Power proposed low-income customer community solar participation, among other things, for which it estimated customers would save, on average \$2.16 per month.

¹⁷ <https://www.lowincomesolar.org/best-practices/single-family-district-of-columbia>



and opportunities for program adjustment. Programs should be reviewed periodically to identify opportunities for improvement, with meaningful stakeholder engagement incorporated into the review process. To that end, any program should capture metrics related to customer economic benefits, participation targets, customer satisfaction, and community engagement, among others. Periodic reviews should also evaluate the competitive solar market to determine if any utility low-income solar programming should be scaled back in response to greater interest and capabilities of the solar market.

4. Include long-term funding to support programs, including low-income carveouts for any incentive pools.

Long-term funding is an essential component of successful low-income solar programs. Funding to support meaningful savings and tangible economic benefits for participating customers must be sustained and sustainable. Stop and start programs create uncertainty amongst both consumers and market participants, ultimately breeding a climate of distrust and making it difficult for the next program to succeed.

Low-income solar programs are funded through a variety of sources. The most successful programs operating today include a long-term funding source to support dedicated, differential incentives for low-income customer solar adoption. Programs are funded through public purpose charges, riders, noncompliance or alternative compliance funds, ratepayer funded incentive pools, or revenues from carbon or renewable energy credit markets. In any approach, it is essential to include the foundational principle of equity within funding mechanisms and incentive pools for solar and renewable energy adoption. This can be achieved through an equity budget, low-income carveout, or carveouts for other demographics, such as states that use “disadvantaged communities”¹⁸ or other definitions and metrics for underserved population segments. If low-income customers pay into a pilot or program’s incentive pool as ratepayers or taxpayers, which is generally the case, low-income incentives should be budgeted at least in proportion to their contribution to the incentive pool. This policy ensures that all taxpayers or ratepayers who contribute to the solar initiative, including low-income households, also have equitable access to receive the benefits of the program.

5. Address barriers to participation for low-income households.

Low-income solar (and more broadly, energy) programs generally require design that is differentiated from market-rate programs, to account for the unique barriers faced by low-income customers. These barriers include addressing upfront cost and financing barriers and ensuring deep energy cost savings through minimum savings requirements or other tracking metrics.¹⁹

6. Complement existing programs to reduce overall household energy burden.

Low-income solar programs and policies should integrate well with synergistic programs such as low-income energy efficiency, healthy home programs and others that address the intersection of equity, energy, and infrastructure, and, when combined, provide the greatest opportunity for energy burden reduction. Integrating low-income solar programs with existing low-income programs and services can also mitigate implementation challenges such as income verification and build on trust created by successful existing programs.

¹⁸ California utilizes a definition of Disadvantaged Communities (DACs) within state energy programs, informed by the mapping tool CalEnviroScreen. <https://oehha.ca.gov/calenviroscreen/sb535>

¹⁹ These may include minimum savings goals or requirements, minimum energy burden reduction targets, or savings-to-investment ratio requirements as included in federal weatherization programs https://www.energy.gov/sites/prod/files/2017/01/f34/107598_WAP_FS_v1b.pdf



7. Drive local economic opportunity in underserved communities through workforce development and participation for minority- and women-owned business enterprises.

Low-income solar programs provide an ideal opportunity for incorporation of workforce development components that provide job training opportunities and direct pathways to employment in solar for local workers in underserved communities. Additionally, providing business opportunities for local minority- and women-owned businesses is emerging as a best practice. For example, the NAACP outlines best practices for equity in energy procurement in their Just Energy Policies Compendium including policies to support minority- and women-owned businesses. These types of program elements will ensure that low-income solar programs provide community economic benefits beyond household savings.

8. Prioritize community engagement throughout the program design, planning, implementation and ongoing operations, ideally through partnerships with local community organizations.

All low-income programs must include commitment to and planning for deep community engagement in the project design and planning process, with ongoing engagement after the project is complete. As a starting point, regulators should require low-income solar providers to develop a plan for community outreach and education, which must be in place and implemented at the beginning of the planning and design process. Trusted local community-based organizations must be included in all key decisions around program or project planning, design and implementation. Without community buy-in and an agreed upon plan for the provider to follow, outreach and trust building may not be as successful. Engagement should include partnerships with trusted local community-based organizations, which can help educate and enroll customers. Furthermore, where desired by local community-based organizations, programs should explore ways to facilitate community ownership of projects.

9. In the case of utility-owned projects, treat utility and non-utility owned projects equitably and follow the Considerations for Utility Development and Ownership of Solar for Low-Income Communities.

As outlined above, utilities have a natural advantage when it comes to low-income solar deployment because they are large, established entities with pre-existing customer relationships. Regulated utilities should be encouraged to make solar available to low-income customers in ways that both facilitate the overall growth of low-income solar markets and encourage strong third party participation in these markets. If a policy-making body or regulator makes the determination that utility-owned low-income solar is appropriate (see Section IV, Considerations for Utility Development and Ownership of Solar for Low-Income Communities), then the utility's program must be designed in a manner that discourages singular treatment not available to the open market. Singular treatment includes access to utility assets, such as customer rolls or the utility bill, or exceptions to rules, such as project size. This does not mean the utility should not utilize assets or seek effective rules, but rather, if the utility finds there is an appropriate way to utilize such assets or improve rules for their own program rollout, they must work to provide appropriate access to the same assets and ensure the same rules apply to other market players. Otherwise, singular treatment creates barriers to community and competitive market involvement in low-income solar, which will ultimately limit program success.



CONCLUSION

The growth of solar in the United States is an opportunity to address challenges such as high energy burdens, unemployment, and pollution in underserved communities. As policy makers, regulators, and advocates work toward expanded solar access and equity, the authors hope that this paper provides assistance in considering the various roles utilities can play to support access to solar for low-income communities and whether regulated utilities should be authorized to own low-income solar projects. The recommendations and considerations highlighted in this paper are intended specifically for low-income solar programs due to distinct barriers to low-income solar deployment. While some of our recommendations may transcend a low-income focus, as a whole, they are not intended to apply to utility involvement in the broader distributed energy resources market. Utilities are in a unique position to directly address some of the barriers to low-income solar deployment and ownership. As such, utilities should be encouraged to break down barriers to low-income solar in ways that prioritize community involvement and local decision-making, support robust competitive market development, and are in the best interests of low-income ratepayers and communities.



APPENDIX A

APPLICATION OF PRINCIPLES AND RECOMMENDATIONS FOR UTILITY PARTICIPATION IN SOLAR PROGRAMS FOR LOW-INCOME CUSTOMERS TO AN EXAMPLE UTILITY PROGRAM: SOUTH CAROLINA ELECTRIC & GAS COMMUNITY SOLAR PROGRAM

In 2014, the South Carolina General Assembly passed, and the Governor signed, legislation to create a Distributed Energy Resources Program. The legislation, commonly referred to as Act 236, opened the door for the utilities in South Carolina to propose community solar programs. In early 2015, South Carolina Electric & Gas (“SCE&G”) applied to the South Carolina Public Service Commission for approval to implement its Distributed Energy Resources Program, and proposed a community solar program as a piece of the overall program. The SC PSC approved the program in July 2015.²⁰

SCE&G’s proposal for its community solar program and special provisions for including low-income customers has been fleshed out since the PSC gave approval. The utility chose to partner with Clean Energy Collective, a company that constructs community solar projects and also develops software for administering community solar subscriptions and bill credits. The 16 MW program is open to residential customers and tax-exempt entities, with 1 MW reserved for low-income households. Customers have the option of purchasing one or more panels, or they can subscribe to the energy output of an array. At this time, all of the low-income subscribers have chosen to subscribe instead of purchase panels. Subscription fees of \$0.20 per month per kW and early subscription termination fees are waived for low-income participants. Subscribers earn a monthly bill credit of \$0.01 per kWh of energy generated by their share of the community solar project, which, for a 5 kW subscription, would yield a monthly energy output of roughly 600 kWh and thus a bill credit of approximately \$6.00 per month. Approximately 200 low-income subscribers are participating in SCE&G’s community solar program.

The utility and Clean Energy Collective conducted outreach to community action agencies and the state Office of Economic Opportunity. These entities refer their clients, mainly LIHEAP recipients, to the utility for a quick home energy checkup with some simple energy efficiency measures like LED light bulbs, followed by enrollment in the community solar program.

Here we review SCE&G’s low-income community solar offering against the Guidelines for Successful Low-Income Solar Programs in the principal paper (Section V). This review examines SCE&G’s low-income community solar offering, not the broader program. While some aspects of SCE&G’s low-income community solar offering are beneficial, overall the program falls short of meeting these recommendations.

²⁰ See South Carolina Public Service Commission Docket 2015-54-E for additional information. <https://dms.psc.sc.gov/Web/Dockets/Detail/115364>



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Recommendation	SCE&G’s Low-Income Community Solar Offering	Assessment
1. Provide immediate tangible economic benefits for low-income participants.	SCE&G compensates its low-income community solar subscribers \$0.01 per kWh generated by the subscriber’s share, with no subscription fees. For the purposes of this review, the authors assume an average low-income subscriber’s subscription is approximately 5 kW, with a monthly energy output of approximately 600 kWh. This would result in a bill credit of approximately \$6.00 per month for an average low-income customer.	<p>Needs Improvement</p> <p>In South Carolina, low-income households spend approximately \$200 per month on electricity.²¹ The energy burden among low-income households in the state ranges from approximately 8% to over 25%,²² while the national average energy burden is 3.5%.²³</p> <p>The estimated average bill savings for participating low-income customers will not be enough to meaningfully impact the energy burden, particularly for the most vulnerable customers.</p>
2. Fully compensate low-income solar projects for the services and benefits they provide.	SCE&G owns the community solar projects in its territory. The utility’s proposal documents are not clear with regard to the various benefits the company expects.	<p>Needs Improvement</p> <p>SCE&G’s program could be improved by quantifying benefits such as distribution system modernization and bad debt mitigation.</p>
3. Be designed as replicable, scalable programs for long-term program sustainability and opportunities for adjustment.	SCE&G’s low-income offering does not include any steps or opportunities to assess the effectiveness of the program and make adjustments. The term of SCE&G’s community solar program is 20 years.	<p>Does Not Meet the Standard</p> <p>SCE&G’s low-income community solar program could be improved by incorporating regular opportunities for assessment and adjustment to ensure maximum effectiveness.</p>
4. Include long-term funding to support programs, including low-income carve-outs for any incentive pools.	The term of SCE&G’s community solar program is 20 years. While this may seem like a long-term program, there is no clear plan for continued support for the program.	<p>Needs Improvement</p> <p>SCE&G’s low-income community solar program could be improved by outlining plans for continued support beyond the planned 20-year program timeline.</p>

21 U.S. Department of Energy, Low-Income Energy Affordability Data (LEAD) Tool, at <https://www.energy.gov/eere/slsc/maps/lead-tool>.

22 *Id.*

23 Energy Efficiency for All, American Council for an Energy Efficient Economy, Lifting the High Energy Burden in America’s Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities (2016), at <https://catalog.data.gov/dataset/clean-energy-for-low-income-communities-accelerator-energy-data-profiles-2fffb>.



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Recommendation	SCE&G's Low-Income Community Solar Offering	Assessment
5. Address barriers to participation for low-income households.	Under SCE&G's community solar program, subscription fees of \$0.20 per month per kW and early subscription termination fees are waived for low-income participants.	<p>Meets the Standard</p> <p>By waiving participation and early termination fees, the SCE&G program addresses basic participation barriers for low-income households.</p>
6. Complement existing programs to reduce overall household energy burden.	As a precondition for participating in the low-income community solar offering, SCE&G requires participating customers to receive a home energy checkup and install some basic energy efficiency measures like LED light bulbs.	<p>Needs Improvement</p> <p>While the program involves some basic energy auditing and efficiency measures, deeper energy efficiency and weatherization efforts could further reduce participants' energy burden.</p>
7. Drive local economic opportunity in underserved communities through workforce development and participation for minority- and women-owned business enterprises.	SCE&G's program does not incorporate workforce development opportunities. The company does not appear to have made attempts to solicit the services of women- or minority-owned businesses as program contractors.	<p>Does Not Meet the Standard</p> <p>The program does nothing to spur local economic development for underserved communities. The program would benefit from a thoughtful approach to workforce development and soliciting minority- and women-owned businesses to participate.</p>
8. Prioritize community engagement throughout the program design, planning, implementation and ongoing operations, ideally through partnerships with local community organizations.	SCE&G and its contractor Clean Energy Collective conducted education and outreach efforts with community action agencies and the state's Office of Economic Opportunity. These are governmental or quasi-governmental entities. It is not clear that efforts were made to engage directly with community-based organizations.	<p>Needs Improvement</p> <p>It is not clear that the utility and its contractor made efforts to engage with underserved communities directly; instead they chose to engage with government or quasi-government agencies that provide social assistance benefits to those communities.</p>
9. In the case of utility-owned projects, treat utility and non-utility owned projects equitably and follow the Considerations for Utility Development and Ownership of Solar for Low-Income Communities.	In South Carolina, non-utility entities cannot offer community solar.	<p>Does Not Meet the Standard</p> <p>SCE&G's community solar offering is significantly anti-competitive.</p>



APPENDIX B

APPLICATION OF PRINCIPLES AND RECOMMENDATIONS FOR UTILITY PARTICIPATION IN SOLAR PROGRAMS FOR LOW-INCOME CUSTOMERS TO AN EXAMPLE UTILITY PROPOSAL: CONSOLIDATED EDISON COMPANY OF NEW YORK'S SHARED SOLAR PILOT PROGRAM

In July 2015, New York's Department of Public Service (the "Commission") issued an Order establishing a Community Distributed Generation (CDG) program as part of the state's effort to transition from net metering to a Value of Distributed Energy Resources (VDER).²⁴ New York recognized that "broad community participation in DG is envisioned in the Reforming the Energy Vision (REV) proceeding." CDG was largely seen as a way to expand access to those that cannot access on-site solar.

The state's CDG market took a significant amount of time to develop. New York entered a complex VDER proceeding to quantify the temporal and location values of DERs. The Commission also took time to look into CDG projects for low-income households in New York, including the role of utilities in the CDG space. Market uncertainty, particularly around the value of CDG projects, essentially stalled project development in the state.

Therefore, it came as a surprise when Consolidated Edison Company of New York, Inc. (ConEd) filed a Petition for Approval of a Pilot Program for Providing Shared Solar to Low-Income Customers in October, 2016. The ConEd pilot consisted of a 3MW utility-owned community solar facility dedicated to serving low-income households already participating in the utility's electric low-income affordability program.

ConEd's proposal presents an interesting case study. New York state is a restructured market where electric distribution companies, like ConEd, are not permitted to own generation or distributed energy resources. The utility justified its Petition by saying that the CDG program was falling short of serving low-income customers and that this customer segment is underserved by the marketplace.²⁵ Their claim of a market failure was considered premature by several intervening parties. New York's CDG market was essentially stalled because of the state's ongoing Value of Distributed Energy Resources proceeding. Therefore, CDG projects were essentially unfinanceable because of regulatory uncertainty associated with the value of the energy they would generate. Furthermore, the Petition was submitted before Commission Staff completed their white paper on utility ownership of community distributed generation projects that expand access to low and moderate income participation. ConEd was also separately exploring non-utility owned, market based solutions to serve LMI customers in a Request for Information (RFI) that was still open at the time.

Nonetheless, the Commission approved the pilot in August, 2017, allowing Phase 1 of ConEd's pilot to proceed as a demonstration project serving low-income households, thus creating an exception to the general rule that utility ownership of DERs is not allowed. The Order approving the program explicitly stated that the pilot will "[offer] the state and market participants the opportunity to gain experience with a new model for providing low-income customers with access to DERs."²⁶ As of May 2019, the project design is still being finalized.²⁷

This review primarily examines ConEd's proposal against the Guidelines for Successful Low-Income Solar Programs outlined in the principal paper (Section V):

24 <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={76520435-25ED-4B84-847>

25 <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=16-E-0622&submit=Search>

26 New York State Department of Public Service (2017). Order Approving Shared Solar Pilot Program with Modification. Case Number 16-E-0622. Retrieved from <http://www.dps.ny.gov/>.

27 <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=16-E-0622&submit=Search>



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While some aspects of ConEd’s proposal are beneficial, overall the proposal falls short of meeting those recommendations. In addition, the premature finding of market failure in approving the program highlights the issues raised in our Considerations for Utility Development and Ownership of Solar for Low-Income Communities (Section IV).

Recommendation	ConEd’s Pilot Proposal	Assessment
<p>1. Provide immediate tangible economic benefits for low-income participants.</p>	<p>According to ConEd’s proposal, 100% of the 3 MW system will be dedicated to low-income subscribers. The value to subscribers is guaranteed to be either “positive or zero”, with households expected to save approximately \$5 per month.</p> <p>The company is achieving economies of scale with a 3MW system installed on utility-owned property, which has the added benefit of reducing overall project development costs.</p>	<p>Needs Improvement</p> <p>In the state of New York, low-income households spend an average of approximately \$100 per month on electricity.²⁸ The energy burden among low-income households in the state ranges from approximately 6% to 17%,²⁹ while the national average energy burden is 3.5%.³⁰</p> <p>A \$5 per month credit is low and fails to provide meaningful savings for low-income households participating in the program.</p> <p>ConEd was asked to examine strategies to increase the level of savings, including greater participant benefits through ancillary offerings such as energy efficiency, home weatherization, and third party DER offerings paired with participation. It is also possible that ConEd will improve the customer value proposition but that is unknown at this time.</p>
<p>2. Fully compensate low-income solar projects for the services and benefits they provide.</p>	<p>The Company plans to prioritize installation in areas where additional DER penetration “may benefit the system and other customers through a reduced need for traditional infrastructure investments”. However, the actual credit rate is set to the value of output of solar generation set in the VDER proceeding minus the estimated costs of the pilot.</p>	<p>Meets the Standard</p> <p>New York’s Value of Distributed Energy Resources (VDER) proceeding attempts to capture the locational and temporal values of distributed generation. The robust valuation methodology recognizes that solar resources provide benefits to the distribution system. It also captures the environmental benefits of solar generation.</p>

28 U.S. Department of Energy, Low-Income Energy Affordability Data (LEAD) Tool, at <https://www.energy.gov/eere/slsc/maps/lead-tool>.

29 *Id.*

30 Energy Efficiency for All, American Council for an Energy Efficient Economy, *Lifting the High Energy Burden in America’s Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities* (2016), at <https://catalog.data.gov/dataset/clean-energy-for-low-income-communities-accelerator-energy-data-profiles-2fffb>.



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Recommendation	ConEd’s Pilot Proposal	Assessment
<p>3. Be designed as replicable, scalable programs for long-term program sustainability and opportunities for adjustment.</p>	<p>The petition only mentions an evaluation framework that provides data on the overall program operation, including aggregated data on participating customer accounts. However, it is unclear how that evaluation framework will be used to make adjustments to Phase 2 of the pilot.</p> <p>Third-party entities were only able to participate via competitive procurement for the design, siting, permitting and construction of the facility.</p>	<p>Needs Improvement</p> <p>ConEd’s proposal could be improved by incorporating regular opportunities for assessment, stakeholder feedback and adjustment before Phase 2 to ensure maximum benefits for participating households.</p> <p>ConEd’s proposal could also be improved with annual reporting requirements, a stakeholder process to guide program review and adjustment, and opportunities to maximize competitive market-based offerings for the Company’s low-income ratepayers.</p> <p>Lastly, ConEd operates in a restructured market and moved forward with their Petition without proof of a market failure. Therefore, to design this program with an eye toward long-term sustainability the Petition should have discussed how ConEd would transition away from ownership to a facilitator role, be a backstop to increase project financeability of low-income projects, and generally move toward competitive market-based offerings.</p>
<p>4. Include long-term funding to support programs, including low-income carveouts for any incentive pools.</p>	<p>ConEd proposed to own and operate the solar facility as part of a Pilot Program. The utility does not have plans to replicate the Pilot at this initial stage and did not secure long-term funding to support a scalable utility-owned low-income program. The 3 MW utility-owned system is expected to cost \$9-million. The Shared Solar Pilot funding is incremental to the Company’s current electric revenue requirement will be recovered from customers.</p>	<p>Needs Improvement</p> <p>ConEd’s program is an initial Pilot Program offering. The utility has plans to expand the program to 11 MW should the initial 3 MW phase be successful. As the Pilot current stands, it is a stop and start program that will create uncertainty among consumers and market participants and fails to provide a sustainable funding source.</p>
<p>5. Address barriers to participation for low-income households.</p>	<p>ConEd’s Pilot program removes several barriers for low-income household participation, including the cost of any upfront payment and credit checks, both of which could limit participation.</p>	<p>Meets the Standard</p> <p>ConEd’s Pilot successfully addresses basic participation barriers for low-income households by eliminating upfront costs and credit checks.</p>



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Recommendation	ConEd’s Pilot Proposal	Assessment
<p>6. Complement existing programs to reduce overall household energy burden.</p>	<p>Eligible customers are those that are already qualified to participate in the company’s low-income affordability program and the no-cost, energy efficiency program offered by the utility or state agency.</p> <p>The petition states that the pilot will provide additional benefits, such as increased energy literacy and awareness and greater participation in energy efficiency programs.</p>	<p>Meets the Standard</p> <p>Using an existing low-income affordability program means that the company can easily identify income-eligible candidates to participate in the program. In addition, these are households that have received energy efficiency upgrades. When combined with a community solar subscription, energy efficiency plus solar can effectively reduce a household’s energy burden.</p>
<p>7. Drive local economic opportunity in underserved communities through workforce development and participation for minority- and women-owned business enterprises.</p>	<p>ConEd’s materials do not mention an intention to utilize local vendors, nor does the proposal include any consideration or provision of job training for individuals in underserved communities.</p>	<p>Needs Improvement</p> <p>ConEd could strengthen its program by using local vendors and providing on-the-job training opportunities.</p>
<p>8. Prioritize community engagement throughout the program design, planning, implementation and ongoing operations, ideally through partnerships with local community organizations.</p>	<p>ConEd’s petition only included a brief reference to a marketing and outreach strategy that includes engagement with community organizations. However, that is expected after the program design phase rather than any meaningful community engagement throughout the program design and planning process.</p> <p>The company issued an RFI from community organizations for local outreach and marketing of ConEd’s Shared Solar program, indicating a desire to select one community partner in each Shared Solar neighborhood to facilitate community engagement, education and outreach.</p>	<p>Needs Improvement</p> <p>ConEd’s proposal could be improved by demonstrating a clear dedication to community engagement. The utility should have created a stakeholder process in the design of the pilot to ensure community needs and desires are met with such a unique utility-owned program. The issuance of an RFI appears to be a step in the right direction.</p>



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<p>9. In the case of utility-owned projects, treat utility and non-utility owned projects equitably and follow the Considerations for Utility Development and Ownership of Solar for Low-Income Communities.</p>	<p>ConEd’s program utilizes competitive bidding for its 3 MW CDG project. The petition states that the pilot will not replace or compete with projects that would be proposed by third parties under the utility’s Low-and-Moderate Income Demonstration Project.</p> <p>ConEd’s proposal includes a plan for including its project subscribers in an on-bill financing program, which would not be made available to other providers.</p> <p>The utility’s petition failed to acknowledge the competitive advantage the utility has within the broader NY CDG program or to recognize that the utility was moving forward with its pilot before the market could provide adequate certainty for third-party owned systems.</p>	<p>Needs Improvement</p> <p>ConEd’s proposal is significantly anti-competitive. The utility’s proposal would be improved by ensuring that on-bill financing was afforded to market participants and that the market had a chance to develop third-party focused low-income solutions.</p> <p>In their proposal, the company could also have articulated measures they could undertake to prevent a competitive advantage over other third party community solar offerings.</p> <p>Furthermore, ConEd should have waited to submit its petition until after:</p> <ul style="list-style-type: none"> • The VDER proceeding was completed and tariff structures put in place; • Commission staff received input on the role of utility sponsored CDG projects; and, • Commission staff finalized their white paper relating to CDG for low-income customers.