


LOW-INCOME **SOLAR POLICY GUIDE**Case Study: **Onset Shared Solar Project**

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-KELISSA S., PROGRAM PARTICIPANT  
ONSET SHARED SOLAR PROJECT

Photo: Marilyn Humphries





## ONSET SHARED SOLAR PROJECT BENEFITTING 19 AFFORDABLE HOUSING PROJECTS WITH OVER 1,000 UNITS AND 56 INDIVIDUAL RESIDENTS TWO 1 MW AC OFF-SITE SHARED SOLAR PROJECTS

### PROJECT INFORMATION

Boston Community Capital (BCC) is a nonprofit community development financial institution. Since 2008, BCC has helped low-income communities access the cost savings and price stability of solar power. The organization<sup>1</sup> has developed and currently operates about 7 megawatts of solar photovoltaic systems across Massachusetts. Half of BCC's solar projects are on-site, rooftop solar installations that serve affordable housing developments and community facilities. It has also developed three off-site shared solar facilities, which use virtual net metering (VNM) to provide benefits to customers unable to put solar on their own roofs.

The Onset Shared Solar Project is one of BCC's off-site shared solar facilities. Onset is a historic waterfront community in the town of Wareham, MA, on the shore of Buzzards Bay. BCC has built two large, adjacent ground-mounted solar arrays there, on land leased from the Onset Water District. At 1 megawatt each, the arrays produce enough electricity to power about 450 homes annually. The electricity produced by the panels flows to the grid, and BCC earns net metering credits for every kilowatt-hour of electricity generated. BCC, in turn, sells those credits to 19 affordable housing developments at a discounted rate. The arrangement offsets the electricity costs of the property owner, typically in the common areas such as gathering rooms and hallways of an affordable housing development. In some cases, however, the properties are master-metered, meaning the property owner pays all of the tenants' electricity costs.

BCC allocates net metering credits estimated to offset about 85 percent of a property owner's annual electricity costs. These credits are sold at a 20 percent discount, for a minimum contract term of 10 years, providing an initial cost savings of about 17 percent; properties will save more if electricity rates go up. Even if electricity rates stay flat, the Onset Shared Solar Project will generate savings to the affordable housing providers of at least \$1 million over 10 years.

In addition to serving 19 affordable housing developments served by the Onset arrays, BCC has developed a pilot program to directly offset the electricity bills of 56 residents of two of the affordable housing developments. For these residents, BCC aims to achieve a savings of 50 percent, or \$500, off their annual electric bills.

This Onset Shared Solar Project demonstrates the potential of shared solar project models that use VNM to expand access to solar for affordable housing properties and lower electricity bills. It also highlights the opportunity, and some of the challenges, of using VNM to directly benefit the low-income residents of these properties.

### PARTNERSHIP

BCC's key partners for the Onset Shared Solar Project were:

- Eastern Bank, which provided both tax equity and debt financing for the solar;
- Borrego Solar, which designed and installed the solar system and provides O&M services;
- Six respected affordable housing developers who own the 19 affordable housing developments;
- Housing Solutions for Southeastern Massachusetts' team, in particular, one of the properties' owners, who engaged the 56 residents directly, to sign them up for direct shared solar participation; and,
- Onset Water District, which receives lease payments to support its operating budget, and the Town of Wareham, which receives property tax payments on previously untaxed property.

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<sup>1</sup> BCC's solar work is done through its affiliate BCC Solar.

## MOTIVATOR

Helping low-income communities address energy affordability challenges was a primary reason BCC embarked on their solar projects. Equally important was the need to ensure that low-income communities and residents have the opportunity to support and participate in a transition to a more renewable energy future.

### PROJECT BENEFITS AND VALUE

The Onset Shared Solar Project is attractive to affordable housing owners, such as Community Action for Better Housing (CABH), in New Bedford, MA. CABH provides affordable and supportive housing, primarily to formerly homeless individuals and families. It has a large electric bill since it pays for all the tenants' electricity use. CABH had been interested in solar for a long time, but many of their properties are historic, and many have rooflines unsuitable for a good solar installation. Participation in a shared solar project solved the physical limitations CABH faced, as well as provided cost savings.

Director of Housing Development, Ed Allard, at New Bedford's CABH says that, as an organization, they have long been interested in solar energy. "It's a source of green energy, and it's healthy for the environment. BCC said they were developing a [solar installation] and were looking for nonprofit clients to sign on to get electricity at a lower cost. It's also a cost-saving option for us. We decided to sign on."<sup>2</sup>

The pilot program's benefits to participating residents is also clear. "I'm all about saving money. I have a tight budget," says Kelissa S., a program participant. "I live in an apartment building, so typically I wouldn't be able to take advantage of solar. But the Shared Solar Program for Cranberry Manor makes it so easy," she continues. "Everything about the program is great, from saving the environment to saving us money. Everyone should have it."

By lowering and stabilizing electricity bills for affordable housing developments and saving residents money, the Onset Shared Solar Project enables BCC to use solar to tackle energy affordability issues and allow low-income communities to address climate change. But policy reform is needed to ensure solar's full potential is realized and its benefits are available to everyone.

"Solar can help cut costs, and it's geared toward the future; low-income communities want to help fight climate change and certainly don't want to be left behind as renewable energy becomes mainstream," says BCC Solar's president, Dick Jones<sup>3</sup>. "Participation in renewable energy projects can sustainably reduce a customer's energy burden and the volatility of energy costs. Furthermore, reducing the energy burden of low-income customers benefits everyone by reducing electricity system costs associated with delinquencies, collection, bad debt, arrearage management, and the provision of discount service."<sup>4</sup>

### POLICY & MARKET CONTEXT

Prior to 2015, the market for low-income solar was limited. Aside from BCC, few solar developers focused on serving affordable housing and its residents. This changed for the better with the roll-out of the Solar Renewable Energy Certificate II (SREC II) program (a solar carve-out of the state's Renewable Portfolio Standard). Under SREC II, for every megawatt-hour of electricity a solar project generates, the project owner receives a certificate that they can sell back to electricity providers and utility companies. While the program was under development, BCC successfully argued for affordable housing to be treated as

<sup>2</sup> [http://www.bostoncommunitycapital.org/onset\\_solar](http://www.bostoncommunitycapital.org/onset_solar)

<sup>3</sup> Interview by Melanie Santiago-Mosier with Dick Jones and Emily Rochon of BCC Solar on April 11, 2018.

<sup>4</sup> Initial Brief of BCC Solar Energy Advantage, Inc., D.P.U. 17-140, 9, fn 1 (April 23, 2018).

a priority use. This favored status led to more than 202 MW of solar projects serving affordable housing being installed or qualified under this program. As of 2017, Massachusetts had the highest per capita amount of solar serving affordable housing in the United States.

Facilitating the expansion of the low-income solar market was Massachusetts' virtual net metering policy. Under this policy, solar project owners are able to allocate net metering credits to other utility customers, so long as the customers are served by the same utility and located in the same utility load zone, and basic requirements for net metering are met. The advantage of VNM is that it creates the potential for anyone to access the cost benefits of solar, regardless of whether they own a rooftop that is suitable for solar. Today, half of BCC's solar is shared from off-site locations with customers who cannot put solar on their own roofs.<sup>5</sup>

VNM also enables the development of third-party shared solar business models that eliminate the need for participants to pay the upfront costs of going solar. It would be difficult for many affordable housing developments, for example, to obtain approval from their lenders to take on additional debt to install solar. On the other hand, lender and investor approval of a net metering contract is much simpler for an affordable housing development.

The SREC II incentive program has been a key driver of expanding access to solar for affordable housing developments. Later in 2018, Massachusetts will transition away from SREC II and implement a new incentive program, the Solar Massachusetts Renewable Energy Target (SMART) program. BCC and others have been successful in maintaining affordable housing as a priority in the new SMART program and for expanding the definition of priority solar projects to include those directly serving low-income residents.

## INCENTIVES & FINANCING

BCC has primarily used a third party, partnership flip-financing structure to finance its solar projects. This structure eliminates the need for BCC's customers to raise or borrow to pay for the solar installation and maximizes the value of the federal solar investment tax credits (ITC) and other tax benefits. This is a common, though complex, structure used in many commercial solar transactions. Many of BCC's solar customers cannot take advantage of the tax benefits, which typically lower the capital cost of the solar installation by 30 percent or more, making this type of financing necessary for solar to be economically feasible.



In a partnership flip structure, BCC creates a special purpose entity (SPE) to develop and own the solar installation during the five-year tax compliance period. BCC then sells a 99.9 percent, non-controlling interest in the SPE to a tax investor. In return for purchasing that interest in the SPE, the investor receives the 30 percent ITC, accelerated depreciation and a portion of the cash flow from the project. BCC then arranges debt financing to pay for much of the balance of the capital costs, which is repaid from the cash flow generated by the solar. In several transactions, BCC has also used New Markets Tax Credits to cover the remaining capital cost, lowering the "sponsor equity" that BCC would otherwise have had to raise or contribute, and to allow greater savings for our affordable

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<sup>5</sup> BCC uses virtual net metering for nearly all of its rooftop installations as well since many of the affordable housing developments it serves are multi-building, multi-metered sites, which require virtual net metering to allocate net metering credits across the all of development's electric meters and load.

housing customers. At the end of the tax compliance period, nearly all of the ownership of the SPE “flips” to BCC as the sponsor, which then allows BCC to buy out the tax equity investor’s remaining interest at a nominal cost.

To pay back the debt and to cover operating costs, BCC sells the net metering credits generated by the solar arrays at a discount to the affordable housing development and other customers and the SRECs it receives for generating the solar electricity. Since solar projects only receive SRECs for 10 years, the debt for solar projects in Massachusetts has typically had a 10-year term. Additionally, as a commodity, net metering credits can be transferred to another eligible customer in the event the original customer no longer needs them, e.g. if their electricity consumption declines, an electricity account is closed, etc. This provides protections for both customers and solar developers—the former can contract for net metering credits to ensure they aren’t buying credits they wouldn’t be able to use and the latter are able to find new buyers for credits and limits their risk in the event a customer defaults.

## GREATEST CHALLENGES

A host of challenges limits solar’s benefits to low-income communities. As noted above, on-site rooftop solar requires a suitable rooftop, which many affordable housing developments and low-income households lack. Even if a suitable rooftop is available, the upfront cost of a solar installation can be a barrier. VNM does address these barriers and has expanded access to solar for affordable housing developments in Massachusetts.

Nevertheless, it remains difficult to directly serve low-income households, including residents of these properties. A number of challenges stand in the way of this, and many go well beyond the scope of this case study. But with respect to VNM, as designed in Massachusetts, a key barrier to expanding access to the low-income household level is the need to sell net metering credits to customers, and sign contracts, to generate revenue and cover solar project debt and operation costs.

To sell these credits, solar projects have to enter into contracts with customers. Many low-income customers simply won’t sign these contracts as they find them complicated and hard to understand. Additionally, there can be a high level of distrust among low-income households toward energy services marketers, made worse by scams and predatory practices by some in the energy industry. Further, potential future utility rate changes make it difficult to assess if savings will be realized throughout the term of the contract. Households also may not have time to learn about a renewable energy opportunity; many households are focused on working to make ends meet. Individuals may also lack the energy literacy necessary to evaluate the value of participating in a renewable energy project. Even if a solar project managed to secure the necessary number of contract sales, another challenge is obtaining financing from banks, investors and others who perceive low-income customers as a credit risk. Thus it is very difficult for a solar developer to obtain financing for a project serving low-income customers.

In light of these challenges, very few shared solar projects directly serve low-income residents in Massachusetts. This prompted BCC to pilot a program that allowed a small portion of net metering credits to be allocated to low-income residents at no cost. BCC sought to test an approach that eliminated the need for households to sign contracts to receive the benefits of solar. The pilot program has provided BCC with important learnings on successful customer engagement strategies, as detailed in the following section. It’s important to note, however, that absent policy changes, BCC’s approach is not scalable. Solar economics do not permit solar developers to forfeit more than a small portion of the net metering credit revenue it would otherwise receive by selling the credits. That’s why BCC has advocated, within the context of the SMART program development and elsewhere, for a set of regulatory and legislative measures that would improve the VNM mechanism and allow no-cost allocation solar models to scale and serve a wider range of low-income households.

## TENANT BENEFITS & ENGAGEMENT

For 56 households of the 19 affordable housing projects that participate in the program there are direct bill-saving benefits - to the others there’s the indirect benefits.<sup>6</sup> However, the indirect savings by reducing the operating costs for the affordable housing providers can be reinvested at the properties to, for example, provide tenants with programs and services. For the 56 households eligible to receive net metering credits on their electricity bill, BCC’s goal is to reduce their annual costs by half.

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<sup>6</sup> Approximately half of the 19 developments are master-metered where the property owner pays for all of the electricity and the tenants do not have separate utility accounts or bills.

The process of signing up households for the pilot program has provided BCC with some important lessons regarding successful customer engagement strategies. Initially, a lack of customer engagement hampered BCC efforts to enroll households in the pilot. BCC partnered with Housing Solutions, the nonprofit owner of the affordable housing developments, to sign up the tenants. It wasn't until the development hired a new property manager, who himself had a solar installation on his home and a personal interest in shared solar, that customers began to sign up. During his interviews with residents for rent recertification, he would tell them about the shared solar opportunity. With such a trusted advocate of solar, more residents became engaged. This experience is reflected in other states: effective outreach is best achieved through a trusted intermediary and is key to the program's success.

