

SOLAR *in Your Community* CHALLENGE



Case Study

The Community Affordable Renewable Energy (CARE) Project

As the costs have decreased over time, solar energy has become a more integral part of our energy future across the United States. Its environmental benefits are accompanied by job creation, reduced utility costs for homeowners, and more efficient operational costs in facility management. Despite significant growth and demand for solar adoption, low- and moderate-income (LMI) communities represent less than 5% of solar customers in the United States. With LMI households representing 40% of America's population, this market's potential is largely unrealized, and the benefits of going solar have yet to materialize equitably.¹ Similarly, nonprofit organizations and public agencies have not been able to adopt solar at a rate comparable to the broader market.

There are several obstacles for LMI communities to go solar, including a shortage of financing options for small and nonprofit projects; complicated interconnection processes; limited options for power purchase agreements (or equivalent); legislative limitations on community solar projects; and limited local capacity in community partners.

In response to these obstacles, the U.S. Department of Energy Solar Energy Technologies Office launched the \$5 million Solar in Your Community Challenge (SIYC) in 2016. With participation from 172 teams across the country, the SIYC tapped the innovation of solar developers, service providers, utilities, municipalities, nonprofit organizations, and others to find solutions. In addition to accessing professional expertise and seed funding, teams also competed for \$1 million in monetary prizes.

Teams from around the country created new partnerships, built new financial models, explored regulatory change, leveraged other

sources of capital, and structured deals that had no precedent. Some of the teams built actual solar projects resulting in 15.5 MW of solar capacity, with much more in the pipeline. Other teams built programs that could be deployed across the country. Some did both. Additional details about the competition can be found on U. S. Department of Energy's [website](#).

The Community Affordable Renewable Energy Project (Project CARE) is the Solar in Your Community Challenge Grand Prize Winner. Based in Denver, Colorado, the team, comprised of [GRID Alternatives Colorado](#) (GRID) and the [Denver Housing Authority](#) (DHA), came together because of their shared vision for the future of renewable energy for low-income residents. GRID, a nonprofit that provides affordable renewable energy and job training to underserved communities, brings to the team a wealth of knowledge surrounding solar policy and development. DHA, also a community-based nonprofit organization, is a quasi-municipal entity that provides affordable housing to more than 26,000 LMI residents in Denver.

Project CARE entered the Solar in Your Community Challenge with three objectives.

Objective #1 - Offer predictable reduced energy costs and renewable energy options to low-income communities throughout the Denver Metro Area.

Objective #2 - Develop a pipeline to employment in the solar industry for underserved communities.

Objective #3 - Prove that the project model is scalable and can be replicated by affordable housing organizations across the country.

To achieve these objectives, Project CARE facilitated the installation of a 2MW ground-mounted community solar array in

<https://www.solarinyourcommunity.org/>

Watkins, Colorado, 25 miles east of Denver. The solar array is projected to save more than 700 DHA LMI residents approximately 20% on their energy bills over the next 20 years through a bill credit (see call-out box to the left), for cumulative savings of nearly \$3 million dollars. Each kilowatt produced by the system will serve LMI residents living in Denver, making it the largest 100% LMI-focused community solar array in the United States to date.

In order to develop a solar workforce for underserved communities, GRID and DHA collaborated with the Denver Urban Renewable Authority to develop and implement the Solar Training Academy (STA). The STA provides underserved and unemployed Denver residents with hands-on and classroom-based solar job training to prepare them for careers

Community solar projects differ from typical residential rooftop systems in that the power is generated in a different location than it is consumed. Community solar projects are large arrays installed in a community. Residents and businesses can subscribe to receive a portion of the energy produced from the system. Subscribers then receive a credit on their bill associated with the community solar energy generation. In Colorado, Xcel Energy runs the Solar Rewards Community program, which requires that at minimum, 5% of the community solar array capacity be allocated to low-income subscribers.

“Knowing that the renewable energy and savings from the project were going to families like mine was wonderful.”

— April Valdez, a Solar Training Academy graduate

in the solar industry. Through the STA, Project CARE trained 51 low-income individuals, many of whom have contributed to the success of the Watkins project by helping to install the system as part of their training.

The team tackled a number of challenges associated with providing solar energy to LMI communities. The concern about insufficient roof space was overcome by developing a community solar project instead of a roof-mounted system. DHA owns the system and prequalifies its residents as LMI subscribers, eliminating the issue of low (or non-existent) credit scores, high acquisition costs, and lack of PPA options. To tackle the challenge of limited utility programs that have historically prohibited access to solar for LMI customers, GRID and other stakeholders identified the necessity for low-income programs for solar and pushed for legislative change in Colorado. This led to a low-income carve-out in the Xcel Energy Solar Rewards Community program that helped to make the DHA community solar project a success.

The 2MW solar array in Watkins is unique in that it is the first community solar system to be owned by a housing authority. By following this ownership model, customer acquisition costs and barriers to entry are significantly reduced and allow DHA to manage energy generation and eliminate the need of relying on a third-party organization to procure electricity. The financial model of

Project CARE is key to continuing to provide affordable solar energy to LMI residents. DHA worked with motivated partners, such as GRID and other financing experts, to help navigate the various complexities of this project. DHA committed to fully subscribe the system or pay the financing partners in lieu of PPA payments. This innovative financing model is anchored on the role of DHA as the developer, owner, and subscriber of the solar array.

This team is continuing to pursue additional opportunities to scale the model and replicate it elsewhere in Colorado and beyond. In addition to the 2MW solar array that was interconnected during the Solar in Your Community Challenge period of performance (May 2017 through October 2018), Project CARE has three more solar projects in Colorado

under development: 4MW in Denver, 2.5MW in Pueblo, and 640kW in Boulder. Through this expansion and pipeline of projects, the Project CARE model is demonstrating its ability to scale and is estimated to reduce the energy burden of over 2,650 LMI residents in the near future. There is also room for expansion in Denver, as DHA has aggressive goals for additional community solar projects, aiming to utilize the Project CARE model to achieve 15MW of capacity, which would serve their entire customer base of more than 26,000 LMI residents.

Through the hard work and dedication of GRID and DHA, Project CARE has proven that their community solar model is an attainable, replicable, scalable, and impactful tool for delivering affordable renewable energy to LMI communities across the country.

About the Solar Energy Technologies Office

The U.S. Department of Energy Solar Energy Technologies Office supports early-stage research and development to improve the affordability, reliability, and performance of solar technologies on the grid. Learn more at energy.gov/solar-office.