

April 23, 2021

Bringing Solar Energy to Low- and Moderate-Income Communities

Eric Hangen, Rebecca Regan, and Sarah Boege

The Carsey Perspectives series presents new ways of looking at issues affecting our society and the world. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the sponsors or publisher.

The U.S. solar photovoltaics (PV) industry has taken off over the past decade, but without deliberate action low- and moderate-income communities could be left behind. Driven by dramatic declines in up-front cost, installed PV capacity has grown from 1 gigawatt in 2009 to 89 gigawatts in 2020—enough capacity to power roughly 19 million homes. The industry is expected to double in size over just the next 5 years.¹

Much of the growth has been driven by large, utility-scale projects that can produce 5 megawatts or more of power—enough to power at least 1,000 homes. The cost of electricity produced by these projects has decreased by more than 70 percent since 2010. As of Q3 2020, development costs of large, utility-scale solar PV power plants were under \$1 per watt, down by more than 70 percent from 2010,² and a robust array of investors has come forward to efficiently deliver capital to these kinds of projects including large banks, insurance companies, pension funds, and others.

But low- and moderate-income communities, including communities of color, are at risk of being left behind in the transition to clean energy. Mission-driven solar project developers and financial institutions have been working alongside energy justice advocates to open up solar access for these communities, using strategies ranging from [community solar](#), to solar installations on affordable multifamily housing, to distributed solar and storage programs, and more. Their goals go beyond simply generating more green energy to advancing social equity by:

- empowering communities to control their energy future
- stabilizing energy prices, saving money, and building wealth for low-income families
- creating quality jobs

- improving health by reducing pollution
- providing energy resilience for vulnerable communities

Mission-driven actors are using a wide variety of strategies to meet these goals, from helping low-income homeowners get solar—and sometimes battery storage, to developing solar projects serving affordable rental housing and community facilities, to building larger “shared solar” projects to which households from across the community can subscribe.

However, the financing ecosystem does not work nearly as well for these “mission driven” solar projects as it does for utility-scale projects. For home rooftop solar, even if low-income consumers have a home and suitable roof, they may fail to qualify for federal tax incentives, lack adequate credit to qualify for a loan—or the mission-driven lenders seeking to serve them may not be adequately capitalized to make long-term loans. For mission-driven commercial or community-scale projects, assembling nearly every component of the project capital stack—whether bridging early-stage costs, attracting tax credit equity investors, securing long-term debt, or coming up with sponsor equity and filling gaps—can present challenges. A variety of obstacles contribute to the scarcity of financing for low-income solar, including small project sizes, lack of developer balance sheet capacity, both real and perceived issues with credit risk, elevated technical assistance needs, and greater subsidy requirements to pursue goals such as deep energy affordability, climate resilience, or job creation. Still other obstacles are regulatory: for example, not all states allow community solar projects or Power Purchase Agreements, common strategies used for providing low-income solar—and the potential for regulations to shift over time creates risks that mission-driven projects can ill afford.

Our goal was to assess the current landscape of mission-driven solar development in the United States and examine the roles that community-based financial institutions could play. To do so, we reviewed the substantial literature related to multiple dimensions of low-income solar finance and interviewed 47 key informants who are stakeholders in the field. From this work, we are prepared to recommend public investments and policy changes that could help scale the provision of equitable solar finance.

Key recommendations for policymakers and funders in the renewable energy and community development fields that emerged from this process include the following:

- Help to capitalize and support community-based lenders to provide flexible, low-cost, and long-term financing to mission-driven solar projects—including providing guarantees or other forms of credit enhancement.
- Provide a grant-in-lieu-of-credits option for the Investment Tax Credit as was done during the last recession.
- Develop pools of government and philanthropic support that can complement financing from community-based lenders to complete the capital stack for mission-driven projects, as well as to support education and technical assistance to both consumers and potential project sponsors.
- Create a national Renewable Energy Credits program that includes social equity targets to provide a baseline of support for clean energy generation.
- Change utility regulations to remove barriers to low-income solar projects, provide greater certainty for developers, and measure progress toward equity in renewable energy policy implementation.

Endnotes

1. SEIA & Wood Mackenzie (2020). *Solar Market Insight Report 2019 Year in Review*. Solar Energy Industries Association and Wood Mackenzie Power & Renewables. <https://www.seia.org/research-resources/solar-market-insight-report-2019-year-review>
2. SEIA & Wood Mackenzie (2020). *U.S. Solar Market Insight Executive Summary, Q4 2020*. Solar Energy Industries Association and Wood Mackenzie Power & Renewables. <https://www.seia.org/us-solar-market-insight>. Also see: Bolinger, M., Seel, J., Robson, D., & Warner, C. (2020). *Utility-Scale Solar Data Update: 2020 Edition*. Lawrence Berkeley National Laboratory. https://emp.lbl.gov/sites/default/files/2020_utility-scale_solar_data_update.pdf

About the Authors

Eric Hangen is a senior research fellow at the Center for Impact Finance at the Carsey School of Public Policy.

Rebecca Regan is a managing director and co-leads the Affordable Housing and Community Development practice at Terra Search Partners.

Sarah Boege is a policy analyst with both the Vulnerable Families Research Program and the Center for Impact Finance at the Carsey School of Public Policy.

This material is based upon work supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the Solar Energy Technologies Office (SETO) Award Number DE-EE0009009. The views expressed herein do not necessarily represent the views of the U.S. Department of Energy or the United States Government.



University of New Hampshire
Carsey School of Public Policy

The Carsey School of Public Policy at the University of New Hampshire is nationally recognized for its research, policy education, and engagement. The school takes on the pressing issues of the twenty-first century, striving for innovative, responsive, and equitable solutions.

Huddleston Hall • 73 Main Street • Durham, NH 03824
(603) 862-2821

TTY USERS: DIAL 7-1-1 OR 1-800-735-2964 (RELAY N.H.)

carsey.unh.edu