



Increasing Access to Solar for Low-Income Households in Multifamily Affordable Housing

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Abstract. Increasing access to onsite solar and community solar (CS) can provide numerous benefits to low-income (LI) households living in multifamily affordable housing (MFAH). Solar can help reduce their energy costs, preserve affordable housing, and create green workforce development opportunities. However, the MFAH market faces myriad barriers to accessing solar for LI residents, including lack of funding and other resources, low credit scores, and market and regulatory issues. ICAST (International Center for Appropriate and Sustainable Technology) is a national leader in delivering energy efficiency and renewable energy (EERE) solutions to LI households in MFAH. This paper leverages existing literature and ICAST's experience to discuss the aforementioned barriers; it also discusses ICAST's work to overcome them. ICAST is piloting an innovative and replicable program called Project Sunlight that incorporates technical and financial assistance and an innovative financing model to help MFAH owners surmount some of the most significant hurdles to accessing affordable solar for their LI tenants. Through Project Sunlight, ICAST can increase equitable access to solar to benefit LI households, MFAH properties, local communities, and society at large.

Keywords: Multifamily affordable housing · Solar · Low-income

1 Introduction

Increasing access to energy efficiency and renewable energy (EERE) solutions, such as onsite and community solar (CS) can reduce energy costs for low-income (LI) households, help preserve affordable housing, and create green workforce development opportunities [1]. According to the U.S. Department of Energy (DOE), the national average energy burden for LI households, i.e., the percentage of their income dedicated to covering energy costs, is 8.6%—three times higher than for non-LI households [2]. However, LI households—which constitute 44% of all households in the U.S. [2]—face myriad barriers to accessing solar, including lack of funds [3], low credit scores [3] (which can preclude them from accessing solar subscriptions), lack of home ownership [3] (renters do not have control over their roofs and thus, cannot pursue rooftop solar), and other regulatory and policy hurdles. There are numerous programs designed to expand access to solar solutions for LI households, including incentive and subsidy programs such as solar renewable energy credits (SRECs), or Utility CS programs with carve-outs for

LI populations. However, LI households in multifamily affordable housing (MFAH) still face significant barriers to accessing solar, including the property owners' lack of resources and a lack of financing models tailored to the unique needs of this segment [1].

ICAST (International Center for Appropriate and Sustainable Technology) is a 501(c)(3) nonprofit with a 20-year history of delivering EERE solutions to LI and underserved communities. ICAST was selected by the DOE's Solar Energy Technologies Office (SETO) to implement a national initiative to overcome the hurdles of deploying solar in MFAH for the benefit of their LI tenants. MFAH is often older and energy inefficient, but historically underserved by clean energy programs [4]. In partnership with Utilities, MFAH owners, investors, and other stakeholders, ICAST has launched Project Sunlight, a scalable and nationally replicable approach to address the challenges of delivering affordable solar to LI households living in MFAH.

2 Benefits of Increasing Access to Solar for Low-Income Households in Multifamily Affordable Housing

EERE solutions such as onsite solar and CS can reduce LI residents' energy costs and enable them to dedicate their funds to other essential goods and services such as groceries and healthcare [5, 6]. Further, solar installations can help preserve and improve affordable housing, especially when delivered as part of whole-building EERE solutions [6] that provide significant upgrades to the property's building shell and mechanical, electrical, and plumbing systems. ICAST leverages this approach for all of its programs including Project Sunlight, as it increases the property's health, functioning, and safety, and brings down costs for the owners as well as the residents. Solar installations also create green workforce development opportunities for underserved communities [6]. The Bureau of Labor statistics found that the photovoltaic (PV) solar installer occupation is one of the five fastest-growing occupations in the U.S. [7]. Affordable solar tailored to LI renters in MFAH can also increase equitable access to EERE technologies. Renter households are far more likely to have lower incomes and to be households of color—48% of renter household are headed by a person of color [8]. Of the renter households earning less than \$30,000, Black and Hispanic households make up 25% and 19%, respectively [8]. Low- and moderate-income households are also more likely to live in multifamily housing [9, 10] than single-family homes.

3 Barriers to Increasing Solar Adoption in Multifamily Affordable Housing

3.1 Multifamily Affordable Housing is a Hard-To-Reach Market

MFAH owners often lack the resources (i.e., time, expertise, or funds) to pursue solar installs [4, 11], they have misperceptions regarding the cost and value of such installs, and they have a “split incentive” [4, 11]—i.e., in properties where the residents pay their own utility bills, owners are hesitant to pay for solar because they believe the cost-reduction benefits will accrue solely to the residents. Furthermore, few solar program

implementers have knowledge or experience dealing with the issues faced by this market segment.

3.2 There is a Lack of Sustainable Financing Models for Multifamily Affordable Housing

Most of the solar programs that are operating at any appreciable scale offer LI households very low-cost or free [12–14] solar. The subsidies come from various sources, including government and philanthropic grants [14]. While states such as Illinois, Washington D.C., and California have LI solar programs with generous incentives, these are unsustainable and rare due to their high ongoing costs. Most statewide or Utility programs do not offer that kind of generous funding at any scale. In fact, a case can be made [15] that some Utilities would prefer an end to solar subsidies for LI because they believe the costs of providing free or discounted solar is being unfairly borne by other Utility customers. Further, reliance on government and philanthropic funding to subsidize large-scale solar programs is neither a scalable nor a sustainable [14] approach because both governments [12] and philanthropic sources have historically launched programs only to later move funding to other priorities.

3.3 Onsite Solar Projects for Multifamily Affordable Housing Are Technically and Financially Complex

Onsite solar projects for MFAH have higher upfront legal and setup costs [1], as a percentage of the project costs, due to the smaller size of onsite solar projects, often rendering them financially unfeasible. Also, many Utilities and states do not allow virtual net metering (VNM) [16, 17], making it difficult, if not impossible, to install solar at a MFAH property with individual solar equipment, connections, and utility meters for each LI tenant. Lack of VNM implies each tenant needs an individual connection to the Utility, decreasing the size of the solar project and increasing the costs exponentially.

Even if VNM is an option, the small size of onsite MFAH solar installations limit the volume efficiency needed to attract cost-effective financing. Most tax credit investors are not interested in small MFAH projects [18] and the few equity investors willing to provide financing require high returns. Debt providers such as banks and credit unions shy away from solar financing due to a lack of collateral, as solar panels may not be a bankable asset [19]. ICAST believes this lack of access to reasonable financing is the biggest hurdle to solar for LI residents in MFAH.

3.4 Existing Community Solar Programs Are Limited in Their Ability to Reach Low-Income Households in Multifamily Affordable Housing

While the CS approach aggregates solar subscribers to bring volume efficiency and reduce transaction costs, it is not a universal solution because it depends on policies such as community solar, VNM, Utility bill crediting, and other state and local regulations. Some states do not offer net metering [20], many do not offer VNM [17], and most Utility billing systems will not allow for pro-rata allocation of solar to individual apartment

meters. Even in places where these models are working, they have not successfully driven solar access at scale.

Additionally, the annual process required by most CS programs for identifying and qualifying LI participants is cumbersome and expensive. This is especially true for LI households, which are more likely to move residences frequently [21]. The national annual turnover rate in multifamily is 47.5% [22], i.e., a multifamily property loses almost half of their renters each year. Further, a subsidized MFAH property owner/manager needs to go through a laborious and bureaucratic process to change the Utility and rent subsidy tenants receive in order to recoup their investment in any EERE upgrades. So, if a solar program changes the Utility costs for the LI tenants, the MFAH property needs to expend significant resources to recoup their investment. This adds to the effort needed by the MFAH property owner/manager and creates another hurdle.

4 How Project Sunlight Will Remove Barriers for Low-Income Households in Multifamily Affordable Housing

Project Sunlight overcomes barriers to serving LI households in MFAH by educating MFAH owners and property managers on the economic and environmental benefits of solar, providing access to financing, and increasing the volume efficiencies through aggregation, all while reducing overall costs by standardizing processes and contracts that encourage buy-in from both investors and Utilities.

Unlike many CS programs, which enroll individuals, Project Sunlight recruits the entire MFAH property, i.e., all of the LI residents on the property and the property itself, under one contract, to keep the cost savings benefit of solar with the property and its residents. Residents are signed up automatically with their lease agreements, at no cost to them. This further reduces costs to sign up subscribers, as the solar energy will continue to be utilized on the properties that sign contracts irrespective of the resident turnover.

ICAST also works directly with Utilities on these projects, gaining their buy-in by allowing local Utilities to own and operate the CS assets as long as they continue to serve LI populations. This ensures that Utilities do not see Project Sunlight as competition, but as a potential partner, removing one of the most common barriers to CS development. By not wanting to own the solar asset, ICAST can build partnerships with Utilities and MFAH owners who see ICAST as a facilitator rather than competitor.

The innovative, scalable, and sustainable aspect of Project Sunlight is ICAST's ability to partner with local Utilities, MFAH properties, and other stakeholders to launch large-scale, replicable solar projects in a manner beneficial for all parties.

4.1 Creation of a Cost-Effective, Sustainable Financing Model

ICAST is piloting a cost-effective and scalable new financing model for solar, leveraging components of current models to fund solar PV for MFAH, and utilizing its partnerships with Utilities and financial institutions. ICAST is combining components of four funding models—two of them utilize Utility funding, one uses a Special Purpose Entity (SPE) to take advantage of the tax credits, depreciation, and incentives from third-party investors, and the last is a philanthropic approach that heavily subsidizes solar for the LI population.

ICAST utilizes its ability to monetize the tax credits through a SPE, who offer an option to the MFAH owner or Utility to own the solar asset after year six (timeframe for depreciating all of the solar assets). Because the local Utility or the MFAH can serve as the manager, and later the owner, of the solar generation asset, there is high local buy-in. ICAST also incorporates a philanthropic model to the extent possible to help subsidize solar for LI households living in MFAH. By combining best practices from the current approaches, ICAST can leverage the benefits of different funding sources while offering a win-win solution for all parties, including investors, Utilities, donors, and tenants. This model is scalable nationally because it reduces/eliminates the need for subsidies.

4.2 Deployment of an Aggregation Database for Multifamily Affordable Housing

ICAST partnered with MFAH owners/managers, investors, and attorneys, to determine methods for aggregating risk profiles of the MFAH solar projects to reduce transaction costs. ICAST uses its aggregation database for project inputs as an efficient and cost-effective way to engage MFAH properties to sign up for this program. ICAST can aggregate numerous, similar solar projects together into a package deal for investment.

4.3 Standardization of Process and Contracts

ICAST worked with its attorneys to achieve a standardized contract approach that can reduce transaction costs with a comfortable level of risk. ICAST has established templates and provisions for a universal solar contract and documentation for aggregated projects to significantly reduce transaction costs. The process does require customizing to function in different states, with different laws and provisions that may come into play for aggregating demand from multiple MFAH projects into one financing package.

5 Conclusion

Increasing access to onsite solar and CS solutions for LI households in MFAH benefits the LI residents, the MFAH property, the community, and society at large. Existing models to increase access for LI households must be supported and enhanced by innovative financing models tailored to meet the unique needs of the MFAH market. By aggregating MFAH projects, standardizing the process and documentation, and borrowing the best practices from the industry to arrive at its innovative solution, Project Sunlight leverages existing resources and funding streams to facilitate equitable access to solar for historically underserved communities.

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