# VOLUME 3 SOLAR FOR MANUFACTURED An Update on Recent HOMES Developments



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### ABOUT THIS REPORT

In 2021, the Clean Energy States Alliance (CESA) produced a <u>two-volume report on Solar for</u> <u>Manufactured Homes</u>, *An Assessment of the Opportunities and Challenges in 14 States*, as part of its <u>Scaling Up Solar for Under-Resourced Communities</u> project. In this report, the third volume in the Solar for Manufactured Homes series, CESA offers an update relating to recent developments, including how the Inflation Reduction Act can support solar for manufactured homes, how community solar can be used to benefit households residing in manufactured homes, and two case studies illustrating pilots testing new strategies.

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### **VOLUME 3**

# SOLAR FOR MANUFACTURED HOMES

## **An Update on Recent Developments**



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With a case study by Gabriel Chan and Steve Coleman (University of Minnesota)

**SEPTEMBER 2023** 

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# INTRODUCTION

In 2021, the Clean Energy States Alliance (CESA) produced a two-volume report, *Solar for Manufactured Homes: An Assessment of the Opportunities and Challenges in 14 States*, as part of the <u>Scaling Up Solar for Under-Resourced Communities</u> project. This multi-year project is a wide-ranging initiative to accelerate solar development that benefits low- and moderate-income (LMI) households and communities. It focuses on three distinct subsets of the LMI solar market: singlefamily homes, manufactured homes, and community institutions, including multifamily affordable housing.

Because manufactured homes had mostly been ignored as a market for solar development, the project started with an overview report that examined the nation's manufactured homes housing stock and identified possible strategies for bringing solar to the millions of residents of those homes. The 2021 report covered the following:

- The first volume described the nature and distribution of the manufactured housing stock across the country. It provided an overview of the general obstacles to LMI solar, as well as additional challenges specifically related to manufactured housing. It included nine case studies highlighting solar deployment models for manufactured housing residents. The volume ended with general findings and recommendations.
- The second volume examined 14 states with different solar markets and policies and identified the most promising ways to bring the benefits of solar power to manufactured homes residents in those states. The states examined were Arizona, California, Florida, Georgia, Kentucky, Maine, Michigan, Missouri, New Mexico, North Carolina, Ohio, South Carolina, Texas, and Virginia.

This third volume offers an update relating to recent developments. It reflects what CESA staff and project partners have learned over the past two years. The first section discusses the potential for the Inflation Reduction Act (IRA) to advance solar for manufactured homes. The second section focuses on community solar because that solar deployment model has shown the most promise for serving residents of manufactured homes.

# INFLATION REDUCTION ACT: OPPORTUNITIES FOR SOLAR FOR MANUFACTURED HOMES

The most significant development of the past few years for LMI solar has been the 2022 enactment of the Inflation Reduction Act (IRA), which will dramatically accelerate clean energy development across the country. It is especially noteworthy for the attention the IRA gives to addressing energy equity. There are many provisions that explicitly seek to ensure that the benefits of clean energy will reach LMI households and disadvantaged communities. These provisions will make it much easier to bring solar to traditionally hard-to-reach markets, including manufactured homes.

With the new policy and programmatic landscape of the IRA in place, states, community groups, and the solar industry have a much greater ability to target and advance solar for manufactured homes. As discussed in Volume One of this report, manufactured homes deserve considerable targeted attention, because they represent a significant share of affordable housing for LMI households and an even larger share of the affordable housing that does not receive direct public subsidies for clean energy. In many states, manufacture housing comprises a significant share of the total housing stock.<sup>1</sup>

The section below describes the IRA programs and provisions that create the greatest opportunities for solar for manufactured homes, and it discusses some of the ways in which the IRA can be leveraged to expand that sector of the solar market.

#### Greenhouse Gas Reduction Fund Solar for All

Because it is targeted specifically at LMI solar, the Solar for All program of the Environmental Protection Agency (EPA) Greenhouse Gas Reduction Fund (GGRF) is especially relevant to solar for manufactured homes. The overall goal of Solar for All is to expand the number of low-income and disadvantaged communities that are primed for investment in residential and residential-serving community solar.<sup>2</sup> The

<sup>&</sup>lt;sup>1</sup> Warren Leon et al., <u>Solar for Manufactured Homes: An Assessment of the Opportunities and</u> <u>Challenges in 14 States</u>, April 2021, Volume 1, pp. 9-12.

<sup>&</sup>lt;sup>2</sup> EPA, <u>GGRF Implementation Framework</u>, p. 3.

program will provide up to 60 awards in total, ranging from \$25 million to \$400 million.<sup>3</sup>

EPA issued a <u>Notice of Funding Opportunity</u> (NOFO) for the Solar for All competition on June 28, 2023.<sup>4</sup> The NOFO details the ways in which states and other eligible entities can use funding awarded through this competition for financial assistance, technical assistance, and administrative costs. Eligible applicants are states, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands, Indian Tribes,<sup>5</sup> municipalities,<sup>6</sup> and eligible nonprofit recipients.<sup>7</sup>

EPA will grant awards through a competitive process, and most importantly, all Solar for All GGRF funds must flow to low-income households and disadvantaged communities.<sup>8</sup> Applicants must submit their grant proposals by October 12, 2023.

Because manufactured home residents may not own their house lot or common areas, and landowners may not be interested in on-site solar, offsite community solar has emerged as one of the most effective strategies to broaden access to solar for manufactured homes residents across the country. In the Solar for All competition, EPA defined residential-serving community solar as "a solar PV powerproducing facility or solar energy purchasing program from a power-producing facility, with up to 5 [megawatts] (MW) nameplate capacity, that delivers at least 50 [percent] of the power generated from the system to multiple residential customers within the same utility territory as the facility."<sup>9</sup> Many designs are available, and in July 2023 CESA published a guide for states presenting a few available options: <u>Community Solar for Low-Income and Disadvantaged</u> <u>Communities: Solar for All Greenhouse Gas Reduction Fund Program Design Options for States</u>.

States across the country as well as coalitions of applicants are developing Solar for All proposals offering assistance across the value chain. Both financial and technical

<sup>&</sup>lt;sup>3</sup> Up to 56 awards, one to serve each of the 56 states and eligible territories; Up to 5 awards to serve American Indian and Alaska Native Communities; And up to 10 awards to serve similar communities across multiple states.

<sup>&</sup>lt;sup>4</sup> The NOFO is available on <u>Grants.gov</u>.

 $<sup>^{\</sup>scriptscriptstyle 5}$  As defined in Section 302(r) of the Clean Air Act.

<sup>&</sup>lt;sup>6</sup> As defined in Section 302(f) of the Clean Air Act.

<sup>&</sup>lt;sup>7</sup> As defined in Section 134(c)(1) of the Clean Air Act.

<sup>&</sup>lt;sup>8</sup> These households and communities include communities identified as disadvantaged by the <u>Climate</u> and <u>Energy Justice Screening Tool</u> (CEJST) map; a limited number of additional communities identified as disadvantaged by the <u>EJScreen mapping tool</u> (EJScreen); geographically dispersed low-income households; and properties providing affordable housing. See NOFO, pp. 10-12, for additional information.

<sup>&</sup>lt;sup>9</sup> See NOFO, p. 9, for additional information.

assistance components of applications could be made to focus exclusively on, or to include, manufactured homes. For example, states can offer financial assistance in the form of bridge loans to utilities that need an initial investment to develop or procure community solar projects for LMI manufactured homes residents. A state could also offer grants to developers that explore community solar projects to serve disadvantaged communities to lower the cost of development activities. Similar grants could be offered to focus on marketing to LMI residents in manufactured homes, including resident-owned communities (ROCs) but also to communities where the land upon which manufactured homes are sited is owned by a third party.

EPA has given special emphasis to ownership options in the NOFO. The NOFO embraced the "five meaningful benefits" developed by the National Community Solar Partnership (NCSP) in collaboration with a broad group of stakeholders and required that proposals' strategy narratives include a "meaningful benefits plan."<sup>10</sup> (See Table 1.) The plan must reflect an approach to "facilitate[e] ownership models that allow for low-income households and disadvantaged communities to access the additional economic benefits of asset ownership."<sup>11</sup>

Greater Bill Savings	LMI Household Access	Resilience & Grid Benefits	Community Ownership	Equitable Workforce Development
Provide a reduction in electricity bills for residential subscribers to a project	Include subscribers from low- to moderate-income households	Include the capability to deliver power to households and/or critical facilities during a grid outage or to strengthen grid operations	Local community members, subscribers, or community organizations own or have equity in the project; other wealth-building strategies	Advance high wages, reduce income disparities across race and gender, ensure a trained and available workforce reflective of the community where the project is located

#### Table 1 - Five Meaningful Benefits

Source: <u>NCSP</u>

The <u>CESA community solar guide</u> includes additional information on community solar models that prioritize community ownership.

In addition to direct financial assistance for community solar, states can propose program designs for "enabling upgrades" where those are "necessary to deploy

<sup>&</sup>lt;sup>10</sup> See NOFO, p. 44, for additional information.

<sup>&</sup>lt;sup>11</sup> See NOFO, pp. 12 and 52, for additional information.

and/or maximize the benefits of (...) residential-serving community solar project."<sup>12</sup> In the context of manufactured homes, one impactful approach is for states to deploy energy efficiency services in conjunction with financial assistance for an eligible community solar project. According to research by the American Council for an Energy-Efficient Economy, 47 percent of the manufactured homes in the country exclusively used electricity, making them not only great candidates for solar but also for demand reduction strategies such as efficiency and weatherization.<sup>13</sup> Financial assistance for enabling upgrades may comprise up to 20 percent of the total financial assistance deployed during the lifetime of the program. See Figure 1.



#### Figure 1 - Distribution of GGRF Funds as per the NOFO.<sup>14</sup> Source: CES

EPA does not limit a state's ability to stack Solar for All funds and other incentives, including incentives for weatherization and efficiency. In fact, the NOFO encourages applicants to use every tool in the toolbox and leverage other sources of funding, including federal, state, philanthropic, or private sources. The other two GGRF programs, the National Clean Investment Fund and the Clean Communities Investment Accelerator, could also prove transformational in developing more perennial sources of financing for manufactured homes solar by providing funding to green banks and community lenders like community development financial

<sup>&</sup>lt;sup>12</sup> See NOFO, p. 9, for additional information.

<sup>&</sup>lt;sup>13</sup> Jacob Talbot, <u>Mobilizing Energy Efficiency in the Manufactured Housing Sector</u>, American Council for an Energy-Efficient Economy, July 2012, pp. 12 and 7.

<sup>&</sup>lt;sup>14</sup> Please note that these percentages differ for Indian and Alaska Native communities and refer to the <u>NOFO</u> for further information.

institutions, credit unions, housing finance agencies, minority depository institutions, and others. Manufactured homes solar programs and projects will be able to use all three sources of funding simultaneously (subject to meeting other program requirements).

EPA anticipates it will announce its Solar for All selection decisions in March 2024 and plans to issue awards by July 2024. All activities funded with the initial grant awards must be completed within five years.<sup>15</sup> Due to the structure of the competition, it is highly likely that states and other applicants selected by EPA to receive Solar for All funding will spend the year following the awards to further design programs and narrow down program implementation. This design phase will provide significant opportunities for engagement with local communities, resident-owned communities, utilities, contractors, labor organizations and other relevant stakeholders.

#### **Tax Credits**

In addition to creating federal award programs like GGRF, the IRA extended, expanded, and enhanced tax credits, providing not only additional sources of funding via a mostly uncapped policy tool but also significant stability and clarity to the solar market. Most LMI households have historically been unable to use solar tax credits because of a lack of significant income tax liability. The IRA includes some new provisions that will enable additional entities to use tax credits.

#### **Extension of the ITC and PTC**

The IRA extended the Investment Tax Credit (ITC) under Section 48 and Section 25D of the Internal Revenue Code and the Production Tax Credit (PTC) under Section 45 of the Internal Revenue Code, at least for another 10 years from 2022 or until the year the Treasury Secretary determines that there has been at least a 75 percent reduction in annual greenhouse gas emissions from the production of electricity in the US as compared to calendar year 2022.<sup>16</sup> In addition, the IRA returned the rates applicable to the ITC and the PTC to their full values or respectively 30 percent and 2.75 cents per kilowatt-hour. See applicable rates in Figure 2, page 10.

#### **Expansion of Tax Credits**

The IRA expanded the reach of current tax credits, for instance by making solar projects eligible for the PTC, but also by creating adders that provide a new source of funding for projects, including community solar projects serving manufactured

<sup>&</sup>lt;sup>15</sup> See NOFO, p. 26, for additional information.

<sup>&</sup>lt;sup>16</sup> Note that projects that start construction on January 1, 2025 or later will not be eligible for the ITC or the PTC, but will be eligible for technology-neutral replacement tax credits under <u>26 U.S. Code § 48E</u> for the ITC (the clean electricity investment credit) and <u>26 U.S. Code § 45Y</u> for the PTC (the clean electricity production credit). For ease of reading we refer to these technology-neutral tax credits as the ITC and the PTC.

homes, if they meet certain requirements. These adders are only available for commercial credits. They include a domestic content bonus (+10 percentage points), an Energy Communities Adder (+10 percentage points), and a Low-Income ITC Adder (+10 to 20 percentage points). Unlike other adders and tax credits, the LMI ITC Adder is capped at 1.8 gigawatts of direct current capacity per calendar year in 2023 and 2024, and follows an allocation process.<sup>17</sup>

			Start of Construction						
			2006 to 2019	2020 to 2021	2022	2023 to 2033	The later of 2034 (or two years after applicable year <sup>a</sup> )	The later of 2035 (or three years after applicable year <sup>a</sup> )	The later of 2036 (or four years after applicable year <sup>a</sup> )
ITC	Full rate (if project meets labor requirements <sup>b</sup> )	Base Credit	30%	26%	30%	30%	22.5%	15%	0%
		Domestic Content Bonus				10%	7.5%	5%	0%
		Energy Community Bonus				10%	7.5%	5%	0%
	<b>Base rate</b> (if project does not meet labor requirements <sup>b</sup> )	Base Credit	30%	26%	6%	6%	4.5%	3%	0%
		Domestic Content Bonus				2%	1.5%	1%	0%
		Energy Community Bonus				2%	1.5%	1%	0%
	Low-income bonus (1.8 GW/yr cap)	<5 MW projects in LMI communities or Indian land				10%	10%	10%	10%
		Qualified low-income residential building project / Qualified low-income economic benefit project				20%	20%	20%	20%
PTC for 10 years (\$2022)	Full rate (if project meets labor requirements <sup>b</sup> )	Base Credit			2.75 ¢	2.75 ¢	2.0 ¢	1.3 ¢	0.0 ¢
		Domestic Content Bonus				0.3¢	0.2 ¢	0.1 ¢	0.0 ¢
		Energy Community Bonus				0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
	<b>Base rate</b> (if project does not meet labor requirements <sup>b</sup> )	Base Credit			0.55 ¢	0.55 ¢	0.4 ¢	0.3¢	0.0¢
		Domestic Content Bonus				0.1¢	0.0¢	0.0 ¢	0.0¢
		Energy Community Bonus				0.1¢	0.0¢	0.1 ¢	0.0 ¢

#### Figure 2 - Summary of ITC and PTC Values Over Time. Source: US Department of Energy

a "Applicable year" is defined as the later of (i) 2032 or (ii) the year the Treasury Secretary determines that there has been a 75% or more reduction in annual greenhouse gas emissions from the production of electricity in the United States as compared to the calendar year 2022. b "Labor requirements" entail certain prevailing wage and apprenticeship conditions being met.

<sup>&</sup>lt;sup>17</sup> The technology-neutral tax credits are expected to follow similar procedures, but Treasury will make a determination about how to administer them in the future.

Community solar projects will only qualify for the 20 percent bonus of the LMI ITC Adder if they meet the requirements set by Treasury for "qualified low-income economic benefit projects." More information about these adders and the way that they relate to community solar projects, including size considerations, savings or benefit requirements, and distribution of benefits, is included in <u>CESA's Low-Income</u> <u>Community Solar Guide</u> and in the <u>final regulations</u>, <u>effective October 16</u>, 2023, published by the Internal Revenue Service (IRS) on August 15, 2023 in the Federal Register.

#### **Enhancement Structures**

The IRA offers new structures to make tax credits more equitable and useful (a) through direct pay for tax-exempt entities and (b) through transferability for entities that do not wish to participate in the complex tax equity market. Both of these new features are available for the ITC, the PTC, and their successors.

• **Direct pay.** Certain tax credits can now be paid out as cash to tax-exempt organizations via "direct pay" (also known as "elective pay") under Section 6417 of the Internal Revenue Code. Until the IRA, nonprofits, such as rural electric cooperatives, nonprofit developers, or resident-owned communities (ROCs) that are well suited to provide solar services to manufactured homes residents, were not able to access these credits, missing out on a substantial source of funding for solar. With the adders introduced above and direct pay, a non-profit developer could theoretically fund from 30-70 percent of eligible costs with this federal subsidy.<sup>18</sup> Direct pay is likely to become a significant source of funding for nonprofit organizations, local governments, and cooperatives offering services to low-income and disadvantaged communities. One significant barrier for projects to access these funds is the initial funds required to develop solar projects due to the timeline of the direct pay transfers from the federal government. As per the IRA, elections must be made by tax-exempt organizations after the project is placed in service,<sup>19</sup>

<sup>&</sup>lt;sup>18</sup> The availability of direct pay for tax-exempt entities on projects one megawatt AC or greater is contingent on compliance with domestic content requirements. The rate of the tax credits available for direct pay will decrease over time until 2025, at which point direct pay will not be available for entities that do not meet domestic content requirements. For additional general information about how public organizations can utilize direct pay, refer to this guide for governments, schools, and nonprofits from the BlueGreen Alliance.

<sup>&</sup>lt;sup>19</sup> Generally, Section 48 credit elections should be made "no later than the due date (including extensions of time) for the tax return for the taxable year for which the election is made." Other rules, for which the Treasury Secretary will make determinations in the future, apply to states and their political subdivisions. Special rules also apply to a few other credits, including the PTC and its successor technology-neutral credit. For the PTC, elections must be made the year the project is placed in service and continue annually for 10 years. See Section 6417(d)(3)(A)(i) of the Internal Revenue Code for additional details. Temporary filing regulations from Treasury are also available here.

so that initial funding for development must be secured elsewhere, through financing or other sources. It is likely that states, including via Solar for All programs, will intervene to provide some interim financing, although not all states will do so. Foundations and charitable organizations could also step into this funding gap to enable direct pay by providing financing to taxexempt entities for solar.<sup>20</sup> Over time, as the market matures and new guidance is released by Treasury, the private sector may move toward creating new financial products focused on enabling this market, though it is likely (a) that effort will take a few years and (b) these products will initially focus on projects benefitting municipalities or large nonprofits with good credit rating. The Holy Cross Energy and Colorado Energy Office case study on page 21 is an example of a rural electric cooperative using direct pay to fund solar for manufactured homes.

• Transferability. The IRA allows a one-time sale of commercial tax credits by project owners to unrelated third-party investors for cash. Note that transferability is *not* available to entities that are eligible to use direct pay such as nonprofits or governments, and individual tax credits, such as Section 25D credits for individual project owners, are not eligible for transfer.<sup>21</sup> This tool may be most relevant for for-profit developers to use in lieu of tax equity. The theoretical advantage of this structure is the ease of monetizing tax credits, and the resulting savings associated with reduced transaction costs. It is still unclear, however, how workable these transfers will be. While the benefits of bypassing the cost, length, and complexity of the tax equity market are undeniable, the practicality of such transfers remain to be seen, including due to the inability to monetize depreciation—a sometimes large part of the capital stack for projects—and the complicated liability structure between a buyer and a seller of tax credits.

For example, if a project fails or is sold within the ITC vesting period of five years, the notice of proposed rulemaking from IRS currently makes the buyer liable for such recaptured amount, together with a significant penalty of 20 percent, despite both events being outside of the tax credit buyer's control.<sup>22</sup> This is a significant deterrent to any investor/buyer, making the credit-worthiness of the seller and its reputation as an project owner and operator central to the credit transfer price (i.e., the investment in the project). A few

<sup>&</sup>lt;sup>20</sup> For additional information on how foundations can support LMI solar, refer to the CESA report Energize Your Impact: How Foundations Can Accelerate Solar for LMI-Serving Community Institutions.

<sup>&</sup>lt;sup>21</sup> IRS, Elective Pay and Transferability.

<sup>&</sup>lt;sup>22</sup> See notice of proposed rulemaking for <u>26 CFR §1.6418-5</u>.

platforms have emerged to enable these transfers and may be good indicators of the usefulness of this tool for LMI solar in the years to come. These include <u>Crux</u>, <u>Evergrow</u>, and <u>Reunion</u>.

#### Other IRA Initiatives with Implications for Manufactured Homes

Several IRA programs provide additional opportunities for solar for manufactured homes. The most relevant programs are described below.

• Environmental and Climate Justice Community Change Grants program (Community Change Grants). EPA Community Change Grants will invest approximately \$2 billion dollars in environmental and climate justice activeities to benefit disadvantaged communities through projects that reduce pollution, increase community climate resilience, and build community capacity to respond to environmental and climate justice challenges. Eligible activities can include: climate resiliency and adaptation; investments in lowand zero-emission and resilient technologies and related infrastructure; and workforce development that supports the reduction of greenhouse gas emissions and other air pollutants. Solar for manufactured homes could qualify at least under the second category, and workforce development for the purpose of installing solar for manufactured homes could qualify under the third category.

Eligible entities for these grants include: (1) a partnership between at least two community-based organizations (CBOs); or (2) a partnership between a CBO and one or any combination of the following: a federally recognized Tribe, a local government, or an institution of higher education. EPA expects most awards will be between \$10 million-\$20 million for multi-faceted projects addressing a range of pollution, climate change, and other priority issues. A limited number of smaller awards between \$1 million-\$3 million will be awarded for projects focused on facilitating the engagement of disadvantaged communities in governmental processes. Projects including solar for manufactured homes could presumably qualify under the larger-sized funding for projects insofar as they are a part of a "multi-faceted project," and they could qualify under the smaller grant awards insofar as they engage with and involve "disadvantaged communities" and focus on deploying solar in manufactured homes in those communities.

• Loan Programs Office's State Energy Financing Institutions-Supported Projects. Through the State Energy Financing Institution (SEFI)-Supported category of the Title 17 Clean Energy Financing Program, the U.S. Department of Energy's Loan Programs Office (LPO) can augment state funds for clean energy, providing additional financial support to projects or programs, including for solar for manufactured homes. Unlike other Title 17 loans, SEFI-supported projects do not have a technology innovation requirement, i.e., technology funded by these loans or guarantees do not have to be "innovative" and can instead be preexisting. As a "renewable energy system" solar is an eligible technology under this program.<sup>23</sup> LPO provides a list of example project types on their website.<sup>24</sup> These include the SEFI-supported "energy efficiency upgrades and electrification of single-family residences," "construction of high-quality, energy-efficient, housing," and "community solar projects,"<sup>25</sup> all of which are relevant to alleviate the energy burden of manufactured homes residents.

Receiving LPO support would provide an additional layer of financial safety and protection to investors in a solar project for low-income communities in manufactured homes, making these projects more attractive. It's important to note, however, that SEFIs funding these projects must make a significant enough initial contribution to receive LPO support, and the funding states use to make this contribution cannot come from other federal programs (even though the LPO loans and guarantees are themselves funded under IRA).

• USDA Assistance for Rural Electric Co-ops. IRA established a program under the U.S. Department of Agriculture (USDA) known as the USDA Assistance for Rural Electric Cooperatives, which will offer \$9.7 billion in loans to rural electric co-ops for the construction of electric distribution, transmission, and generation facilities, "including system improvements and replacements that achieve the greatest reduction in carbon dioxide, methane, and nitrous oxide emissions in rural areas, as well as demand side management, energy conservation programs, and on-grid and off-grid renewable energy systems."<sup>26</sup>

Rural electric co-ops have an interest in managing their loads and the increasing demand for electricity as decarbonization and electrification measures are implemented. One method of meeting these needs for all parts of a rural electric co-op's customer segments, including manufactured homes communities, is to pair energy efficiency interventions with community solar subscriptions. Utilities could also utilize this funding for on-site solar. At the time of this writing, applications and additional information pertaining to the

<sup>&</sup>lt;sup>23</sup> See the list of eligible technologies on <u>LPO's website</u>.

<sup>&</sup>lt;sup>24</sup> See the list of example project types on the <u>SEFI section of LPO's website</u>.

<sup>&</sup>lt;sup>25</sup> Id.

<sup>&</sup>lt;sup>26</sup> White House, "Building a Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action," p. 44

Assistance for Rural Electric Co-ops program are not yet publicly available and is forthcoming.

• Climate Pollution Reduction Grants. EPA's Climate Pollution Reduction Grants (CRPG) program provides \$5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for re-ducing greenhouse gas emissions and other harmful air pollution. CPRG is a two-phase program that provides, in Phase 1, \$250 million for non-competitive planning grants, and in Phase 2, approximately \$4.6 billion for competitive implementation grants. At the time of this writing, Phase 1 awards have been made. Phase 2's Notice of Funding Opportunities (NOFO) has been released, and CPRG applicants are developing their respective Climate Action Plans as a result of Phase 1. EPA notes that a CRPG application is evaluated on "the extent to which it demonstrates that the GHG reduction measures have the potential to create transformative opportunities or impacts that can lead to significant additional GHG emissions reductions,<sup>27</sup> which solar for manufact-ured homes would inherently accomplish.

In terms of how EPA will evaluate the community benefits provided by states' Climate Action Plans, plans must "[provide] a comprehensive discussion and assessment of expected benefits and/or avoided disbenefits to low-income and disadvantaged communities from the proposed GHG reduction measures."<sup>28</sup> If a CPRG application included solar, weatherization, and/or energy efficiency as a part of its Phase 1 Climate Action Plan, the use of CPRG Phase 2 implementation grants for solar for manufactured homes could presumably be considered an acceptable use of implementation funds. Additionally, EPA notes in the Phase 2 NOFO that one potential GHG reduction measure for which applicants may choose to seek CPRG implementation grant funding includes for the "[d]evelopment of distributed or community-scale renewable energy generation, microgrids, or vehicle-to-grid infrastructure in disadvantaged communities, including remote and rural regions."<sup>29</sup> Community solar for manufactured homes in "disadvantaged communities" and rural and remote communities would presumably qualify.

<sup>&</sup>lt;sup>27</sup> See <u>NOFO</u>, p. 50, for additional information.

<sup>&</sup>lt;sup>28</sup> See <u>NOFO</u>, p. 52, for additional information.

<sup>&</sup>lt;sup>29</sup> See <u>NOFO</u>, p. 10, for additional information.

# STRATEGIES FOR ADVANCING SOLAR FOR MANUFACTURED HOMES: A FOCUS ON COMMUNITY SOLAR

In the initial 2021 report on solar for manufactured homes, CESA presented eight recommendations for how best to advance solar for this housing sector. Those eight recommendations are the following:

- 1. Assess the manufactured housing stock in the state or utility service territory
- 2. Start with modest targeted efforts
- 3. Recognize that special funding or incentives will be necessary
- 4. Find the best venues for pursuing a "Solarize" strategy involving group purchasing and a community marketing campaign
- 5. Target resident-owned and other nonprofit manufactured housing communities
- 6. Promote certain types of large community-scale solar arrays
- 7. Support efforts to incorporate solar into new manufactured homes
- 8. Consider third-party ownership, on-bill financing, and other special financing<sup>30</sup>

Those recommendations assumed that different strategies would be necessary to reach different subsets of the manufactured housing sector. For example, solar can be incorporated into new manufactured homes in ways that are impossible for existing manufactured homes. Similarly, there are options, like ground-mounted installations, that can work well on the large share of manufactured homes that are on individual plots of land rather than in manufactured home communities.<sup>31</sup>

But over the past two years, it has become more apparent that community solar (i.e., shared solar arrays with subscriptions for individual households) represent the greatest near-term opportunity to bring the benefits of solar to those households that live in either formal or informal manufactured home communities. There are several reasons for this, including the following:

<sup>&</sup>lt;sup>30</sup> Solar for Manufactured Homes, Volume 1, pp. 68-76

<sup>&</sup>lt;sup>31</sup> Only about 40 percent of manufactured homes are in the nation's approximately 60,000 manufactured home communities; the rest are on individual plots of land. For information about the homes on individual plots, which often cluster near each other and serve as informal manufactured home communities, see Solar for Manufactured Homes, Volume 1, pp. 28-30.

- The National Community Solar Partnership (NCSP), an initiative of the U.S. Department of Energy (DOE), has generated increased interest in community solar and it has produced resources, technical assistance opportunities, and strategies that make it easier for a variety of entities to pursue community solar.<sup>32</sup>
- As noted above, the EPA Solar for All Program will incentivize the development of community solar projects that benefit LMI households.
- Solar installations for individual homes in manufactured home communities have become more challenging. In particular:
  - It has long been known that there are challenges to placing solar panels on the roofs of manufactured homes and many such homes are structurally unable to support them.<sup>33</sup> Over the past two years, additional issues have emerged related to insurance. Utilities seek to protect themselves against the risk of harm to electrical workers during interconnection, but they sometimes require a level of insurance that is excessive for addressing this narrow temporary risk. For example, an electric utility in Minnesota required a \$300,000 liability insurance policy for any solar interconnection for manufactured homes located in the White Earth Nation, where most manufactured homes are not insured.
  - There has been a long-term trend of private equity firms and corporations purchasing manufactured home communities, often raising rents or driving out the homeowners.<sup>34</sup> These new community owners are often reluctant to allow homeowners to install rooftop or ground-mounted solar. In turn, the homeowners are less likely to consider solar if there is a chance that they will be forced to move before they can get a sufficient financial return from rooftop or ground-mounted system.
- The trend towards corporate ownership of manufactured home communities has spurred a more positive counter trend: expansion of the number of ROCs.<sup>35</sup> Residents of more manufactured home communities have been banding together to purchase their communities to ensure that a predatory

<sup>&</sup>lt;sup>32</sup> See <u>DOE's webpage about the National Community Solar Partnership</u>.

<sup>&</sup>lt;sup>33</sup> Solar for Manufactured Homes, Volume 1, pp. 41-42

<sup>&</sup>lt;sup>34</sup> Sophie Kasakove, "Investors Are Buying Mobile Home Parks. Residents Are Paying a Price." New York Times, March 27, 2022

<sup>&</sup>lt;sup>35</sup> For information about the trend towards resident-owned communities, see the <u>website of ROC USA</u>, a national nonprofit organization that works with and supports ROCs.

private equity firm or corporation cannot take over their community. Once the residents have control of the property, they are well positioned to consider participating in or developing a community solar project that will benefit the community and its residents. CESA's 2021 *Solar for Manufactured Housing – Volume 1* report included case studies of two community solar projects involving ROCs, Lakeville Village in New York and Mascoma Meadows in New Hampshire.<sup>36</sup> Other ROCs have been exploring community solar projects since then.

#### Making Community Solar Work for Manufactured Home Residents

Below is a list of a few of the components that will make community solar more accessible to and effective for manufactured homes residents, as well as some caveats for policymakers seeking to address this customer segment.

- Local characteristics. Throughout the Scaling Up Solar for Under-Resourced Communities project, CESA ran a working group of state energy agencies, rural electric cooperatives, and municipally owned utilities to better understand the challenges and opportunities for manufactured homes. One common thread to the work of the group is that no community solar model will work universally well in all states and jurisdictions, or even for all communities within a state. The location, types, and ownership structures, local regulatory models, urban or rural distribution of homes, large or small states, vertical integration of energy markets vs. deregulation, and other local peculiarities remain important considerations were determining the best model for manufactured homes.
- **Carveouts**. While community solar is a good strategy to reach households that are not able to install onsite solar, state community solar programs will not reach LMI customers, including those residing in manufactured homes, unless programs are specifically designed with them in mind. Among other things, outreach and marketing to LMI households remain challenging. States should consider so-called "LMI carveouts" for their community solar programs, as well as LMI manufactured homes carveouts, either by mandating that utilities reach these populations, or by incentivizing dedicated projects through more attractive compensation schemes for developers/owners. Many states with community solar programs have carveouts, although many are quite small. For recent positive examples, New Jersey gave a preference in a competitive solicitation to vendors that were directing more than half of their capacity to income-eligible households. New Jersey Board of Public Utilities now requires all community

<sup>&</sup>lt;sup>36</sup> Solar for Manufactured Homes, Volume 1, pp. 50-53 at <u>www.cesa.org/resource-</u> library/resource/solar-for-manufactured-homes.

solar projects to serve a minimum of 51 percent LMI subscribers, as measured by capacity subscribed.<sup>37</sup> In addition, the value of solar incentives is higher for enrolled LMI customers than for non-LMI customers.<sup>38</sup> To our knowledge, states have not yet implemented carveouts designed to specifically serve manufactured homes, although our work with states on Solar for All indicates that several innovative agencies are planning to submit applications for dedicated program funding for manufactured homes to EPA.

- Subscription cycles. Most community solar programs are subscription-based. One key aspect of LMI solar program designs is the length of the subscription cycle. Short two-year cycles are quite common but are counter-productive in addressing the needs of LMI households. In 2017, a review of the Colorado Energy Office LMI community solar demonstration projects noted that "maintaining full subscription of the projects while rotating the community solar subscriptions to a broader group of subscribers is often a key challenge."<sup>39</sup> In addition to forcing a customer to reenroll at the end of a cycle, or worse, to exclude that consumer from continuing access to solar opportunities, short subscription cycles create additional administrative and financial strain for asset owners which disincentivize developers from participating in state programs. More recent approaches, such as the pilot project described below with Holy Cross Energy and the Colorado Energy Office will include lifetime subscriptions for enrolled manufactured homes residents.
- **Consolidated billing**. Consolidated billing is now widely regarded as a best practice for community solar for LMI customers. It is also true for manufactured homes. A single bill, where the credit is subtracted from monthly generation to determine a net value, is more easily understood by consumers than separate bills. However, consolidated billing requires the involvement of utilities or electricity retailers. Throughout the Scaling Up Solar project, rural electric cooperative staff shared that there are only a few software tools available for them to choose from to bill customers and that the software limits innovation with billing practices, leaving significant room for improvement in this space.
- **Seasonality**. The seasonal variations of solar production can lead to uncertainty for LMI customers with limited budgets for everyday essentials unless projects

 <sup>&</sup>lt;sup>37</sup> See New Jersey Board of Public Utilities Docket No. QO22030153 and NJBPU Makes Community Solar Pilot Program Permanent, 2023 Press Release, New Jersey Board of Public Utilities.
<sup>38</sup> See Revised Administratively Determined Incentives (ADI) SREC Incentives per Market Segment effective March 13, 2023.

<sup>&</sup>lt;sup>39</sup> Hillary Lobos and Emily Artale for the Colorado Energy Office, *Insights from the Colorado Energy* Office Low-Income Community Solar Demonstration Project, December 2017.

are right-sized and actively managed. The 2017 Colorado Energy Office demonstration projects with Fort Collins utility, which covered manufactured homes, included "carry-forward credit" options that were designed to help mitigate the likely higher net power bills for customers in the winter, when heating demand is high and solar production is lower. The Minnesota case study below details a recent approach to "bank" credits for customers on energy assistance and enrolled in the state's Low Income Home Energy Assistance Program (LIHEAP).

• LIHEAP/WAP. As mentioned above, manufactured homes are well suited to benefit from solar and efficiency due to their high electrification rates and high energy burdens. Several states have worked to marry solar and the federal Weatherization Assistance Program (WAP) over time. Using WAP funds to deploy solar requires a special authorization from the federal government, which only a few states have received, including Minnesota and Colorado. However, the administrative burden on states and stakeholders in accessing WAP funds for solar has discouraged most others from pursuing it.<sup>40</sup>

In recent years, states have shifted from attempting to use WAP funds for solar to exploring how state LMI solar programs can be actively coordinated with weatherization and energy assistance partners such as community action partnership organizations to reach customers enrolled in LIHEAP or who have benefited from a WAP intervention. States are focused on both understanding how to set up bidirectional relationships so that LMI solar programs feed WAP/LIHEAP and vice versa, but also the practical considerations of developing community solar projects with partners that have not typically shared systems, processes, resources, or data. The Minnesota case study below in part tests the feasibility of such collaboration. Additional information about how community solar and LIHEAP could be coordinated through a Solar for All program is available in CESA's Low-Income Community Solar Guide.

<sup>&</sup>lt;sup>40</sup> For additional information, see the <u>2018 CESA webinar on using WAP funds for low-income solar</u> and the <u>2018 CESA webinar on using LIHEAP funds for low-income solar</u>.

### CASE STUDY: HOLY CROSS ENERGY'S EAGLE COUNTY COMMUNITY SOLAR PROJECT

Holy Cross Energy (HCE) is a rural electric cooperative in western Colorado serving 45,000 members. It supplies 250 MW of peak demand energy. HCE has goals to provide its members with 100% clean energy by 2030 and achieve net-zero greenhouse gas emissions by 2035. In order to achieve these goals, HCE is deploying a variety of approaches to transition to 100% clean energy. For example, the electric cooperative plans to obtain additional energy efficiency improvements of 0.25% per year; incorporate new, clean dispatchable resources into HCE's power supply mix; continue existing agreements for energy from local biomass, hydro, solar, and coal mine methane projects; support at least 2 MW per year of new rooftop solar systems; and encourage the expanded use of electricity for transportation, building heating and cooling, and industrial processes.

As part of its development of new solar generation, HCE is planning a 450-kilowatt (kW) community solar array that is scheduled to start in April 2024 in conjunction with Earth Day events. CESA's Scaling Up Solar for Under-Resourced Communities Project has provided technical assistance and support for this project.

The array will utilize virtual net metering to benefit 150 HCE ratepayers who live in manufactured homes with each receiving the output of 3 kW from the array. This pilot project aims to offer solar to manufactured homes residents in conjunction with existing and planned weatherization and electrification interventions through the Beneficial Electrification for Eagle County Housing (BEECH) program. Together, these initiatives will reduce the energy bills of those most energy burdened in the community.

The array is planned to be sited on county-owned land in an airfield in Eagle County. The HCE members who are expected to benefit from the array are energy burdened, manufactured home residents who meet the Colorado Energy Office's (CEO) income requirements for participation in its weatherization program. CEO administers the weatherization assistance program (WAP) in Colorado. Most, if not all, program participants will be selected from among the residents of the Dotsero Mobile Home Park. HCE and CEO will coordinate to identify eligible residents in the area.

A portion of the funding for the array comes from CEO. HCE is also utilizing the 30% direct pay investment tax credit, which is newly available to non-taxable entities, such as rural electric cooperatives, through the IRA. The project also plans to take advantage of an additional 20 percent tax credit available through the IRA for a qualified low-income benefit project.

HCE plans to construct, own, and maintain the solar array. As a way to cut costs and increase community and HCE member engagement, there will be a "barn-raising" event to build and energize the system in April 2024. If the model for this pilot is successful, HCE and CEO will work together to scale the model to 3,200 manufactured homes in Eagle County, Colorado.<sup>41</sup>

<sup>&</sup>lt;sup>41</sup> For more information about the Holy Cross Energy Project, see the slides and recording from a webinar about the project that was organized by CESA for the Scaling Up Solar for Under-Resourced Communities Project: <u>Deploying Solar for Manufactured Homes in Colorado</u>, February 23, 2023.

## CASE STUDY: MINNESOTA EQUITABLE SOLAR ACCESS PROJECT

#### By Gabriel Chan and Steve Coleman<sup>42</sup>

The Minnesota Department of Commerce (MN DOC) and Clean Energy Resource Teams (CERTs) began the Equitable Solar Access Project in 2021 to study community solar in Minnesota municipal and cooperative utilities that could advance access to the benefits of solar to low-income households, including manufactured housing.<sup>43</sup>

The Project developed a financial model whose financial flows are shown in the figure below. The concept of the Equitable Solar Access Project is to develop a solar project that generates a monthly "deposit" of kilowatt-hour (kWh) credits in a "bank" at a Community Action Partnership (CAP). The kWh credits from the bank are then used to pay the energy bills of households enrolled in the CAP's energy assistance program (EAP) during heating months of October to May. In turn, the CAP uses the state funding it receives from EAP to pay the utility for the kWh deposits from the solar project.



#### Figure 3 - Pilot Structure - Source: University of Minnesota

<sup>&</sup>lt;sup>42</sup> The case study authors are both based at the Humphrey School of Public Affairs at the University of Minnesota. Questions can be directed to Gabriel Chan at gabechang@umn.edu.

<sup>&</sup>lt;sup>43</sup> The project has received funding and other support from the National Association of Energy Officials (NASEO), the National Energy Assistance Directors Association (NEADA), and the Scaling Up Solar for Under-Resourced Communities Project.

These community solar kWh credits will reduce the cost of electricity for EAP customers. They will also lower the taxes and fees charged on each kWh, and this will allow limited EAP funds to reach more Minnesota families in need of energy assistance. This approach can be especially useful for households that heat with electricity, which includes manufactured homes.

#### **Phase I: Pilot Implementation**

In Phase I of the pilot project, MAHUBE-OTWA CAP identified EAP customers who fit the criteria of the pilot and provided their electric usage data so the impact on their electric bills of kWh credits from a community solar project could be analyzed. It was a project requirement that no EAP customer would be harmed in any way by receiving kWh credits from community solar. Because of low-income households' limited ability to absorb unexpected price spikes, it was important to look at seasonal impacts to make sure that there would not be any months when customers would end up with higher bills than previously.

Concurrently, the Detroit Lakes Public Utility (DLPU) installed an 11-kW solar array, paid for with funding from CERTs. It began operating in February 2023. The production from this array is what will be tracked and used for the CAP kWh account. In this way, this small array will be used to understand the mechanics and processes of using community solar to provide kWh benefits to EAP customers under the Minnesota Equitable Solar Access Project model.

#### Planning for Phase II: Modeling Scaled Up Equitable Community Solar

In phase II of the pilot, the University of Minnesota Chan Lab is analyzing and modeling the processes for a potentially larger-scale solar project.

The model will help develop scenarios to track energy assistance delivered through community solar for households with different consumption profiles and energy assistance needs. The model tracks the customer impact of the kWh credits monetized on the customer's bill and demonstrates how fluctuating solar generation provides subscriber benefits in EAP months. The model also quantifies the impact to the utility of the solar array, accounting for the cost of the project, avoided wholesale energy purchases, crediting subscribed households, and receiving EAP payments.

The model uses simulated solar production, DLPU's wholesale rates, solar project costs estimated from the Lawrence Berkeley National Lab, and both real and simulated low-income household monthly load profiles. Simulated low-income household loads are created from the National Renewable Energy Lab's End User Load Profiles (EULPs). These EULPs are adaptable by Utility, Census Tract, State, Customer Type, and Discrete Loads.

The model shows that about \$15-\$20/month in kWh credit will be available for each kilowatt of community solar subscription. For example, a customer with a 5-kW

subscription would see a bill reduction of about \$95 during each of the seven EAP months in Minnesota. Revenue from the solar production was modeled using the marginal impacts of the community solar project on DLPU wholesale costs to establish the net present value (NPV) of the array production. The model also shows a net positive NPV to the utility under this program from avoided wholesale purchases.

The figures below show the simulated monthly bills over four years of two lowincome households. The households are enrolled in the community solar subscription program with a 4-kW subscription (Figure 4) and a 5-kW subscription (Figure 5) in the second year and see a monthly benefit of approximately \$70 per month (Figure 4) and \$95 per month (Figure 5) in the heating season.

Figure 4 - Monthly Bill Savings with 4-kW Subscription



---Monthly Bill Before EAP (\$/mo) ----- Monthly Bill After Solar EAP (\$/mo)



Figure 5 – Monthly Bill Savings with 5-kW Subscription

# CONCLUSION

Manufactured homes remain a challenging sector of the housing market for solar development, but that does not mean that it should be ignored by states, utilities, or the solar industry. Because it represents a significant share of the LMI housing stock, it needs to be addressed if all segments of the population are to benefit from solar energy. This will require special initiatives and programs designed for and focused on this sector. Fortunately, recent developments, especially the enactment of the Inflation Reduction Act, are making it easier and more feasible to make meaningful progress. The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.





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