

**CleanEnergy**  
States Alliance

# Empowering Tomorrow

A Preview of States'  
Greenhouse Gas Reduction Fund  
Solar for All Programs

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## ABOUT CESA'S SCALING UP SOLAR PROJECT

With the enactment of the Inflation Reduction Act (**IRA**), federal funding is available for states to launch programs that provide solar and solar+storage to disadvantaged communities and transform the low- and moderate-income (**LMI**) solar market. The Clean Energy States Alliance (**CESA**) has convened, informed, or assisted 40 states seeking to design and launch programs with the U.S. Environmental Protection Agency (**EPA**)'s [Greenhouse Gas Reduction Fund \(GGRF\) Solar for All competition](#) funds. Resources from CESA, including template documentation, guidance for program design, best practices relevant to consumer protection for state programs, and much more, are available on [CESA's Scaling Up Solar resource page](#).

CESA offers technical assistance and organizes state convenings to accelerate learning about LMI solar across the country. We welcome all states to participate. Please refer to our [website](#) for the most up-to-date information on these topics.

Government officials and green bank staff can sign up for CESA's Solar for All updates by completing this form: <https://forms.office.com/r/FxusQA1sk5>.

For questions about this project or this report, reach out to Vero Bourg-Meyer, Senior Project Director for Solar and Offshore Wind at [Vero@cleanegroup.org](mailto:Vero@cleanegroup.org).

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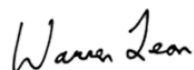
# Foreword from CESA's Executive Director

Since its founding in 2002, the Clean Energy States Alliance (CESA) has worked with state clean energy programs to expand the use of solar technologies. In the early years of this century, when there were only a few solar installations in a handful of states, the focus was almost exclusively on public education and getting solar technology into the field as quickly as possible. But as solar markets began to take off, it became important to focus on ensuring that the benefits of solar were distributed fairly and appropriately across all income levels and across the country. The financial and logistical challenges to such an equitable distribution have been daunting, even though many states have worked to address them.

With the enactment of the federal Inflation Reduction Act (IRA), there is now a unique and unprecedented opportunity to ensure that solar becomes a technology that advances energy equity rather than exacerbates inequality. The IRA's Solar for All program, which is one of three components of the Environmental Protection Agency (EPA) Greenhouse Gas Reduction Fund (GGRF), will distribute \$7 billion in funding to enable "low-income households to access affordable, resilient, and clean solar energy." EPA intends to make up to 60 awards ranging from \$25 million to \$400 million. These awards, most of which will go to states and eligible territories, will be transformational, allowing some states to launch low-income solar programs for the first time and other states to dramatically scale up existing initiatives.

CESA's new report, *Empowering Tomorrow: A Preview of States' Greenhouse Gas Reduction Fund Solar for All Programs*, demonstrates the impacts that Solar for All state programs will have on the low- and moderate-income solar market, if funded and executed well. The report highlights metrics that show the states' ambitious plans to expand the benefits of solar, and it describes program ideas that illustrate the varied ways that states will tackle the challenge of bringing those benefits to low-income and disadvantaged communities.

We do not know which applications will receive a positive response from EPA, but we know that Solar for All will be historic. We applaud states for their vision, and we hope they get the opportunity to turn that vision into real savings, wealth building, and climate mitigation for all.



Executive Director  
Clean Energy States Alliance

# Introduction

## Background and Timeline

Solar power is now among the cheapest forms of power worldwide,<sup>1</sup> offering households an opportunity to access significant savings and health benefits, and to participate actively in climate change mitigation. Yet, some communities have not had equal access to the solar market. Most adopters of solar power remain wealthier than the average US population.<sup>2</sup> In 2022, the median income for a household with solar was about \$117,000 per year, compared to a U.S. median of about \$69,000 per year for all households and \$86,000 per year for all owner-occupied households.<sup>3</sup> Greater participation in the solar economy by lower-income households is happening over time, but that shift remains slow. In addition, solar adopters also tend to be white, college educated, and with higher proportions of native English speakers.<sup>4</sup>

Solar finance and deployment for low- and moderate-income (LMI) households presents a unique set of challenges, which CESA and others have written about at length.<sup>5</sup> These challenges are multifaceted and differ across communities or solar sectors. However, in general, far too little funding has been available to broaden solar access, until now.

On June 28, 2023, the U.S. Environmental Protection Agency (EPA) issued a [Notice Of Funding Opportunity \(NOFO\)](#) for the Greenhouse Gas Reduction Fund (GGRF) Solar for All competition (**Solar for All**). The \$7 billion competitive grant opportunity aims “to expand the number of low-income and disadvantaged communities primed for residential solar investment—enabling millions of low-income households to access affordable, resilient, and clean solar energy.”<sup>6</sup>

[States and territories](#), [Tribal governments](#), [municipalities](#), and eligible [nonprofits](#) prepared applications throughout the summer of 2023 and submitted them to EPA before October 12, 2023. EPA anticipates notifying applicants of its selection decisions in March 2024. Once award decisions are announced, award recipients and EPA will start negotiating cooperative agreements.<sup>7</sup> EPA anticipates that the final awards will then be made in July 2024. The Inflation Reduction Act (IRA) requires EPA to award all Solar for All funds by September 30, 2024.

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<sup>1</sup> Lazard, [Levelized Cost of Energy: Version 16.0](#), 2023.

<sup>2</sup> Forrester, Barbose, O'Shaughnessy, Darghouth, and Montaños, [Residential Solar-Adopter Income and Demographic Trends: 2023 Update](#), 2023.

<sup>3</sup> Id.

<sup>4</sup> Id.

<sup>5</sup> See, for example, [CESA Scaling Up Solar for Under-Resourced Communities resources webpage](#).

<sup>6</sup> EPA, [Solar for All Webpage](#), 2024. Note that GGRF includes two additional and concurrent competitions, which, although they will also have a great impact on LMI solar, are not the topic of this report.

<sup>7</sup> Cooperative agreements are a type of grant in which the EPA has a greater management role than a traditional grant.

Once the funding is awarded, states and other award recipients will have five years to deploy it. They will be allowed to use the first year as a planning year, leaving a four-year deployment window.

### Purpose of this Report

The Solar for All program represents a generational opportunity to unlock the solar potential of disadvantaged communities (DACs) and low-income households, but only if Solar for All is executed well.

In many cases, state energy agencies are best suited to deploy these programs and will likely be the primary implementers of Solar for All (see the section *Why States and Which States?* below). To be successful within the short timeframe of the program, they will need active and rapid involvement from diverse coalitions of stakeholders from the public, private, and nonprofit sectors. Uncertain about whether they will receive EPA funding, states have, for the most part, been reluctant to engage stakeholders too early for fear of overpromising. This report aims to provide some limited information regarding the types of programs that states would like to pursue with Solar for All funding.

**This report will provide some insights into what will be the most significant influx of capital for LMI solar in US history.** The LMI solar programs that will be developed by Solar for All recipients will be bounded by the program frameworks that EPA approves during the award process. Once EPA and a state agree on a scope of work and timeline, a federal contract will be signed, which will dictate how funding can be spent. Therefore, understanding what is included in Solar for All applications will help stakeholders understand what state programs may look like, if funded. While much remains to be designed within the planning year, the trajectory of state programs, what they will focus on, and the tools and strategies they will prioritize will be somewhat set at the time EPA signs cooperative agreements in the summer of 2024. Although we cannot know which applications EPA will approve and what modifications will be required, these agreements will be, for the most part, based on proposed state plans.

In addition, by offering some high-level information about various state plans, we hope to invigorate the national conversation ahead of the award announcements, point out a few programmatic features that EPA, the market, and states should pay attention to while learning from each other, and set the stage for successful program deployment.

States, whether or not they have active existing solar programs, understand the scale of the challenge as well as the market transformation potential of implementing the Solar for All programs. State deployment goals, while necessarily following the confines of EPA's program framework and NOFO, will be based on respective state priorities established as part of the application process, and a state's program success will depend in large part on whether it is able to entice the private sector to help meet those goals.

States across the political spectrum have proposed interesting programs and collaborated throughout the application process. This report aims to help the vast network of stakeholders that will participate in implementing the Solar for All programs better understand what will be needed

in terms of market expansion tools for solar, and to better prepare for the programmatic functions that will be necessary to deploy LMI solar at scale.

Lastly, we hope that this report can help stakeholders reflect on how they could support states and organize their networks to enable the rapid and effective deployment of Solar for All programs.

### Why States and Which States?

This short report provides a brief preview of state-wide Solar for All applications to EPA in 35 states.<sup>8</sup> The applicants shared their applications with CESA for the purpose of preparing this report.

**The report does not disclose any information or data that would identify individual states. All of the applications analyzed by CESA are held in confidence, and CESA is not authorized to disclose details relevant to individual states or to share the applications.**

In all but five cases, the analysis focuses on applications submitted by state agencies, quasi-public agencies, or state green banks. For the applications included in the report that are not led by a state agency, either:

- (a) A state agency supported the nonprofit application, formally as part of a coalition or informally with feedback and connections, or
- (b) A state agency did not apply as the lead or as a coalition member, but a nonprofit green bank or Community Development Finance Institution (CDFI) with significant expertise in LMI solar programs did apply for a state-wide program.<sup>9</sup>

EPA will select up to 60 recipients, including up to 56 to serve “state and territory geographies.”<sup>10</sup> This means that 93 percent of the awards may go to organizations that proposed programs covering an entire state or territory, excluding applications from Tribal leadership in American Indian and Alaska Native Communities (up to 5 awards) and multi-community awards (up to 10 awards). This report focuses on state-wide applications only, mostly by states, with a few exceptions as explained above.

We acknowledge that Solar for All is a competitive grants program and not a state formula-based funding program that guarantees funding for all states. As a result, it is not certain whether the applications reviewed in this report will receive funding from EPA, or how much they will receive. However, states and territories are generally better placed to earn one of the 56 awards for state-wide programs rather than smaller nonprofits or municipalities that may have applied for the same funding.

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<sup>8</sup> In this report, the term “state” refers to US states, territories, and the District of Columbia for the sake of expediency. The applications analyzed in this report include ones from the District of Columbia and Puerto Rico.

<sup>9</sup> In one case, a CDFI competed with a state agency. We reached out to both and included the one that agreed to share their data with CESA.

<sup>10</sup> See NOFO, pg. 24.



This is the case for several reasons:

- State agencies have resources that are not available to smaller nonprofits or municipalities to complement the funding offered by EPA, stretching federal awards further.
- State agencies have experience deploying federal funding, including navigating complex federal regulatory requirements, and reporting.
- Many state agencies already run statewide LMI solar programs, which they are able to build upon or leverage.<sup>11</sup>
- State agencies and state green banks are, in most cases, better able to achieve the broad market transformation that is a central GGRF goal due to their wide reach.
- State energy agencies and state green banks are “naturally” connected to the stakeholders that will make Solar for All successful, including workforce development organizations or labor agencies, utilities, energy efficiency programs, poverty alleviation and economic development agencies, community action agencies, and other relevant organizations that are crucial to speedy program delivery.
- Few small organizations would be able to build programs from scratch, including the myriad programmatic functions required to deploy millions of dollars of federal funds to reach hard-to-reach populations within the five-year program period. Fewer would be able to deploy funding at the scale of a state. Fewer still could do so in a way that recycles funding for use beyond the initial five-year timeline.

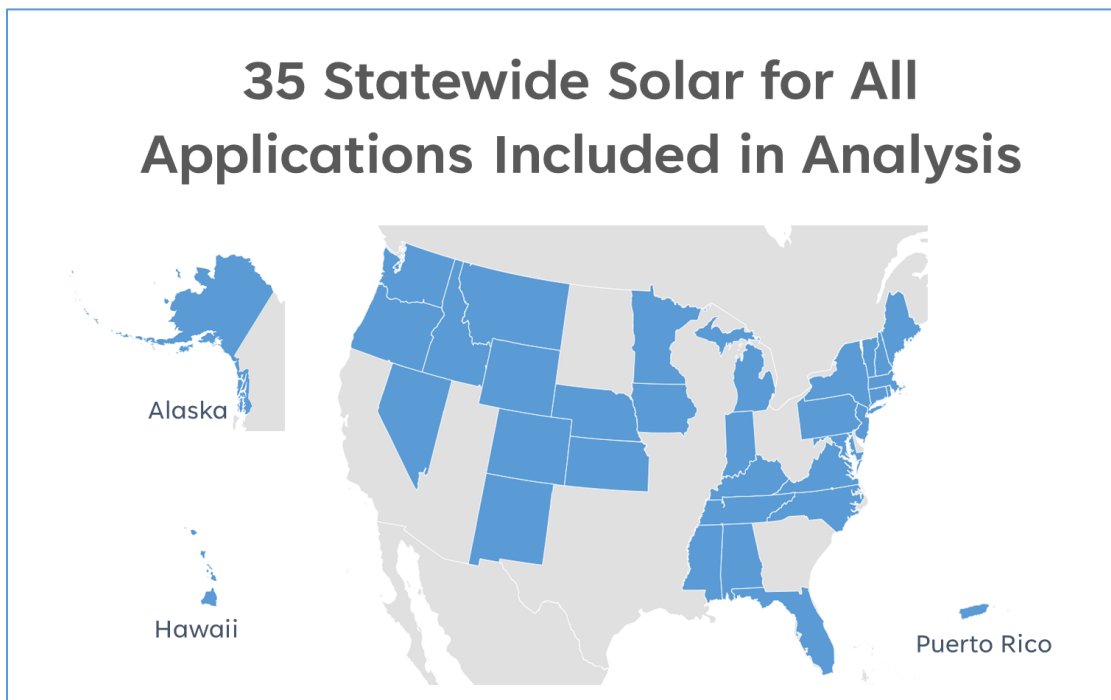


FIGURE 1

<sup>11</sup> For a Directory of State Low- and Moderate-Income Clean Energy Programs, see CESA’s website [here](#).

CESA reached out to all states and included Solar for All applications from 35 states in this review based on state agencies' willingness to be included in the analysis. **These 35 states represent about 187 million Americans, including over 66 million households.** See Figure 1.

In the sections below, we explore basic program metrics (*Metrics*) and share a few trends observed during our program review (*Program Features Trends*).

## Metrics

Solar for All is set to fundamentally reshape the LMI solar sector in the U.S. The program has the potential to broaden solar access, support local jobs, and provide substantial savings to families. The analysis prepared for this report demonstrates the historic impact in disadvantaged communities that will result from the Solar for All investment. For some states, this is an acceleration of work they have supported for years with much more modest resources and variable levels of success. For others, it is an entirely new endeavor, now enabled by the IRA.

This section summarizes the impact that states across the country believe their proposed programs can have on the LMI solar market. Not all of this funding will be awarded, of course, and there is significant variability in the way that states presented their program metrics. Note that CESA made editorial decisions when parsing through the applications, as data types were not always easy to reconcile. Nonetheless, **the metrics below on the programs proposed by states, following local priorities, give a sense of the order of magnitude of Solar for All's impact potential if these state programs are funded by EPA.**

### Total Funding Requested

**The applicants for the 35 statewide applications included in this report collectively requested \$6,040,819,217 from EPA. The mean program funding requested for these states is \$172,594,835 and the median is \$138,679,605.**

EPA received preliminary requests totaling \$38 billion at the notice of intent stage of the NOFO process. The final amount requested to EPA from all applicants is not yet known, but it will be significantly smaller. After receiving the preliminary requests, EPA restricted the maximum amount of funding that applicants could request, based on the total population of disadvantaged census tracts identified by the [Climate and Economic Justice Screening Tool \(CEJST\)](#). Some partially disadvantaged communities could also be counted, explaining how states like Oklahoma were eligible for a large amount of funding as shown on the map below (see Figure 2).<sup>12</sup>

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<sup>12</sup> Note that household eligibility to benefit from this funding is not limited to CEJST-designated communities. Solar for All funding can support solar for (1) disadvantaged communities as defined by CEJST, and/or (2) disadvantaged communities as defined by the EPA EJScreen mapping tool for census block groups at or above the 90th percentile for any supplemental index or geographic areas included in Tribal lands as

Of the 35 states included in this analysis, two were eligible for a large program, 16 were eligible for a medium program, and 17 were eligible for a small program. All but nine states requested the maximum amount of funding available in the size category—small, medium, or large—for which they were eligible.

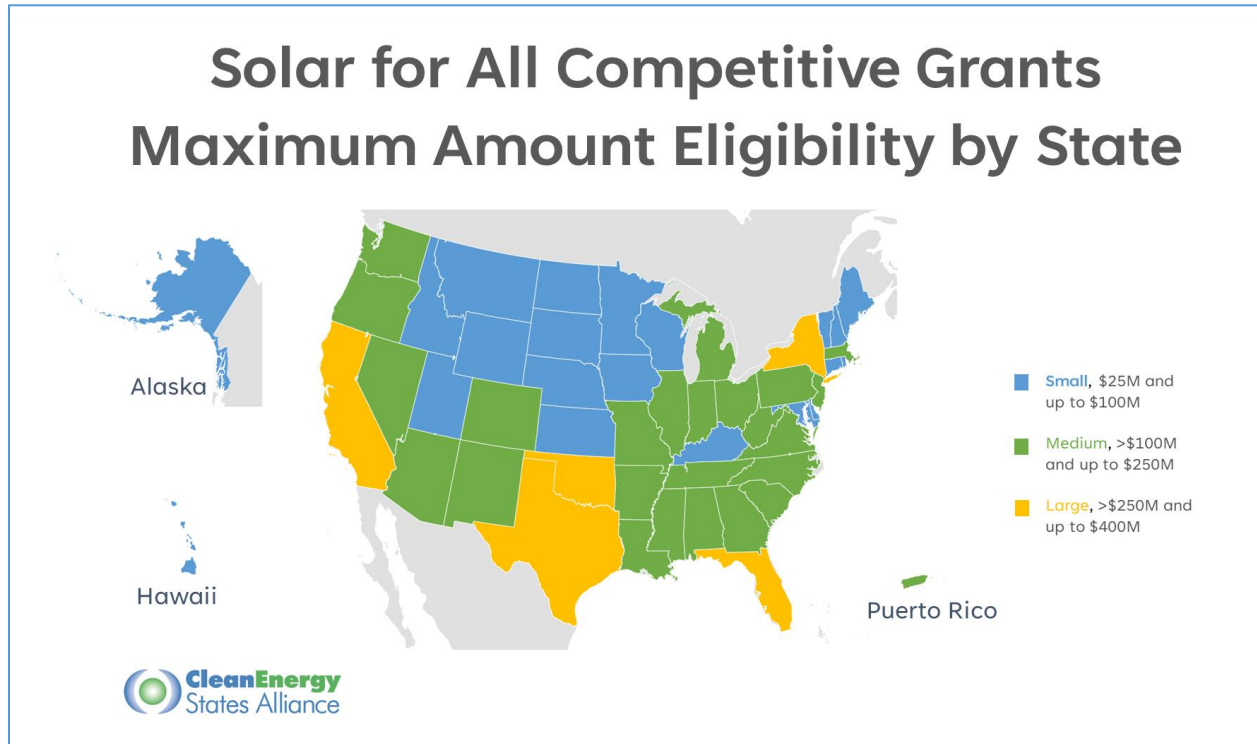


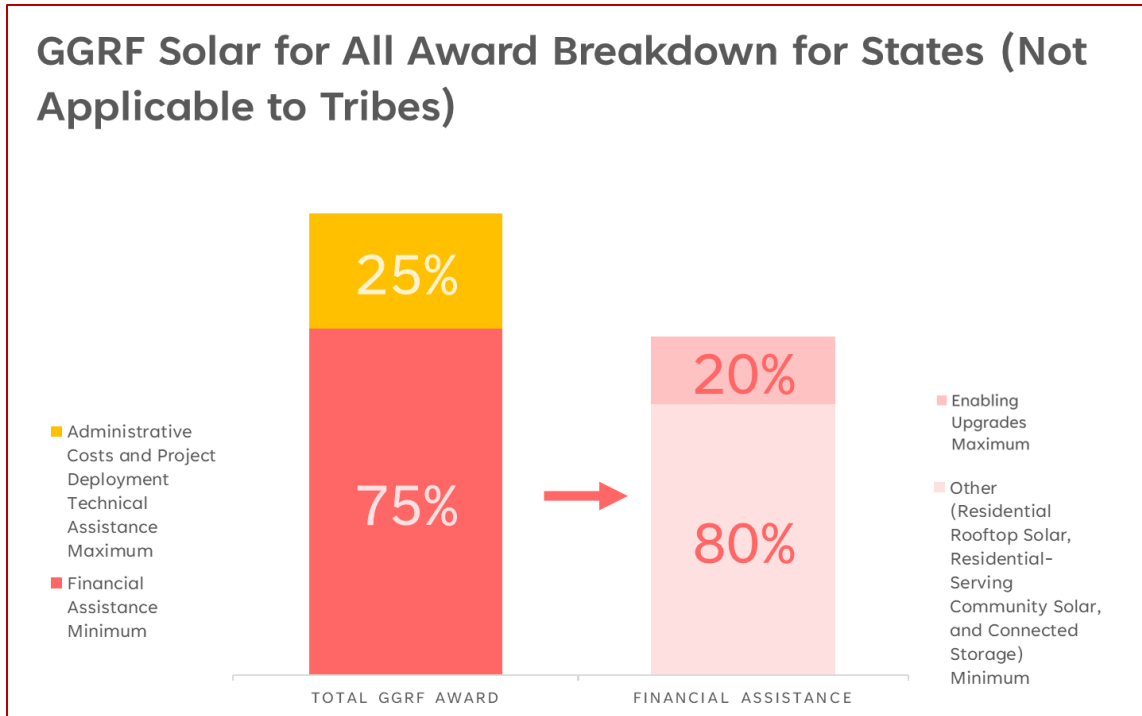
FIGURE 2

States primarily applied for (a) financial assistance funding, as well as (b) technical assistance funding to deploy the programs, enabling upgrades, and storage, within the framework allowed by EPA as shown in the following figure.

States also applied for funding for the administrative costs related to the deployment and general management of these programs.

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included in EJScreen, and/or (3) geographically dispersed low-income households, defined as either: a. individuals and households with incomes at or below the greater of 80% Area Median Income (AMI) or 200% of the Federal Poverty Level (FPL), or b. individuals and households currently approved for assistance from at least one income-based or income-verified federal assistance programs in the last 12 months (e.g., LIHEAP, SNAP, WAP), and/or (4) properties providing affordable housing. See pages 10-12 of the NOFO for additional information about covered programs.



## One vs. Several Solar Programs

As noted above, the plans that EPA and states agree to at the onset of the program will influence the trajectory of state solar programs, what they will focus on, and the bulk of the tools and strategies they will prioritize. A diverse set of states necessarily invited a diverse range of proposed programs, with the vast majority of states including more than one type of program, focused on three main sectors: single-family homes, multi-family homes, and community solar. CESA also separately tracked proposed programs for manufactured homes. Only one state focused its whole application on one sector type (community solar). No state focused its entire application only on single-family home programs or on multi-family homes programs.

States proposed programs across sectors, as shown in this table.

	Single-Family Home Program	Multi-Family Housing Program	Community Solar Program	Manufactured Homes Program	Other
Proposed	33	33	33	2	3
Did not propose	2	2	2	33	30

## Distribution of Funding by Sector

Based on the applications, the largest share of the Solar for All financial assistance requested by states would go to community solar projects (\$1,393,060,251 or 37%), followed by solar programs

for single-family homes (\$1,240,592,132 or 32%), multi-family homes (\$985,839,612 or 26%), other programs (\$190,000,000 or 5%), and manufactured homes (\$1,000,000 or less than 1%).<sup>13</sup>

Note that while most states assigned dollar values to specific types of programs and sectors, a minority preferred to leave this aspect of the program design open. In addition, not all states defined programs around traditional single-family, multi-family, and community solar sectors. See Figure 3.

Metrics in this report are based not just on how states chose to categorize a program within a sector, but also on the content of the applications and the details of program descriptions. By and large, we have followed the states definitions, with a few exceptions when the details of the application called for the program to be classified within a different category.

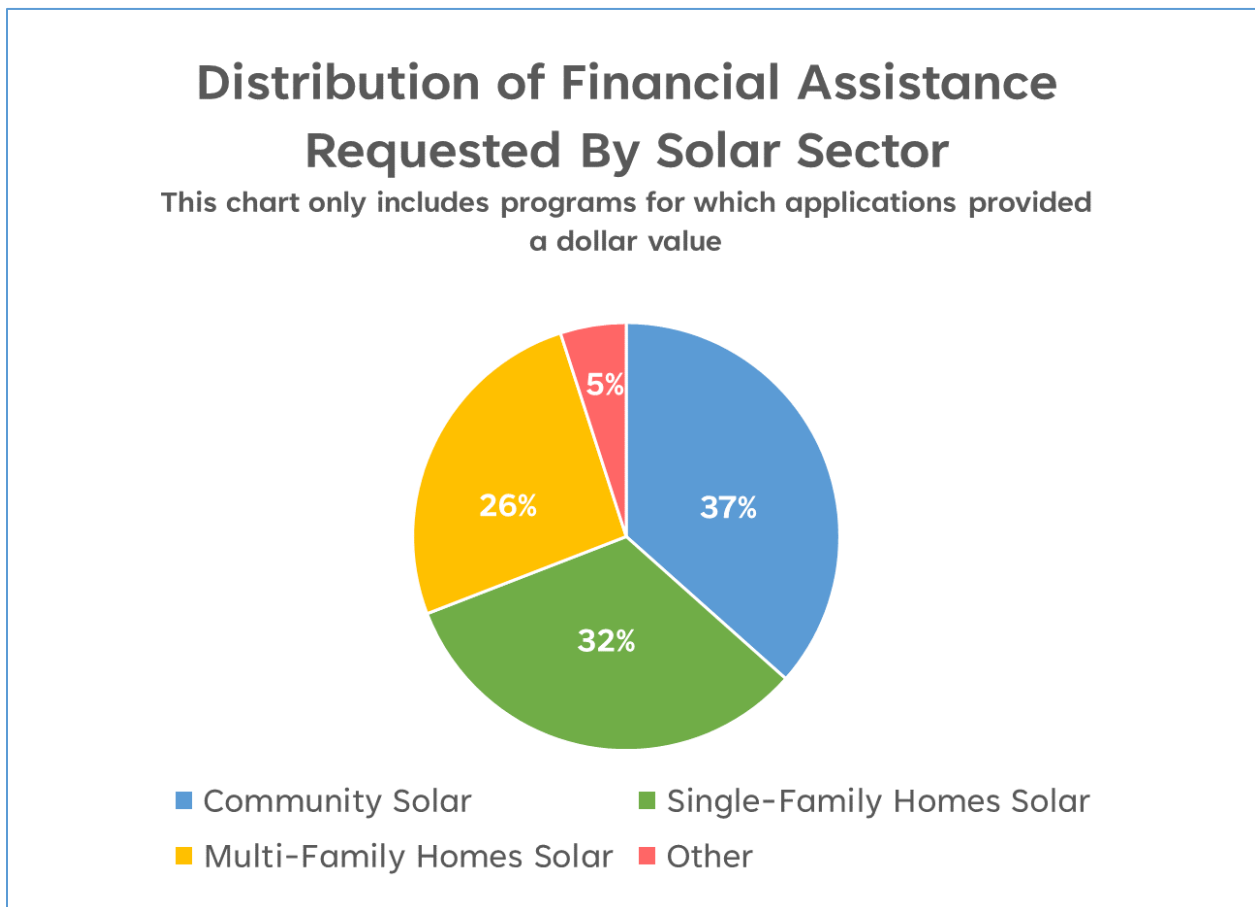


FIGURE 3

<sup>13</sup> Manufactured homes are not displayed on the chart below.

The sections below include additional information about the various sectors, including bar charts representing different program sizes requested by states for each sector. Because not every state included a dollar value for its proposed programs, **there are fewer bars than programs proposed, and the total by sector does not represent the full amount of investment proposed across all states.** The bars represent the programs that presented a dollar value or for which the dollar value could be inferred based on other information in the applications.

### Total New Solar Capacity and Sectoral Distribution

In total, the Solar for All applications propose to deploy an additional 2,917 MW of solar capacity to the grid, exclusively to serve disadvantaged communities and low-income households in 35 states. As stated above, not every sectoral program included a capacity number. The distribution by sector is shown below, along with percentages. While community solar represented 37% of the total funding, community solar programs are expected to create 63% of the new capacity. See Figure 4.

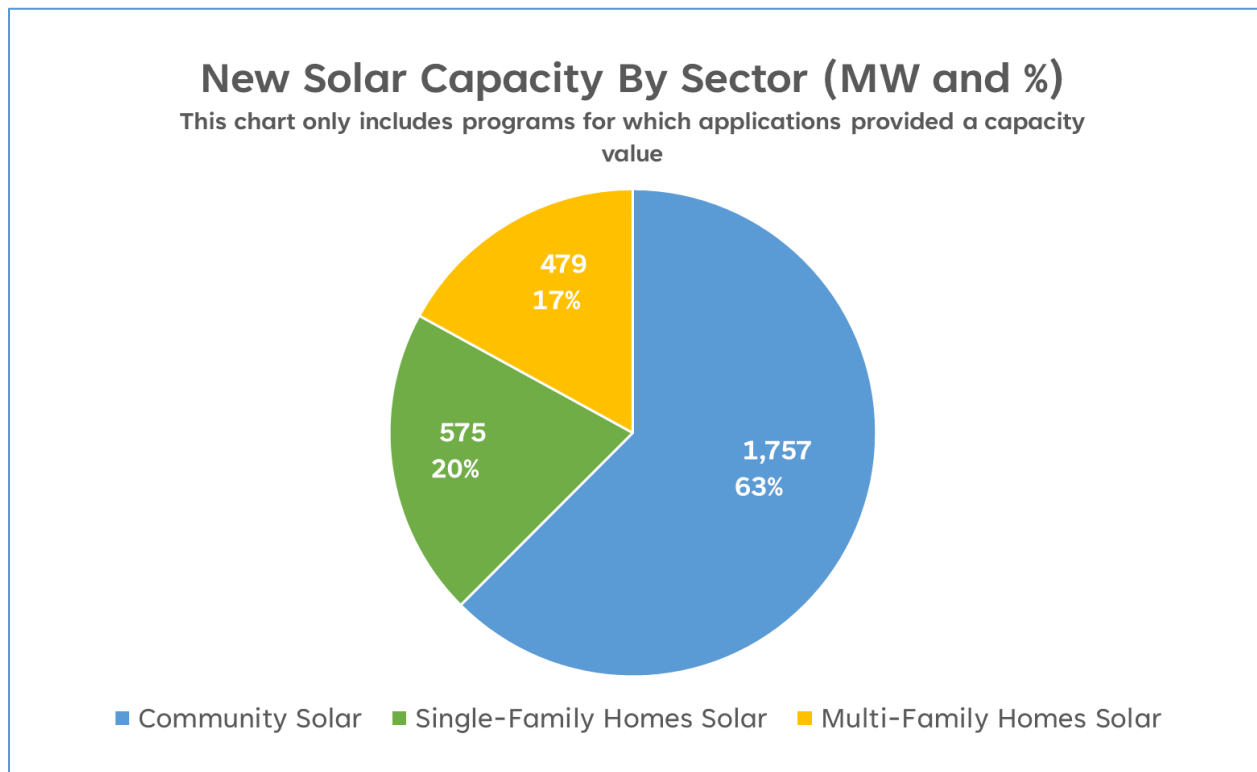


FIGURE 4

More information about each sector is available below.

## Community Solar

Of the Solar for All applications included in this analysis, 33 out of 35 (94%) propose a community solar program. Of these, 26 applications (79%) included a dollar value. The distribution, without state attribution, is shown below in Figure 5.

The mean value of funding requested to support DACs and low-income households using community solar was \$48,036,560, and the median value was \$40,500,000.

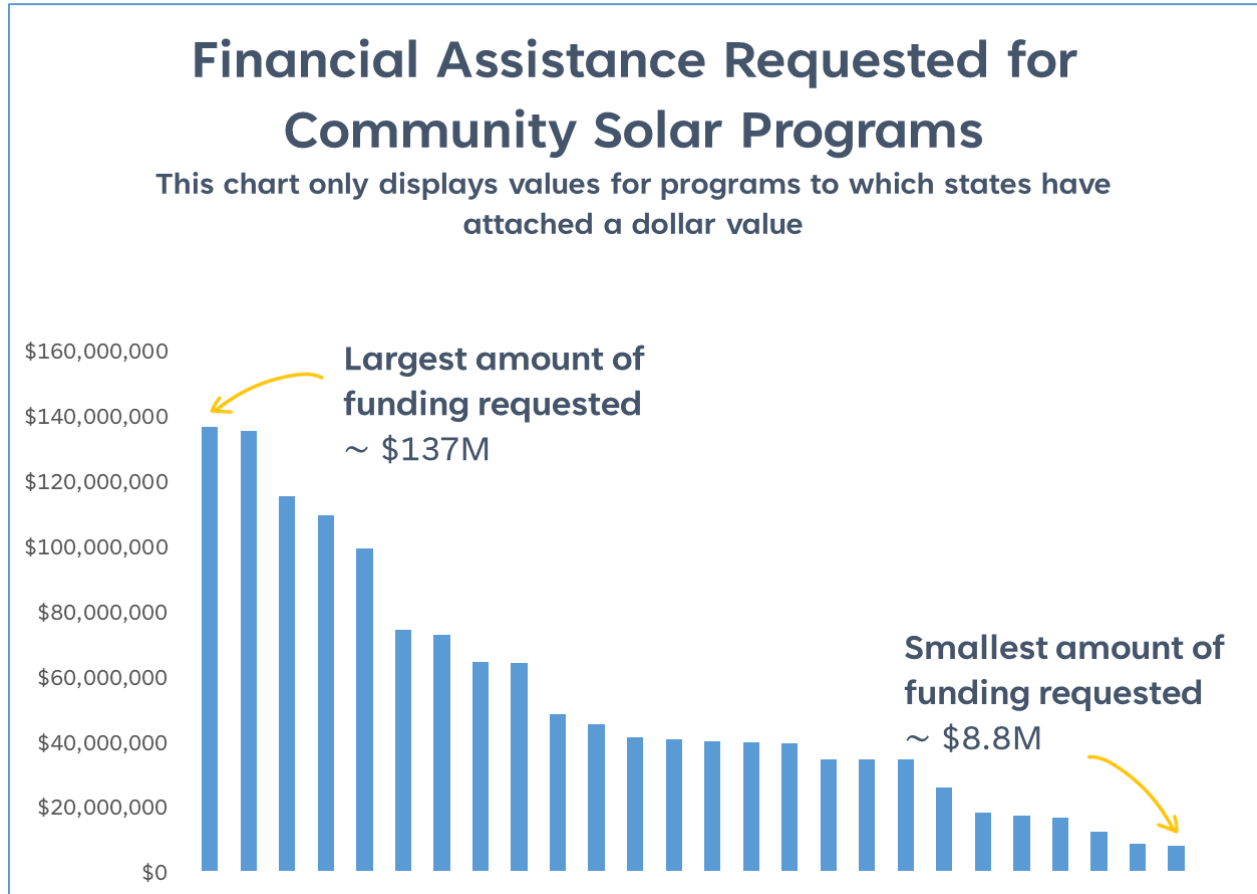


FIGURE 5

Of the 33 proposed community solar programs, 20 included values for expected solar capacity deployed, totaling a proposed 1,757 MW, and distributed as shown in Figure 6. The mean capacity for community solar programs is 65.1 MW, while the median is 44.7 MW.

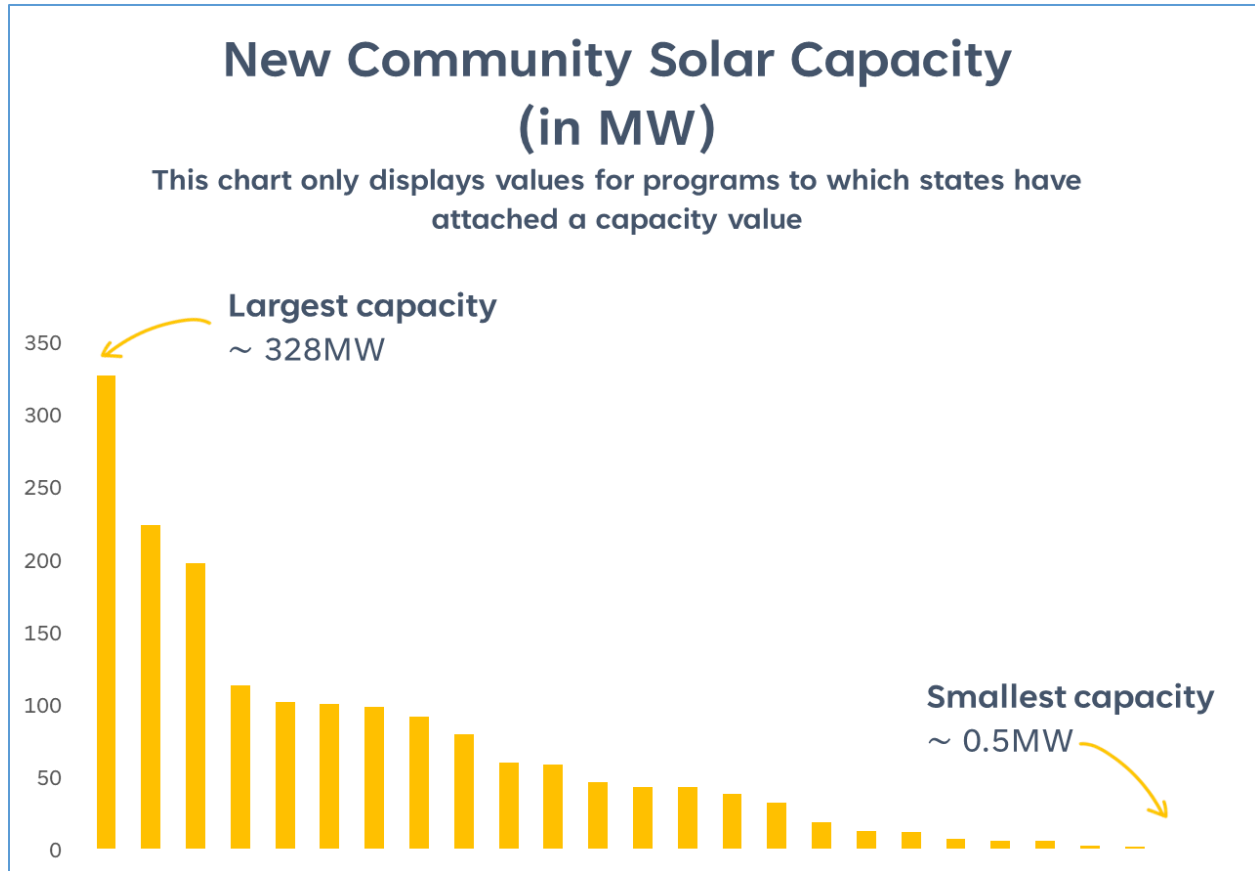


FIGURE 6

For reference, according to the Solar Energy Industries Association (**SEIA**), 6.2 GW of community solar have been installed in the U.S. through Q4 2023,<sup>14</sup> with 6 GW expected in the next five years.<sup>15</sup> The 1,757 MW of new community solar proposed in Solar for All state programs are equivalent to about 28% of all community solar capacity installed in the country to date and focused exclusively to benefit DACs and low-income households. Of course, additional community solar capacity will be installed in those states without state support during the Solar for All performance period.

The five largest programs in terms of proposed community solar capacity are populous states with mature solar markets, with one exception. These five applications collectively propose to spend \$487 million to help deploy 970 MW of new LMI community solar capacity. We will offer a similar closer look at the five largest programs (by capacity) in each sector.

<sup>14</sup> SEIA, [Community Solar](#), 2023

<sup>15</sup> SEIA, [U.S. Solar Market Insight](#), 2023



## Single-Family Homes

Of the applications included in this analysis, 33 out of 35 (94%) propose a single-family homes program. Of these, 28 applications (84%) included a dollar value as shown in Figure 7.

The mean value of funding requested for the single-family homes sector was \$41,353,071 and the median value was \$32,171,250.

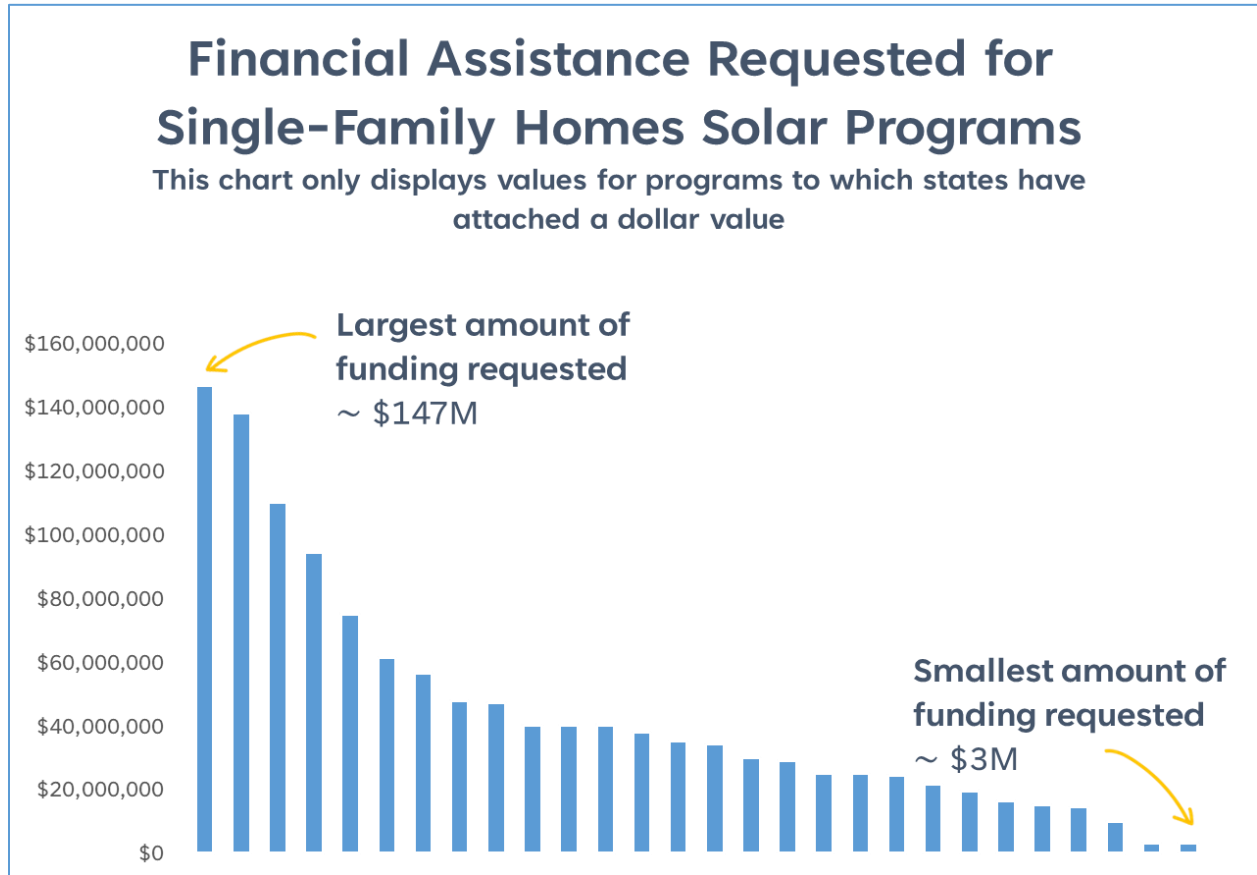


FIGURE 7

Of the 33 proposed single-family home programs, 25 included values for expected solar capacity deployed, totaling 575 MW, and distributed as shown on Figure 8. Country-wide, capacity for residential rooftop solar installed by households below 80% AMI was about 7 GW through 2022, so that the new proposed capacity in just these 33 states would be equal to about 8% of the total installed LMI residential solar capacity.<sup>16</sup>

<sup>16</sup> Galen Barbose, communication with author, based on Lawrence Berkeley National Lab and WoodMac data for 2022, on February 16, 2024.

The mean capacity for proposed single-family homes programs is 21.3 MW, while the median is 13.8 MW. For comparison, the Connecticut Green Bank’s successful LMI solar program that ran from July 2015 to December 2021, a period slightly longer than EPA’s Solar for All five-year period of performance, resulted in about 29 MW in new LMI solar capacity, or slightly above the mean capacity for these 25 proposed programs.<sup>17</sup>

The five largest single-family home solar programs in terms of capacity are geographically very diverse but trend toward more rural states, and collectively propose to spend \$495 million to help deploy 270 MW of new single-family home solar capacity.

Two of the five include third-party ownership models (TPO), while two do not, and the remaining one does not clearly state what deployment model will be followed. Additional information about program trends can be found below (*Program Features Trends*).

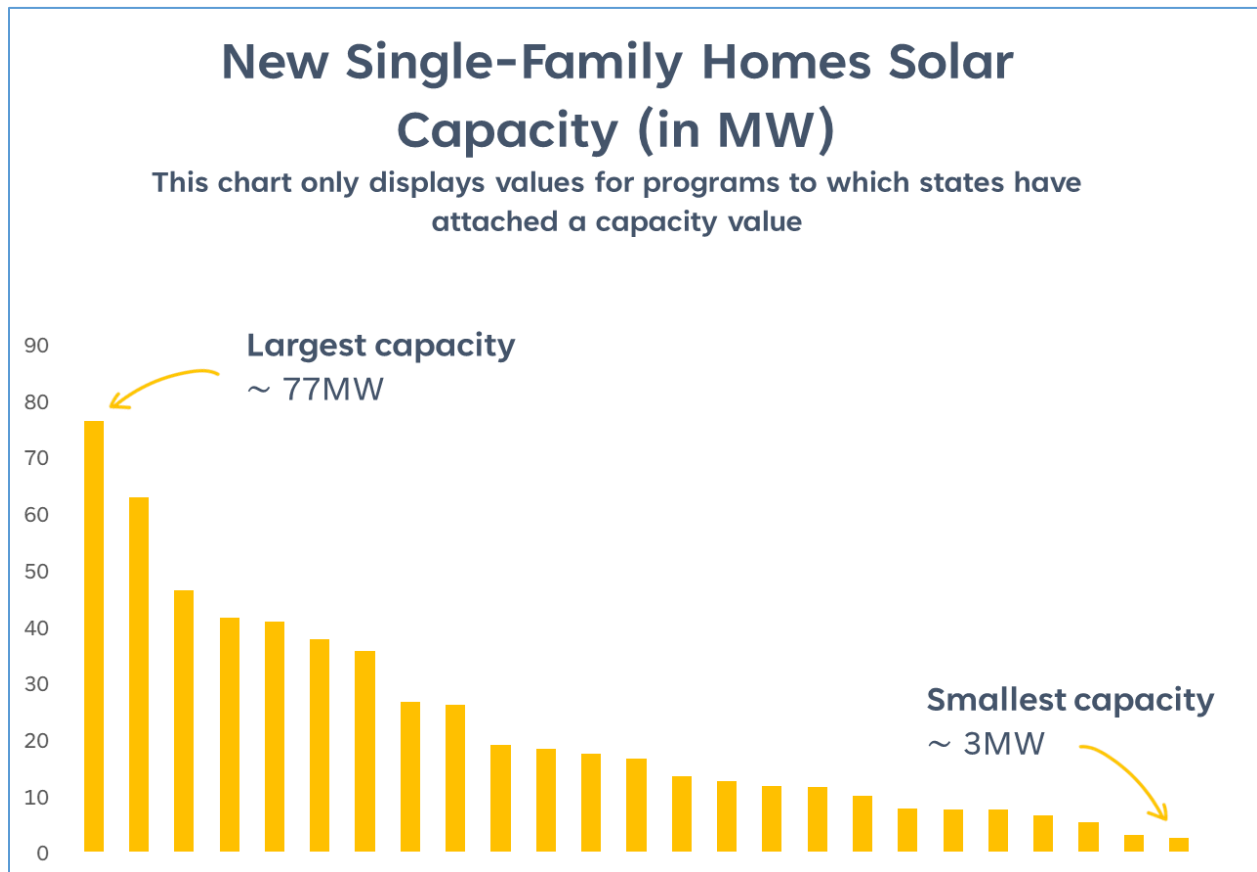


FIGURE 8

<sup>17</sup> Connecticut Green Bank, [Strategy Impact Solar for All Webpage](#), 2024.

## Multi-Family Housing

Of the applications reviewed for this analysis, 33 out of 35 (94%) propose one or more programs supporting solar on multi-family housing, with a primary focus on multi-family affordable housing, including both publicly- and privately-owned housing. These metrics exclude community solar programs, which in many instances will also include customers who are tenants in multi-family housing. Instead, the multi-family programs that are counted here focus on supporting the development of solar and/or solar+storage that are owned by affordable housing providers, or third-party owned for the benefit of multi-family affordable housing residents only.

Of these 33 applications, 25, or 76%, included a dollar value for their proposed multi-family housing solar programs, as shown in Figure 9. The mean value of funding requested to support the multi-family housing sector was \$36,512,578 and the median value was \$26,000,000.

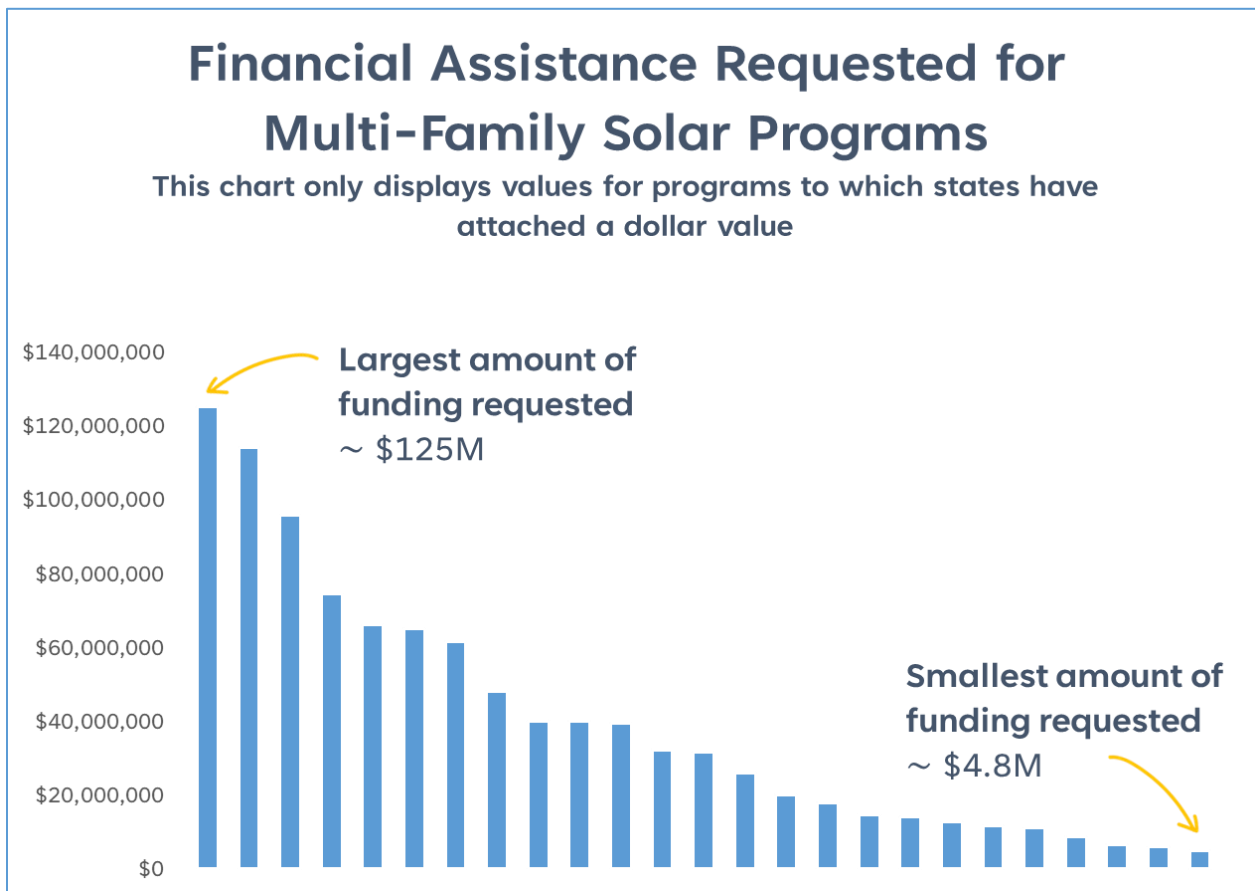


FIGURE 9

Of the 33 proposed multi-family programs, 20 included values for expected solar capacity deployed, totaling 479 MW, and distributed as shown in Figure 10. The mean capacity for multi-family programs is 18.4 MW, while the median is 13.6 MW.

The five largest programs in terms of capacity are geographically diverse and collectively propose to spend \$334 million to help deploy 247 MW of new capacity.

For context, California’s Solar on Multifamily Affordable Housing program (**SOMAH**), has an overall target to install 300 MW of generating capacity by 2032.<sup>18</sup> Its predecessor, California’s Multifamily Affordable Housing (**MASH**), which ran from 2008 to 2021, had interconnected 53.5 MW as of December 2021.<sup>19</sup>

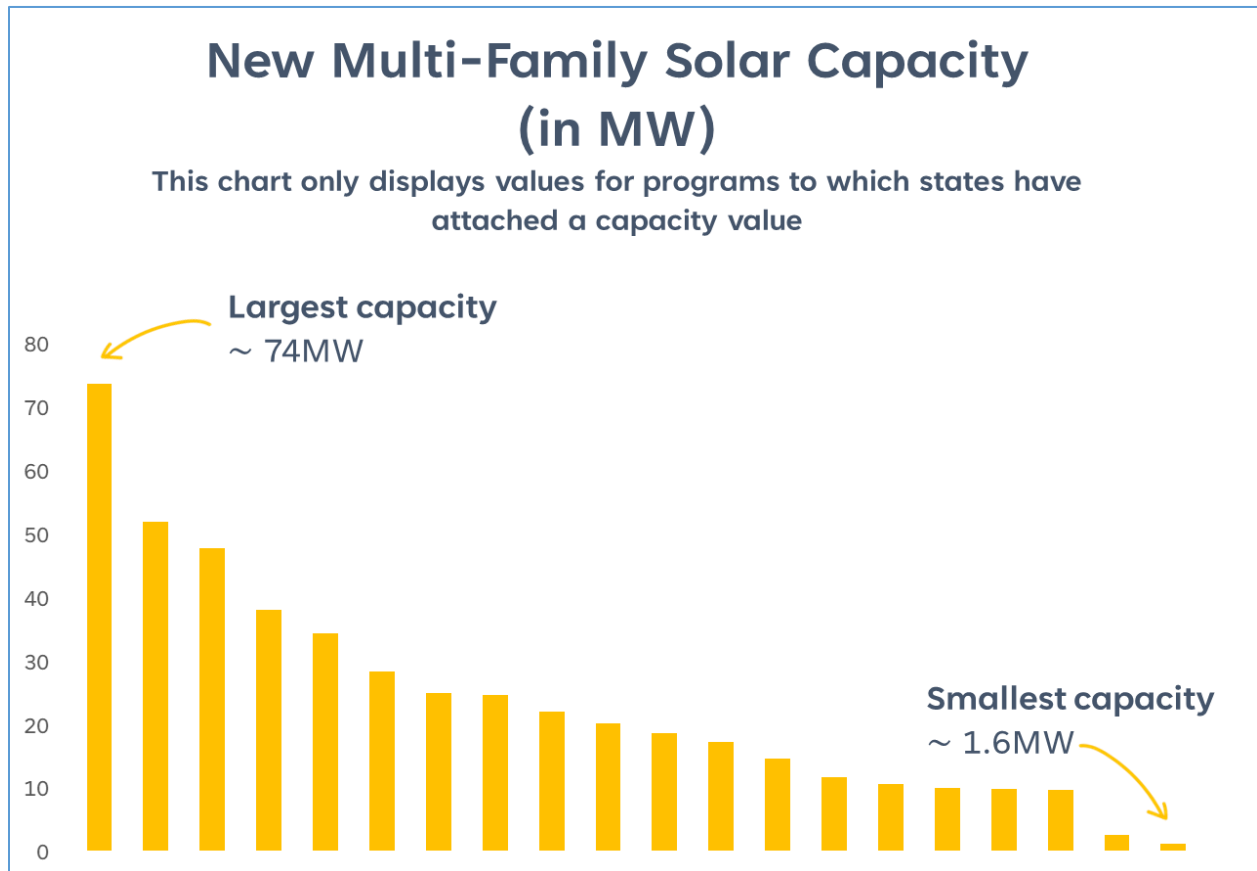


FIGURE 10

### Manufactured Homes

Only two states requested funding dedicated to serving manufactured homes. Of these, one requested a specific dollar amount but did not attach a capacity value to it, while the second attached a capacity value to it but no dollar amount. A third state proposed, instead of a separate

<sup>18</sup> California Public Utilities Commission, [SOMAH Program Handbook](#), pg. 13.

<sup>19</sup> California Public Utilities Commission, [CSI Multifamily Affordable Solar Housing \(MASH\) Program webpage](#), Accessed 2024.

program, a focus on manufactured homes that have good energy efficiency to receive solar and batteries utilizing both grants and credit enhancements.

## Battery Storage

Only five states did not explicitly propose battery storage, including one state that reserved its decision to add storage to a later date. The proposed storage capacity in the 30 states that did propose storage totals 1,207 MWh (1.2 GWh) across all programs.

To put this number in context, the state of California, which has the largest state program for equitable storage in the country, incentivized approximately 0.71 GWh from March 2020 to February 2024 in its Self-Generation Incentive Program (**SGIP**) equity storage categories, including 0.69 GWh in its equity resiliency program and 0.02 GWh in its residential storage equity program.<sup>20</sup> Note that both of these numbers are based on the [SGIP Dashboard](#), which reports its incentives in terms of dollars rather than GWh. As a result, the back-of-the-envelope calculations presented here are likely somewhat inflated as we have assumed for convenience that the incentive rate for the current step had been kept constant. In reality, the rates applicable to each step decline.

Connecticut's [Energy Storage Solutions program](#), which was launched in 2022, reported about 2.3 MWh participating in the low-income and underserved residential categories as of February 2024.

Outside of equity-only programs, the state of Massachusetts, which has paid keen attention to storage as a matter of state policy, has a target of 1 GWh of energy storage by 2025. Massachusetts reported that on February 15, 2023, utilities had installed 330 MWh of storage with an additional 2,700 MWh of storage in the pipeline.<sup>21</sup>

These points of reference from state programs underscore that 1.2 GWh of storage proposed for DACs and low-income households under Solar for All over the next five years is quite significant. Note however, that while storage is allowed by EPA under eligible technologies, it is not the primary goal of the Solar for All competition, and storage must be “associated” with solar to be funded.

EPA defined “associated storage” as that installed to “maximiz[e] residential rooftop and residential-serving community solar deployment, delivering demand response needs, aggregating assets into virtual power plants, and delivering residential power during grid outages. Financial assistance for associated storage must be deployed in conjunction with financial assistance for a solar PV system and the storage asset must be connected to the solar PV system.”<sup>22</sup>

## Other Program Types and Enabling Upgrades

Four states proposed additional types of programs, such as a tribal set-aside, a grid improvement program, or a program aimed specifically at critical facilities.

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<sup>20</sup> To learn more about SGIP's equity programs, you may consult [this fact sheet from the California Public Utility Commission](#).

<sup>21</sup> Massachusetts, [ESI Goals & Storage Target](#), 2024.

<sup>22</sup> See NOFO, pg. 9.

The vast majority of states proposed providing funding for enabling upgrades, but a few states did not. See *Program Features Trends* for additional information.

## Impact: Households and Savings

**These statewide Solar for All programs intend to serve a total of 711,068 low-income households or residents of disadvantaged communities within the program period.**

**These households could receive almost two billion dollars (\$1,990,048,488) in savings between July 2024 and July 2029, and slightly under \$10 billion (\$9,950,242,438) in savings over the course of a standard 25-year solar project's asset life.** Of course, the longer the term the more uncertain the outcome, as 20- to 25-year time frame savings calculations are not sufficiently granular to include factors that could increase a household's saving (e.g., increasing utility rates) or conversely decrease a household's saving (e.g., solar escalators). More detailed calculations will be possible when states enter the planning year.

As with the rest of the metrics, not every state included the detail of annual savings by sectoral program. For those that did, annual savings would represent \$41,681,830 from single-family home programs, \$28,797,942 from multi-family housing programs, and \$93,722,967 for community solar programs.

**Most states proposed 20% savings, but did not necessarily do so across all programs, with some going as high as 80% or 90% for some programs.**

# Program Features Trends

In this section, we delve further into qualitative data and offer some information about the trends observed in the states' Solar for All applications included in this analysis, and, as relevant, context.

## Coalitions and Deployment Partners

Of the applications included in this analysis, 19 are applications led by a state agency alone, while 16 are coalition applications. **Out of these 35 applications, 21 (60%) are led by state energy agencies, with the remainder of the state agency-led applications a mix of housing agencies, economic development agencies, and green banks leads.**

Solar for All coalitions, meaning groups of applicants working together, vary both in size and in type of partners. They include stakeholders such as state energy agencies, state housing agencies, state labor agencies, state economic development agencies, Indian affairs departments, public utility commissions, state green banks (both nonprofits and quasi-public agencies), housing finance agencies, local CDFIs, cities and counties, groups of cities, labor unions, solar nonprofit developers, conservation organizations, academia, including in one instance a Historically Black College and University and community colleges, foundations, and environmental justice organizations.

Coalitions varied in size from two to 19 coalition partners, with the majority of coalitions comprising between three and four partners.

## Strategies for Deploying Funding

**Tools and strategies included in the proposed programs run the gamut from grants to financing approaches, and applications reflect, among other things, local solar markets, local priorities regarding solar sectors, local housing stocks, and local legal or regulatory barriers.**

Financial assistance strategies proposed include (a) full grants/fully-subsidized systems, (b) partial grants/rebates/adders, (c) predevelopment grants and loans, particularly for difficult market segments like multi-family affordable housing, (d) capacity-based incentives for developers, including relating to third-party ownership contracts, (e) subsidized lease payments, (f) bulk purchasing approaches, (g) credit enhancement tools such as interest rate buy-downs, using funding to lengthen loan terms, or loan loss reserve funds, (h) linked deposits to fund LMI solar loan programs with CDFIs or credit unions, (i) and a variety of revolving loan funds with a focus on the recycling of funds allowing programs to last beyond the initial five-year program period. Examples of noteworthy, proposed program structures are included below.

## Fully Subsidized Systems, Grants, and Traditional Incentives

**At least six states, mostly rural, proposed fully subsidized single-family solar systems. These fully subsidized systems tend to be targeted at customers who have received other federal support** from programs such as the Weatherization Assistance Program (WAP) or Low Income Home Energy Assistance Program (LIHEAP), sometimes even reserving funding for LIHEAP and/or WAP customers who have received new roofs in the recent past. In other instances, these fully subsidized systems are reserved for hard-to-reach customers in remote areas.

One state offering fully subsidized solar systems to low-income households also had a strong resilience focus with free storage, including a preference for customers who experience more and/or longer than average outages during major storms. While some states preferred to direct storage to a specific type of customers, others kept their options open for free storage for those that would “benefit the most” from a free system, including households with energy-dependent medical needs.

**Several states proposed traditional grant approaches like increasing the value of existing incentives for solar+storage or proposing a small number of large grants to help defray the cost of solar on multi-family affordable housing.**

A minority of states exclusively opted to offer grants, but with options reserved to explore opportunities for TPO solutions and other ways to monetize tax credits.

Some programs were dependent upon other legislative or regulatory processes. Of note, one state included a grant program that would facilitate expansion of an existing community solar program if enabling legislation is passed, and another proposed a grant to utilities together with a tariff that utilities would have to move through the state’s ratemaking process.

**Several states are also planning to run their Solar for All programs as competitive grants on an annual basis**, following rounds or capacity blocks, with or without cohorts, with additional points

awarded to projects that meet predefined criteria, sometimes prioritizing projects that serve WAP/LIHEAP customers, or for instance, prioritizing brownfields redevelopment.

### Supporting and Structuring Community Solar Subscriptions

**States proposed a great variety of program types for community solar, both in terms of financial assistance offered and of potential program features.**

Several states proposed different features for programs designed to support solar in both municipal utilities and rural electric cooperatives versus in investor-owned utility territories (**IOUs**).

One state proposed incentivizing community solar for large projects under the condition that the utility owner would initiate on-bill crediting for tenants of multi-family affordable housing within its entire service territory.

Several states increased the size of LMI carveouts within an existing state program for community solar.

### Tiered Subsidy Models

**At least five states proposed some version of a tiered subsidy model, across different sectors, whereby the amount of subsidy available will depend on different criteria.** In one state, individual levels of subsidies were based on a customer's income compared to AMI. In another, grants for third-party-owned systems were contingent on both income and capacity criteria. In another, the subsidy proposed was kept constant, but the total amount of available subsidy increased based on AMI categories. Yet others changed the proportion of grants to loans available based on a customer's income in relation to AMI, or even based on the amount of Investment Tax Credit (**ITC**) that could be used for a project.

On the other side of the customer equation, one state proposed that the levels of savings that were required to be shown by developers would be made a function of the number of utility disconnection notices issued for customers, a tool to ensure that deep savings accrue to those who need it most.

### Loans to Building Owners, Consumers, and Developers

**In what seemed to be the most popular strategy after grants, at least 12 states proposed loans and revolving loan programs—including loans with zero percent interest financing for the solar component of eligible affordable housing development projects—and loans to public housing authorities/building owners.** States proposed new or increased funding sizes and various credit enhancement approaches to lengthen the term of loans (e.g., 20 to 25 years) and to reduce rates for LMI customers.

Several states are planning to provide low-cost loans using interest rate buy-downs (**IRBDs**) or no-cost loans for those customers who could potentially have enough tax basis to monetize Section 25D tax credits (for individuals). A minority of states proposed providing direct loans to low-income consumers or funding lenders that would then offer loans direct to consumers, with some preparing standard-offer solar loan products for LMI consumers through existing lending platforms.



**A few states emphasized that financing solar was not an option they considered due to low-income and DAC representatives stating they were not interested in such a product.** Some of these states are still interested in considering on-bill financing (as well as other models like TPO, see below) for their single-family homes programs.

One state proposed combining forgivable loans for necessary enabling upgrades with a zero percent loan program for solar and/or solar+storage for multi-family affordable housing providers, the repayment of which would feed into an existing community solar program to allow the expansion of that program going forward.

### Direct Pay

**Naturally, most states proposed to combine different strategies to reduce the cost of solar systems. Of note, at least 10 states mentioned direct pay<sup>23</sup> in their applications.** Not all states have concrete plans, however, for how to fold direct pay monetization into programs. Most states plan on utilizing the planning year to design a workable model. One state application mentions that public housing authorities will be supported in using direct pay within a new multi-family affordable housing program.

One applicant proposed to capture the ITC and ITC adders by leveraging direct pay options in a revolving loan and grant fund that would cover 50% to 100% of a project's total costs with the expectation that all or part of the ITC would be repaid into the fund and redeployed before the end of the performance period. Another state proposed a two-year low-interest loan with the principal in the same amount as the ITC, as well as a 12- to 15-year loan for the rest of the project's costs.

Several states specifically proposed braiding this funding with funding from the GGRF National Clean Investment Fund (NCIF) and the Clean Communities Investment Accelerator (CCIA), to enable CDFIs to support community-based organizations that wish to access direct pay, with one state contemplating co-ownership of systems with financial institutions. One state focused primarily on providing technical assistance to access direct pay instead of the revolving fund/bridge loan approach favored by others.

### Other Financial Approaches

A few states proposed supporting third-party lenders and investors in various ways. For instance, one state proposed offering additional funds for third-party lenders via deposits and increasing or creating loan loss reserve funds (LLRs) for third-party lenders. Several states proposed offering LLRs and IRBDs specifically for their single-family homes programs.

**At least 21 states proposed a program that included a TPO component, including lease-to-own models, competitive procurement processes, and taking advantage of the ability to leverage the ITC and the ITC adders to obtain lower lease rates.** Some programs would provide additional

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<sup>23</sup> Since the IRA, certain tax credits can be paid out as cash to certain tax-exempt organizations via “direct pay” (also known as “elective pay”). 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. Direct pay is likely to be a significant source of funding for nonprofit organizations, local governments, and cooperatives offering services to low-income and disadvantaged communities.

community benefits as well as consumer protections, and a large number would be designed to offer ownership opportunities in time. One state proposed a lease that would be subsidized via Solar Renewable Energy Certificates purchase agreements, together with lease buydown payments for single-family homeowners.

Some states plan to offer loans to TPO investors to guarantee minimum bill savings, and a few states seemed to prioritize TPO programs for multi-family housing.

### Community-Owned Solar

**At least eight states proposed offering funding for community-owned solar and solar+storage, but with different strategies, including revolving loan funds, predevelopment loans, bridge loans (to help access tax credits), construction or permanent loans, and LLRs.** These programs are small overall, with some exceptions in a few states that have mature solar markets and significant LMI solar experience. One state focused its proposed community-owned program in non-IOU territory only, whereas another expressed interest in community-owned community solar and community storage to be delivered via energy cooperatives.

Overall, few details are available on how community-owned projects would be developed. Of note, one state offered to play the role of “matchmaker” if community members expressed interest in developing community solar projects but did not have the capacity to move ahead.

In another state with a strong focus on manufactured homes, the agency proposed to prioritize community-owned solar projects in resident-owned communities (**ROCs**). In this model, the ROC would own the solar array on behalf of its member households and each household would be entitled to an equal share of the project’s net benefits.

### Technical Assistance

Apart from financial assistance, Solar for All application narratives had to include technical assistance funding requests to help deploy projects. This funding is in addition to funding that states requested for program administration.

States proposed many approaches to technical assistance: (a) for multi-family affordable housing providers, including through predevelopment grants and by helping coordinate public housing agencies (e.g., by developing a concerted procurement strategy statewide), (b) for CDFIs and weatherization agencies, (c) for solar developers and DACs, (d) for customer support and outreach as well as for community engagement, (d) for community representation in public proceedings, (e) for free energy audits, (f) for interconnection process improvements, (g) for solarize campaigns, and (h) for accessing direct pay.

### Enabling Upgrades

Many different types of enabling upgrades have been proposed by states to address barriers for which no funding has traditionally been available. **They include electrical panel upgrades, roof repairs, mold and asbestos abatement, or other investments necessary to enable the deployment of the solar. A few also included energy efficiency upgrades.**

In addition, some focused on shared infrastructure such as funding cost-prohibitive inter-connection costs, grants for projects in low-income and disadvantaged communities with grid capacity constraints that would otherwise be infeasible because of the need for costly distribution system upgrades, or funding for known distribution infrastructure upgrades to guarantee community solar development in IOU territory.

### Outreach and Participatory Governance

EPA required that states submit Equitable Access and Meaningful Engagement Plans including a description of how communities would be involved in both program design and operations. The NOFO asked for “formal structures [that] should include participatory governance and regular, meaningful engagement with community-based organizations (**CBOs**) and residents of low-income and disadvantaged communities.”<sup>24</sup>

**A few states stood out in their plan for participatory governance.**<sup>25</sup> Some incentivized it with dedicated funding and proposed advisory boards, committees, or councils. One state proposed formal structures to ensure the program design is “informed by stakeholders and meets interests of residents” both at the program level and at the project level, via regular dedicated meetings including social organizations, unions, tenant groups, and consumer protection advocates.

Many applications proposed stakeholder engagement across multiple channels to create awareness and facilitate customer acquisition, including several proposing to target LIHEAP and/or WAP customers.

Several states included strategies for hiring directly from local communities or funding positions such as community/energy navigators/ambassadors to lead community engagement and education from within local CBOs.

### Consumer Protection

Many states included ideas for consumer protections, including the following:

- Beyond involving communities themselves in the design phase of solar programs, as mentioned above, one state proposed early input on consumer protection from the state **consumer advocate** office.
- Several states emphasized the usefulness of **transparency and information tools**, such as public portals to enable consumers to track energy savings and carbon emissions reductions, disclosing standard Solar for All subscriber agreements and providing clear

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<sup>24</sup> See NOFO, pg. 45.

<sup>25</sup> There is no one definition of participatory governance. However, the Global Encyclopedia of Public Administration, Public Policy, and Governance states, “‘Participatory governance’ widely refers to the democratic mechanisms which are intended to involve citizens in public policy-making processes. In other words, participatory governance is aimed at establishing a bridge between public institutions and ordinary people, in an attempt to increase the effectiveness and responsiveness of public policy-making activities.” Rocco Palumbo, *Participatory Governance*, in Farazmand, *Global Encyclopedia of Public Administration, Public Policy, and Governance*, 2017.

consumer disclosure forms, ensuring clarity of critical financial terms such as termination fees and options, or electronic signature processes.<sup>26</sup>

- States proposed **monitoring** strategies, including desktop data monitoring and assessments of bill credits and production data, annual reporting requirements from developers to demonstrate consumer benefits such as compliance with the 20% savings minimum, quarterly reporting requirements and randomized bill inspections for all subgrantees, reviews of storage sales contracts to ensure that benefits are passed to customers via upfront discount or leases/PPAs, onsite audit of assets, random sampling and inspection, and the creation and enforcement of rapid corrective measures in case parts of the programs are found to be underperforming.
- Some states have already established plans for **hotlines and complaints processes**, including some that resulted from protocols developed during the COVID crisis. These include managing and regularly monitoring a phone line as well as a program email account, or in some cases using an online portal to contact staff with questions or concerns, or to submit official complaints to program administrators, consumer advocates, or the attorney general's office.
- A few states proposed plans for **marketing tactics and messaging** such as requiring approval of marketing done by partners, as well as offering culturally and linguistically competent material, created with community input.
- One state proposed a completely **streamlined Solar for All application** within its LIHEAP application portal to reduce the administrative burden on local partners or consumers, and to promote deeper savings.
- Some states mentioned requirements relevant to **insurance, warranties, and guarantees**, including contracted 20% savings for the first year of a TPO contract, combined with a 20-year production guarantee. Another state increased its maintenance warranties to a full 25 years.
- One state proposed that funds be reserved for **quality assurance inspections** and to support municipalities and electrical inspectors.

## Other Notable Program Features

In this section, we summarize other notable program features that were proposed by states in these Solar for All applications:

- All but three states expressed interest in utilizing the **planning year**.
- Some states considered **anti-displacement policies**. For instance, some will design protections against rent increases and favor partnerships with deed-restricted affordable housing property owners. In at least one state, participation from owners of naturally occurring affordable housing properties would require program payback when affordability is not maintained. Others are planning ongoing involvement of stakeholder groups to design effective strategies.

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<sup>26</sup> See CESA, *Low- and Moderate-Income Solar Lease Consumer Disclosure Form Template*, 2023 [here](#) for an example of consumer disclosure information forms.

- Very few states mentioned no **credit check** as a proposed program feature.
- One state proposed a limited **landowner guarantee** against vacancies for properties that receive solar loans and for which the loan is attached to the meter rather than the tenant.
- One state proposed strategies to **accelerate permitting**, including specific assistance for priority counties in the state.
- A few states proposed **microgrids**, some including large grants to critical facilities for resiliency/life-saving measures. One will offer subgrants to local governments and nonprofits.
- One state proposed to **standardize the size of systems** available for most households, with some exceptions, to simplify the permitting and procurement processes, to streamline the assessment of households entering the program, and to facilitate monitoring.
- **On-bill financing was not a strong component** of state applications, although a few proposed exploring new programs or strengthening an existing program.

## Conclusion

This report highlighted metrics and state plans for Solar for All. If funded and executed well, these programs have the potential to transform the LMI solar market in more ways than one and empower tomorrow.

- **First, Solar for All can bring funding to a large number of disadvantaged communities and low-income households.** It can offer the greenhouse gas reduction and pollution abatement tools that the Clean Air Act was intended to support, while remedying some of the inequities of solar development to date. This report demonstrates the states' ambitious plans, and the scale that can be reached in the short term. Of course, this is but a sample of the full Solar for All program, which will include states that are not included in this review, in addition to programs developed by tribal governments, and multistate programs, all of which will add up to yet more short-term investment.
- **Second, Solar for All can prime the solar market to expand the benefits of solar far beyond the initial five years of the program.** States have proposed strategies that stretch the public dollar further using financial tools. It is likely that as states and EPA start working together after the award decisions are announced, additional states will be evaluating strategies to lengthen the impact of the program. Far more households will benefit from this funding over time.
- **Third, Solar for All can tackle the challenges of the LMI solar market holistically.** In addition to financial assistance to tackle upfront costs, arguably the most salient challenge for low-income households in accessing solar, Solar for All will feed the entire ecosystem of support services that can transform the market. These include technical assistance to market the programs and ensure potential customers know about the opportunity, funds to help commu-

nities apply for state funding, funds to train the workforce that will build these projects, funds to ensure that buildings where low-income residents live are safe and suitable to receive solar in the first place, and more.

- **Fourth, states have an opportunity to use this funding to develop programs that are best suited to their local circumstances, barriers, and opportunities.** States do not all have the same starting point, and not all states will aim for the same goal. In addition to EPA's program objectives, state programs will be driven by goals set by states' executive leadership, enabled by the priorities established in local legislation, and fed by needs and wants of local communities.
- **Fifth, states and the private sector can leverage Solar for All funding with many other funding opportunities** to reduce the cost associated with solar and solar+storage for low-income households and DACs. These include of course the other two GGRF competitions, NCIF and CCIA, which have the potential to bring economies of scale to financing renewables, but also revamped tax credits, including the bonus credit programs and new credit monetization features.

We believe that the cumulative effect of this funding, aimed at bringing private sector money into the field, and of a design meant to address known market barriers will be to train and transform state markets to serve the LMI customer segment.

**Solar for All presents an incredible opportunity for states to collaborate, exchange, and grow markets together, faster than they would on their own, building economic opportunity, alleviating poverty, and working to meet their clean energy goals.** Throughout the application period, we saw a tremendous amount of collaboration all across the country from states that were eager to learn from one another.

As award announcements are made and state contracts with EPA are negotiated, we hope to continue supporting states and working to accelerate an equitable clean energy transition. This is only the beginning.

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.

CESA works with state leaders, federal agencies, industry representatives, and other stakeholders to develop and promote clean energy technologies and markets. It supports effective state and local policies, programs, and innovation in the clean energy sector, with an emphasis on renewable energy, power generation, financing strategies, and economic development. CESA facilitates information sharing, provides technical assistance, coordinates multi-state collaborative projects, and communicates the views and achievements of its members.



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