Solar with Justice

Strategies for Powering Up Under-Resourced Communities and Growing an Inclusive Solar Market

Disclaimer

This report is for informational purposes only. The authors make no warranties, expressed or implied, and assume no legal liability or responsibility for the accuracy, completeness, or usefulness of any information provided within this document. The views and opinions expressed herein do not necessarily state or reflect those of the report's funder or any of the organizations and individuals that have offered comments as this document was being drafted. The authors alone are responsible for the contents of this report. The information contained within is subject to change.

For More Information

Information about this project is available on the website of the Clean Energy States Alliance (CESA) at *www.cesa.org/projects/low-income-clean-energy/solar-with-justice*. To reach the project team, contact:

CleanEnergy States Alliance

Clean Energy States Alliance
50 State Street, Suite 1
Montpelier, VT 05602
802.223.2554
www.cesa.org
cesa@cleanegroup.org

On the Cover Photo

A one-megawatt solar project by and for the Soboba Band of Luiseño Indians in Riverside County, California. The project serves the 1,320 members of the tribal community, most of whom live on the Soboba Reservation.

© Soboba Band of Luiseño Indians

CHAPTER 5
State Governments: Recommendations and Case Studies

Recommendations for State Governments

1. Measure progress towards energy equity

2. Make sure pro-solar state policies are in place

3. Adopt special incentives and policies

4. Leverage private capital

5. Work with and help community organizations

6. Bring LMI issues into public utility commission proceedings

7. Design programs for specific market segments

8. Ensure financial benefits reach LMI households

9. Impose high consumer protection standards

10. State initiatives to replicate

Although the federal government and the private sector have played important roles in advancing clean energy, states have been essential to the growth of solar and other clean energy technologies, especially in their role as primary regulator of the electricity industry. Because the federal government has not dictated a national approach, some states have been able to innovate and experiment, creating policies and programs to meet the specific needs of their populations, economies, and geographies. From that experimentation, effective and replicable ideas have spread to other states.

As with other aspects of clean energy, this has been true for LMI solar. For progress to continue and accelerate, the states will need to implement targeted policies and specially designed programs to create a favorable climate in which solar can flourish in under-resourced communities. To reflect different resources and needs, policies and programs will vary among states interested in LMI solar, although there are some general approaches they all can take.

Below we detail recommendations for state government leaders interested in advancing solar in under-resourced communities.

1. Measure Progress towards Energy Equity

States can better design and target their programs when they have good data on the scope and nature of the problem they seek to address. This is especially the case when it comes to solar equity. "Policymakers and program administrators need to have a clear sense of who they are designing their programs for—what the population of under-resourced households actually looks like and what specific market segments they are trying to reach," notes Ben Passer, Director of Energy Access and Equity at Fresh Energy.

It is useful for states to collect quantifiable data aimed at understanding 1) how solar installations are currently spread among different population groups and 2) if progress is being made in bringing all segments of the population into the solar economy. This information can help various stakeholders know where and how to target their efforts.

With this in mind, states can produce a report on solar equity, or on energy equity more broadly, and then update it annually or at some other regular interval. The California Energy Commission has taken an expansive approach to this task and produces an annual Energy Equity Indicators report that it makes widely available on its website.[66] An interactive map focuses on disadvantaged communities and those locations with less than 60 percent of mean household income. It shows solar capacity per capita, energy efficiency investments, clean vehicle rebates, asthma emergency room visits, and older housing stock.

"Policymakers and program administrators need to have a clear sense of who they are designing their programs for—what the population of under-resourced households actually looks like and what specific market segments they are trying to reach,"

— Ben Passer, Fresh Energy

Smaller states without the California Energy Commission's research budget can start by collecting state-specific information that has been compiled by other research organizations—such as Lawrence Berkeley National Laboratory's Income Trends of Residential PV Adopters, the US. Department of Energy's Low-Income Energy Affordability Data (LEAD) tool, the National Renewable Energy Laboratory's Solar for All map, the Stanford University DeepSolar Project, and the Solar Foundation's National Solar Jobs Census—and then supplement it with narrowly focused additional research.[67] A state can also start with findings from a national study, such as the 2019 article on "Disparities in Rooftop Photovoltaics Deployment in the United States by Race and Ethnicity," and then gather state-specific data to see how the state compares to the national trend.[68]

Measuring and evaluating solar equity progress need not be costly, but it is a vital first step towards formulating effective policies and programs.

---

66 California Energy Commission, Energy Equity Indicators web page, *https://ww2.energy.ca.gov/sb350/barriers_report/equity-indicators.html*.

67 Galen Barbose et al., *Income Trends of Residential PV Adopters: An Analysis of Household-Level Income Estimates* (Lawrence Berkeley National Laboratory, April 2018), *https://emp.lbl.gov/news/new-berkeley-lab-study-offers-insights-income*; US Department of Energy, Low-Income Energy Affordability Date (LEAD) Tool web page, *https://openei.org/doe-opendata/dataset/celica-data*; National Renewable Energy Laboratory, Solar for All Map web page, *https://maps.nrel.gov/solar-for-all/?aL=6m-d90%255Bv%255D%3Dt&bL=clight&cE=0&lR=0&mC=38.870832155646326%2C-98.34521484375001&zL=5*; Stanford Engineering, The DeepSolar Project web page, *http://web.stanford.edu/group/deepsolar/home.html*; The Solar Foundation, *National Solar Jobs Census 2018* (The Solar Foundation, 2018), *https://www.thesolarfoundation.org/national*.

68 Deborah A. Sunter et al., *Disparities in Rooftop Photovoltaics Deployment in the United States by Race and Ethnicity* (Nature Sustainability, January 10, 2019), pp. 71–76, *https://www.nature.com/articles/s41893-018-0204-z*.

2. Make Sure Pro-Solar State Policies Are in Place

For LMI solar to thrive, it needs a policy environment that is conducive to general solar development. If a state does not have policies in place that make it easy for solar projects to flourish, it is not going to be possible to install significant solar in under-resourced communities. Even though policies alone will not create a thriving market for LMI solar, they are a prerequisite to establishing such a market.

Without attempting to list all the possible state solar-supporting policies, here are some of the types of policy goals that can be favorable to solar development:

- Ensuring that there are *favorable solar compensation policies*. This may involve preserving net metering, which credits solar customers for the electricity they add to the electricity grid beyond the amount they consume immediately, allowing the customer to benefit at the full retail rate for all the energy produced by the solar array. Or it can be accomplished by implementing a value-of-solar tariff, which is an electricity rate design that compensates customers with solar panels for the electricity they generate at a specific price.

- *Preventing high monthly fixed charges* on electricity bills that make it uneconomical to install solar and preventing high demand charges targeted specifically at solar customers.

- Creating *property and/or sales tax exemptions* for solar installations.

- Allowing for *property-assessed clean energy* (PACE), making it possible for consumers to pay for solar installations over time through their property tax bills, or requiring utilities to allow for *on-bill financing*, enabling customers to pay for the cost of an energy upgrade over time via charges on monthly electricity bills.

- Establishing *quick and easy permitting* for solar systems.

- Offering *rebates or grants* from the state or utilities for solar installations.

- Enacting a *renewable portfolio standard* (RPS), especially one with a solar carve-out, that gives solar installations the possibility of revenue from the sale of renewable energy certificates (RECs).

- Enabling output from *shared solar installations* to be valued using "virtual" net metering or as on-bill credits.

- Implementing *statewide interconnection standards* that make it easy to hook up new solar installations to the electricity grid.

- Sanctioning *third-party ownership* through leases and power purchase agreements (PPAs), making it possible for consumers to get an installation with few upfront costs.[69]

Although no single policy is mandatory or a silver bullet, the most successful states have adopted an overall suite of policies that collectively create a favorable environment for solar. Policy consistency over time is also important.

---

69 In 2016, Environment America surveyed state solar policies. See Gideon Weissman et al., *Lighting the Way IV: The Top States that Helped Drive America's Solar Energy Boom in 2015* (Environment America, July 2016), *https://environmentamerica.org/sites/environment/files/reports/AME%20LightingTheWay%20Jul16%201.3.pdf.*

RE-volv

3. Adopt Special Incentives and Policies

Having a positive policy environment for solar development is necessary but does not ensure robust solar growth in under-resourced communities. Some special incentives and/or policies are needed to overcome the obstacles identified in Chapter 2 of this report.

Those incentives and policies can take many different forms, but state governments must adopt some targeted efforts if they want solar development to reach all economic and social groups in their state. Possible approaches that states can take to support LMI solar goals include:

• Targeted grant or loan programs.

• Higher rebates or lower interest rates for LMI program participants.

• Incentives to attract solar companies, investors, or lenders to become active in under-resourced communities.

The case studies and other programs discussed in the rest of this chapter all include some form of special incentive or policy aimed specifically at the LMI market.

4. Leverage Private Capital

Although special financial incentives will be necessary to jump-start solar in under-resourced communities, states should generally avoid fully funding solar systems for LMI households. Most states do not have enough financial resources to reach a large share of the LMI population if the only source of capital is public funding. Loan-loss reserve funds, green banks, and other financial partnerships can help to leverage private capital and enable solar projects. Some of the advice on financing in Chapter 9 is relevant to state agencies.

5. Work with and Help Community Organizations

As highlighted in this report's general recommendations in Chapter 4, partnerships with community organizations are important. There are several ways that state governments can work with and support frontline organizations in under-resourced communities. For one thing, states can bring representatives of those communities into the program design process when developing solar programs for under-resourced communities.

"It's important to get multiple voices to the table and listen to their expertise," says Betsy Kauffman of Energy Trust of Oregon. "It might involve working differently, maybe holding evening meetings or providing stipends. But the learning and relationships are worth the effort." Such outreach can involve working with community groups one-on-one or include the creation of an advisory committee or working group.

States can also provide community groups with training and funding to help them put together plans for solar projects. The state can then provide some of the funding for the resulting projects. Energy Trust of Oregon has done this very successfully (see Case Study 2).

And while partnerships with community groups are key, they need to be linked to outreach and education for other stakeholders. As Daniel White of the Distrit of Columbia's Department of Energy and Environment observes, "Great incentives alone won't achieve equitable clean energy goals if the community isn't on board and the industry isn't on board. You need to build trust in the community and have everyone at the table."

6. Bring LMI Issues into Public Utility Commission Proceedings

Utilities should be encouraged to focus on solar equity as part of their general social obligation.[70] States have considerable leverage over utilities through the regulatory activities of state public utility commissions (PUCs). LMI solar has not been a major topic for most PUCs, but there are many ways in which this could be approached by state regulators and policymakers:

- Require PUCs to integrate equity considerations into their proceedings or to include special LMI provisions and programs as part of utilities' integrated resource planning (IRP) processes. The California Public Utilities Commission has adopted a plan that provides enhanced opportunities for under-resourced communities to participate in the Commission's decision-making processes, and it requires equity to be considered in all of its proceedings.

"It's important to get multiple voices to the table and listen to their expertise. It might involve working differently but the learning and relationships are worth the effort."

— Betsy Kauffman, Energy Trust of Oregon

"Great incentives alone won't achieve equitable clean energy goals if the community isn't on board and the industry isn't on board. You need to build trust in the community and have everyone at the table."

— Daniel White, DC Department of Energy and Environment

70 See Jim Lazar et al, *Electricity Regulation in the US: A Guide* (The Regulatory Assistance Project, second ed., June 2016), *https://www.raponline.org/wp-content/uploads/2016/07/rap-lazar-electricity-regulation-US-june-2016.pdf*.

- Consider opportunities within rate design to support LMI solar adoption. For example, if a state undertakes net metering reform that will reduce solar compensation, perhaps LMI customers can have a longer "grandfathered" period and be allowed to continue with traditional net metering longer than other customers.

- Analyze the current electricity rate structures that LMI households face and determine whether those rate structures should be altered in ways that make solar adoption more advantageous.

- Scrutinize utilities' claims that changing their billing software or serving low-income households more aggressively would be too costly or require too much administrative change. PUCs can investigate to determine if such claims are true. If so, state regulators can help find the resources to address the problem. If not, they should not let the utilities use a false claim as an excuse for inaction.

- Work with utilities to identify creative ways that they can build solar installations that have LMI community benefits.

- Integrate solar into existing utility rate discount programs for low-income customers or other low-income bill assistance programs. The CleanCARE proposal from the Interstate Renewable Energy Council (IREC) is one such proposal.[71]

7. Design Programs for Specific Market Segments

The LMI market is diverse, and a single program will not reach or impact all segments of that market in the same way. A solar program is unlikely to be able to serve both LMI homeowners and renters equally, or benefit community institutions and individual households to the same degree.

State solar programs will generally be most successful if they explicitly target specific market segment(s) and are tailored to the needs of that particular audience. For example, the Connecticut Green Bank examined the makeup of the LMI population in Connecticut and concluded that LMI homeowners were one appropriate market segment to target. The program they established has been successful precisely because it was designed specifically for that audience (see Case Study 1). The Green Bank went further by funding a study that looked at subgroups within the LMI homeowners market segment to see which subgroups had the greatest potential to be solar customers and which marketing approaches would reach them.[72]

A clear understanding of the demographics and housing stock of the LMI population in the state can help a state agency figure out which market segments to target. For most states, multifamily housing is an especially important market segment to target with special programs, in part because a high percentage of the LMI population lives in such housing, but also because most residential solar installation companies have more experience with single-family homes and there are complicated financial and administrative issues with incorporating solar into multifamily affordable housing developments.

71 Interstate Renewable Energy Council, *IREC's Proposal for a Pilot CleanCARE Program* (submission to California Public Utilities Commission, May 29, 2013), *http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M065/K714/65714610.PDF.*

72 See C+C, *CT Solar Customer Segmentation Study* (September 2017), *https://www.ctgreenbank.com/wp-content/uploads/2018/05/595_CTGB_Customer_Segmentation_CT_FINAL_public.pdf.*

Barb Odell/Cornerstones

8. Ensure Financial Benefits Reach LMI Households

Some programs and projects that could increase the amount of solar in under-resourced communities do not provide meaningful financial benefits to residents, either because they entail excessive financial risk or because the benefits accrue primarily to the project developer, building owner, financier, or to the federal government. When designing any program for the LMI market, states should carefully assess to whom the financial benefits will flow. Specific questions to ask, include:

• Are there mechanisms in place to ensure that LMI households or community institutions are not taking on unreasonable financial risks?

• Will the reduction in electricity bills represent a meaningful financial benefit to the LMI households?

• Are there other benefits that can be conferred to LMI households through solar adoption, such as energy resilience achieved through systems that include battery storage?

• For projects done in conjunction with affordable housing developments, what will be the direct, tangible benefits for tenants?

• For projects involving households that receive HUD housing assistance, will savings on tenants' electricity bills require them to pay more for rent? Similarly, will households' support through LIHEAP be reduced? (See Chapter 2.)

It is better to have less solar development in under-resourced communities than to put state funds into projects that give the illusion of benefitting those communities but do not actually address energy equity. Among the strategies that states can adopt to ensure that benefits reach LMI households are the following:

- Require solar companies to guarantee financial benefits to LMI households if they want to participate in a program that includes special LMI incentives.

- Require affordable housing developments to provide tangible benefits to tenants as a condition for receiving state solar incentives.

- Avoid designing programs that reduce households' HUD housing subsidies.

9. Impose High Consumer Protection Standards

As mentioned in the last chapter, states can create regulations related to solar contracts to protect consumers who are considering whether to go solar. Some states require certain performance guarantees, warranties, service statements, or other consumer protection information be included in all executed solar contracts. The Clean Energy States Alliance has produced a report on *State Solar Contract Disclosure Requirements* that surveys what different states have done in this area. It includes solar contract disclosure forms from six states.[73]

States can also allow consumers to have a grace period for withdrawing from a solar contract, and they can make sure that there are clear, well-publicized avenues for consumers to report problems they are having with a solar contractor. Strong consumer protection benefits all solar customers, but it is especially important for LMI consumers who have limited ability to absorb an unexpected financial loss.

The Illinois Power Agency has incorporated comprehensive and effective consumer protection into its solar programs. For the general Illinois Shines initiative, only projects with approved vendors receive the initiative's generous financial incentives. Those vendors are required to give customers a consumer protection brochure and to use a standard disclosure form so that customers will be able to easily compare offers from different companies and know how much they will need to pay over time. To prevent misleading sales practices, approved vendors need to follow guidelines for their marketing materials and marketing behavior. A special page on the Illinois Shines website makes it easy for consumers to register concerns and complaints about solar marketers or installers.[74] As is noted in the next section on Initiatives to Replicate, the Illinois Power Agency's program for low-income customers, Solar for All, has additional consumer protections.

10. State Initiatives to Replicate

In addition to the Connecticut Green Bank and Energy Trust of Oregon programs described at length in the state case studies below, some promising program models that can be implemented by states are listed here:

- ***California's Solar on Multifamily Affordable Housing (SOMAH) program.*** SOMAH provides upfront, capacity-based financial incentives for installing solar systems on multifamily affordable housing properties. Eligible solar projects under the program are required to achieve direct economic benefits for low-income tenants. Over half of a project's electric output must directly offset tenant load and be provided to tenants in the form of virtual net metering bill credits. The program also offers various no-cost services to participating property owners, including project technical assistance. The program includes job training and local hiring requirements for contractors.[75]

---

73 Nate Hausman et al., *State Solar Contract Disclosure Requirements* (Clean Energy States Alliance, August 2018), *https://www.cesa.org/assets/2018-Files/State-Solar-Contract-Disclosure-Requirements.pdf.*

74 Information about Illinois Shines, including brochures for consumers (in both English and Spanish), marketing guidelines, disclosure forms, and vendor requirements, is available on the Illinois Shines website, *http://illinoisshines.com.*

75 For more information, see the Solar on Multifamily Affordable Housing (SOMAH) program web page, *https://www.calsomah.org.*

- ***Colorado's inclusion of rooftop solar as an eligible measure for its Weatherization Assistance Program (WAP).*** In 2015, Colorado became the first state to receive approval from the US Department of Energy to integrate rooftop solar into WAP, which provides no-cost energy efficiency upgrades to eligible low-income families. Colorado had to demonstrate that solar was likely to be a cost-effective measure.[76] As part of a 2016 settlement, Colorado's largest electricity provider, Xcel Energy, agreed to use WAP funds to offer both an upfront and a per kilowatt-hour solar incentive for up to 300 low-income households.[77] Although the Colorado example demonstrates that leveraging programs like WAP can make solar more accessible for low-income households, states should be careful not to undermine the purpose and function of existing anti-poverty programs, particularly when such programs are designed to provide urgent relief to low-income customers.

- ***Hawaii's Green Energy Money $aver (GEM$) program.*** GEM$ is an on-bill financing program that expands the accessibility and affordability of solar and energy efficiency upgrades to renters, LMI homeowners, and nonprofits. Clean energy investments are repaid over time through a line item on a customer's monthly electric bill. This means that participants can save money from the start, since the program does not require upfront participant costs and only finances investments where the average monthly savings exceed the cost of a participant's monthly bill repayments. Program eligibility is conditioned upon a participant's history of bill repayment (rather than a traditional credit score), and repayment is tied to the electric meter so it can be transferred from one tenant to another.[78]

- ***Illinois' Solar for All program.*** The Illinois Power Agency's Solar for All program helps make solar more affordable for low-income customers and communities. Incentives are offered through approved vendors who agree to all the consumer protection standards in the state's general Illinois Shines solar initiative, as well as special measures that guarantee benefits and reduce risks for participating LMI customers. The program ensures that there are no upfront costs for participants and any ongoing costs or fees will not exceed more than half the value of the energy produced. Customers have seven days after signing a contract to cancel. The program also offers solar job training and connects graduates of the training with approved vendors, who are required to use qualified trainees on a percentage of their projects. [79]

- ***Maryland's Resiliency Hubs program.*** The Maryland Energy Administration's Resiliency Hubs program provides grants to microgrid developers to offset costs for projects in high-density, LMI communities. The program considers a resiliency hub to be a facility within short walking distance from economically disadvantaged populations and that, in an emergency, can provide refrigeration for medications, allow for the charging of small personal devices, and serve as a heating, cooling, and lighting center. The program ranks applications based upon the ratio of LMI residents served and is open to local government agencies, nonprofits, and businesses.[80]

---

76 For more information, see Jeffrey J. Cook and Monisha Shah, *Reducing Energy Burden with Solar: Colorado's Strategy and Roadmap for States* (National Renewable Energy Laboratory, March 2018), *https://www.nrel.gov/docs/fy18osti/70965.pdf*; and the Colorado Energy Office Rooftop Solar Photovoltaic Program web page, *https://www.colorado.gov/pacific/energyoffice/rooftop-solar-pv.*

77 Colorado has used Low Income Home Energy Assistance Program (LIHEAP) funds for low-income solar too. Federally administered by the US Department of Health and Human Services, LIHEAP helps pay heating and electricity bills for low-income customers. Although many states have used a portion of their LIHEAP funds for weatherization, solar was first included as a weatherization measure in Colorado's LIHEAP plan in 2017.

78 For more information, see the Hawaii Green Infrastructure Authority GEM$ Financing Program web page, *https://gems.hawaii.gov/ participate-now/for-homeowners.*

79   Information about Illinois Solar for All is available on the program's website at *https://www.illinoissfa.com*; see especially the program's "Consumer Protections" web page, *https://www.illinoissfa.com/consumer-protections.*

80 Information about the Maryland Resiliency Hubs program is available on the program web page, *https://energy.maryland.gov/Pages/ Resiliency-Hub.aspx.*

- ***Massachusetts' Solar Loan program.*** The Mass Solar Loan program connects homeowners interested in installing solar systems with financing opportunities through low-interest loans. It offers loan support in three ways: 1) an interest rate buy-down, which reduces the interest rate paid by customers as compared to a traditional market-rate loan; 2) a loan loss reserve, which serves as a guarantee against default and encourages lenders to loan to less creditworthy customers; and 3) an additional income-sensitive incentive, which is applied directly to the loan principal to reduce an LMI customer's overall repayment obligation.[81]

- ***New Hampshire's Low and Moderate Income Community Solar Grant program.*** The New Hampshire Public Utilities Commission, which administers the state's Renewable Fund, is required by law to allocate 15 percent or more of the fund annually to benefit LMI residential customers, including "financing or leveraging of financing for low-moderate income community solar projects in manufactured housing communities or in multifamily rental housing." Stemming from this requirement, New Hampshire offers grants for shared solar projects that provide direct benefits to LMI residents. Applicants must use the grant funding for shared solar projects that will result in a direct benefit to at least five residential customers and a majority of them must be LMI customers. These benefits must flow to the LMI customers for 20 years or until the end of the solar project's operational life, whichever is earlier.[82]

- ***New York's Solar for All program.*** Administered by the New York State Energy Research and Development Authority (NYSERDA), New York's Solar for All program offers low-income households the opportunity to subscribe to a shared solar project at no cost. Enrollment in the program operates like a utility bill assistance program with monthly credits being applied directly to participating customers' electricity bills. NYSERDA provides funding for the shared solar arrays to be built, manages the subscription process, matches income-qualified customers with shared solar projects, and works with project developers and electricity providers to ensure subscribers are credited for their subscription in a project. Low-income households subscribe for free, pay no fees to participate, and typically save between $5–$15 a month by participating in the program. Subscription does not impact LIHEAP or other benefit programs.[83]

---

81 Information about the Mass Solar Loan program is available on the program web page, *https://www.masssolarloan.com*.

82 New Hampshire Public Utilities Commission, *Request for Proposal-Renewable Energy Fund Low and Moderate Income Community Solar Grants* (February 6, 2019), *https://www.puc.nh.gov/Home/RFPs/2019-001/20190206-PUC-RFP-2019-001-REF-LMI-Community-Solar-Grants.pdf*.

83 NY-Sun Solar for All program web page, accessed November 14, 2019, *https://www.nyserda.ny.gov/All%20Programs/Programs/NY%20Sun/Solar%20for%20Your%20Home/Community%20Solar/Solar%20for%20All*.