



# Advancing Solar for Manufactured Homes through Community Solar

September 14, 2022

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# CleanEnergy States Alliance



Governor's Energy Office



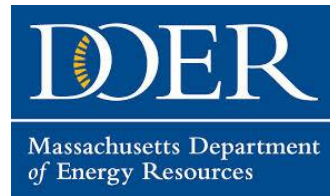
Maryland Energy Administration



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY



Washington State Department of Commerce



# Scaling Up Solar for Under-Resourced Communities

CESA is leading a wide-ranging initiative to accelerate the development of solar projects that benefit low-and-moderate-income (LMI) households and communities and address the central challenge facing the future of solar energy in the US: How to ensure that solar technologies benefit all Americans regardless of income.

Three tracks:

- Single-family homes
- Manufactured homes
- Community institutions

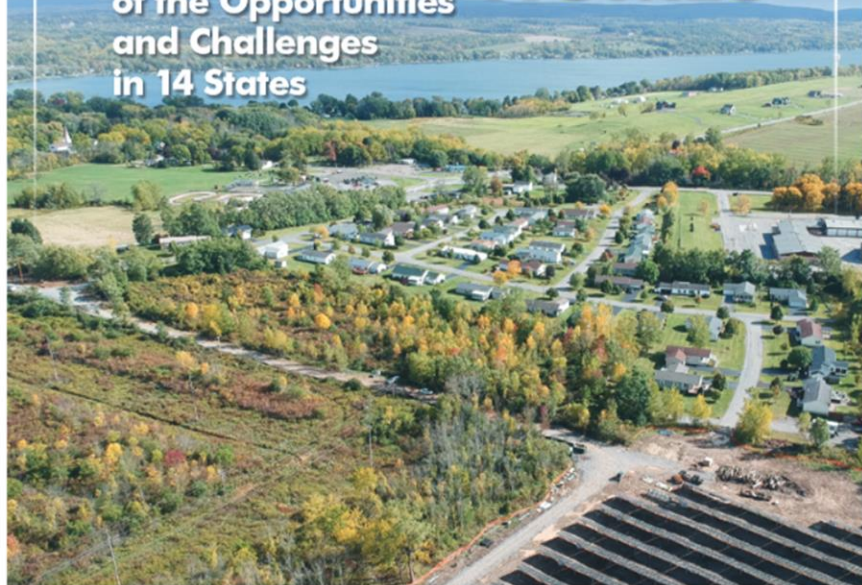
**SIGN UP FOR OUR LEARNING  
NETWORK MAILING LIST:**  
[www.cesa.org/projects/scaling-up-solar-for-under-resourced-communities/manufactured-homes](http://www.cesa.org/projects/scaling-up-solar-for-under-resourced-communities/manufactured-homes)



This project is supported by an award from the US Department of Energy Solar Energy Technologies Office.

VOLUME 1 **SOLAR FOR  
MANUFACTURED  
HOMES**

An Assessment  
of the Opportunities  
and Challenges  
in 14 States

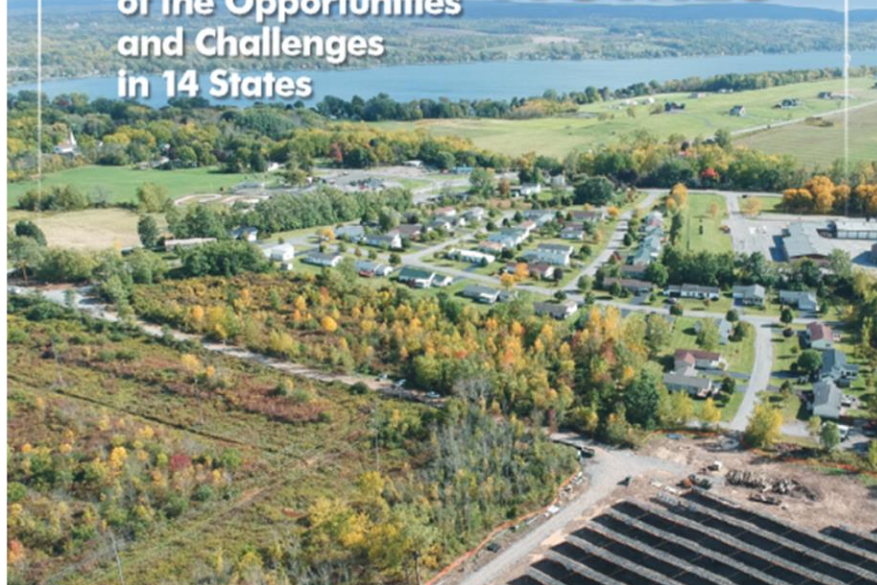


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NATE HAUSMAN, AND LAURA SCHIEB

APRIL 2021

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**NEWLY ADDED  
APPENDIX:**

Summary of  
Opportunities in  
14 States for  
Solar for  
Manufactured  
Homes

**Working group  
open for state  
agencies and  
utilities to join**

[www.cesa.org/resource-library/resource/solar-for-manufactured-homes](http://www.cesa.org/resource-library/resource/solar-for-manufactured-homes)

# Webinar Speakers



**Ariel Drehobl**

**Management and Program Analyst,**  
US Department of Energy  
Solar Energy Technologies Office



U.S. DEPARTMENT OF  
**ENERGY**



**Wafa May Elamin**

**Project Manager,**  
Clean Energy States Alliance



**CleanEnergy**  
States Alliance



# Advancing Solar for Manufactured Homes through Community Solar

## Clean Energy States Alliance Webinar

Ariel Drehobl, U.S. Department of Energy

September 14, 2022



# Community Solar Overview



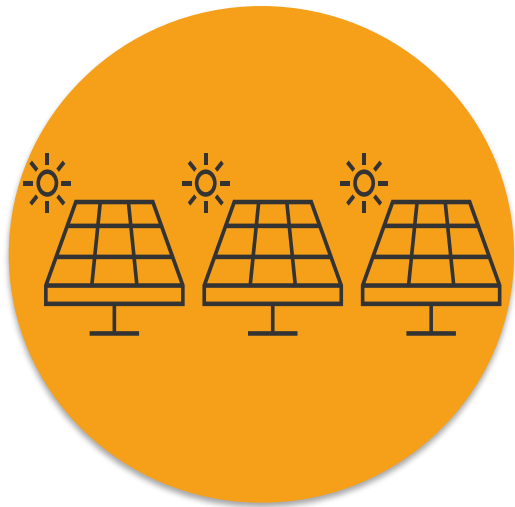
A large-scale solar farm with rows of solar panels on a clear blue sky. The panels are mounted on metal structures and are tilted towards the sun. The ground is dry and brown, suggesting an arid environment. The sky is a clear, bright blue.

# What is community solar?

The U.S. Department of Energy defines community solar as any solar project or purchasing program, within a geographic area, in which the **benefits** of a solar project flow to multiple customers such as individuals, businesses, nonprofits, and other groups.

# What is Community Solar?

## Community Solar Project



Solar panels generate electricity from the sunlight

## Utility



The electricity flows through a meter to the utility grid

## Subscribers



The subscriber gets a credit for the value of the solar electricity on their monthly electric bill

Subscribers pay the host for their share of the community solar project

Each utility assigns a dollar value to solar electricity



Energy Burden Reduction



LMI Household Access



Resilience



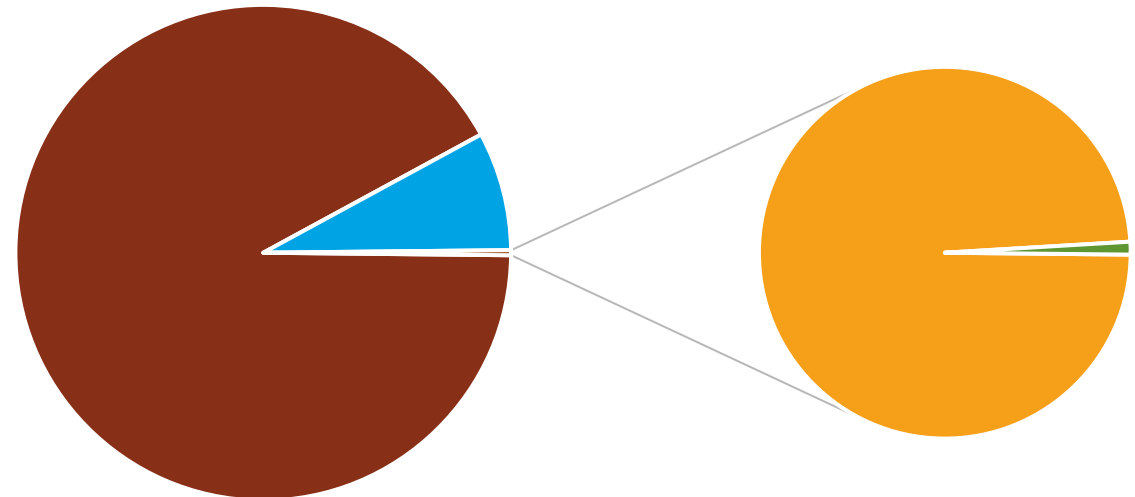
Community Ownership



Workforce Development

# Why Community Solar?

- 49% of households and 48% of businesses **cannot** host a solar system on their property because of ownership and insufficient roof space challenges
- Solar represents <10% U.S. electric generation capacity
- Community solar represents <5% of solar
- Mandated or incentivized Low- to Moderate-Income (LMI) community solar represents <1% of community solar.

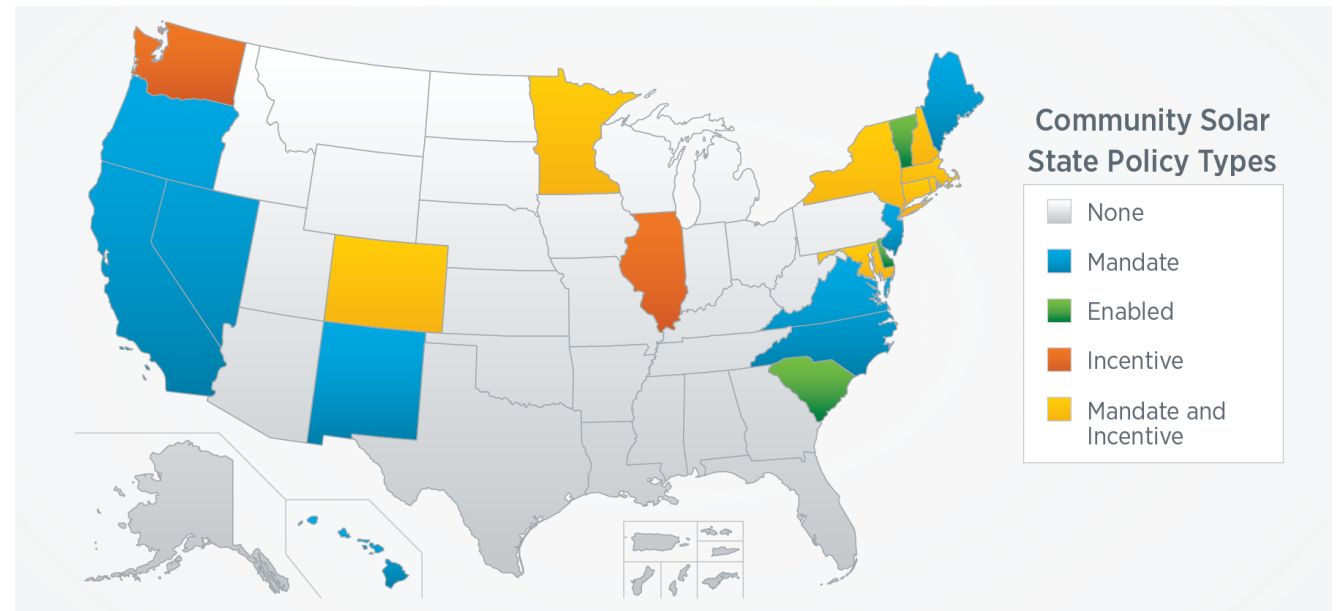


■ Non-solar ■ All solar ■ Community solar ■ LI community solar

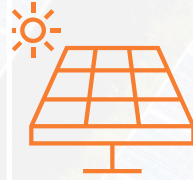
Sources: EIA, SEIA, NREL, NREL (unpublished)

# State Community Solar Markets

- 22 states plus Washington, D.C. have policies that require or support community solar
- **Nearly every state** with enabling community solar policies includes an LMI community solar component
- Policies vary but typically have a **target of 20-50% LMI serving capacity**; some programs provide a financial incentive for LMI community solar



# National Community Solar Partnership Overview



## Data Tracking

- Sharing the Sun is a market trends annual report that is managed by NREL through NCSP; partner commitments are tracked to the program and its goal, and program evaluation is done to determine success.



## Collaboration

- Partners can access an online community platform, virtual/in-person meetings, webinars and other tools to engage with DOE, National Labs, and each other.



## Technical Assistance

- Partners have access to resources and direct technical assistance from DOE, National Labs, and third-party subject-matter experts to support local challenges.

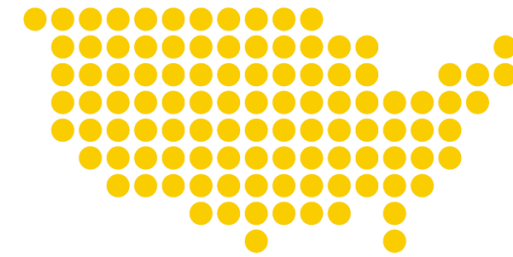
# National Community Solar Partnership Online Platform



**>1000**  
PARTNERS



**>700**  
ORGANIZATIONS



**50**  
STATES



# National Community Solar Partnership Target



**5 million**  
HOUSEHOLDS\*  
\*EQUIVALENT

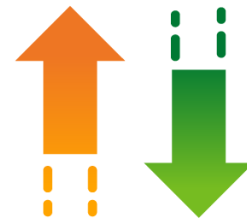


**\$1 billion**  
IN ENERGY BILL  
SAVINGS



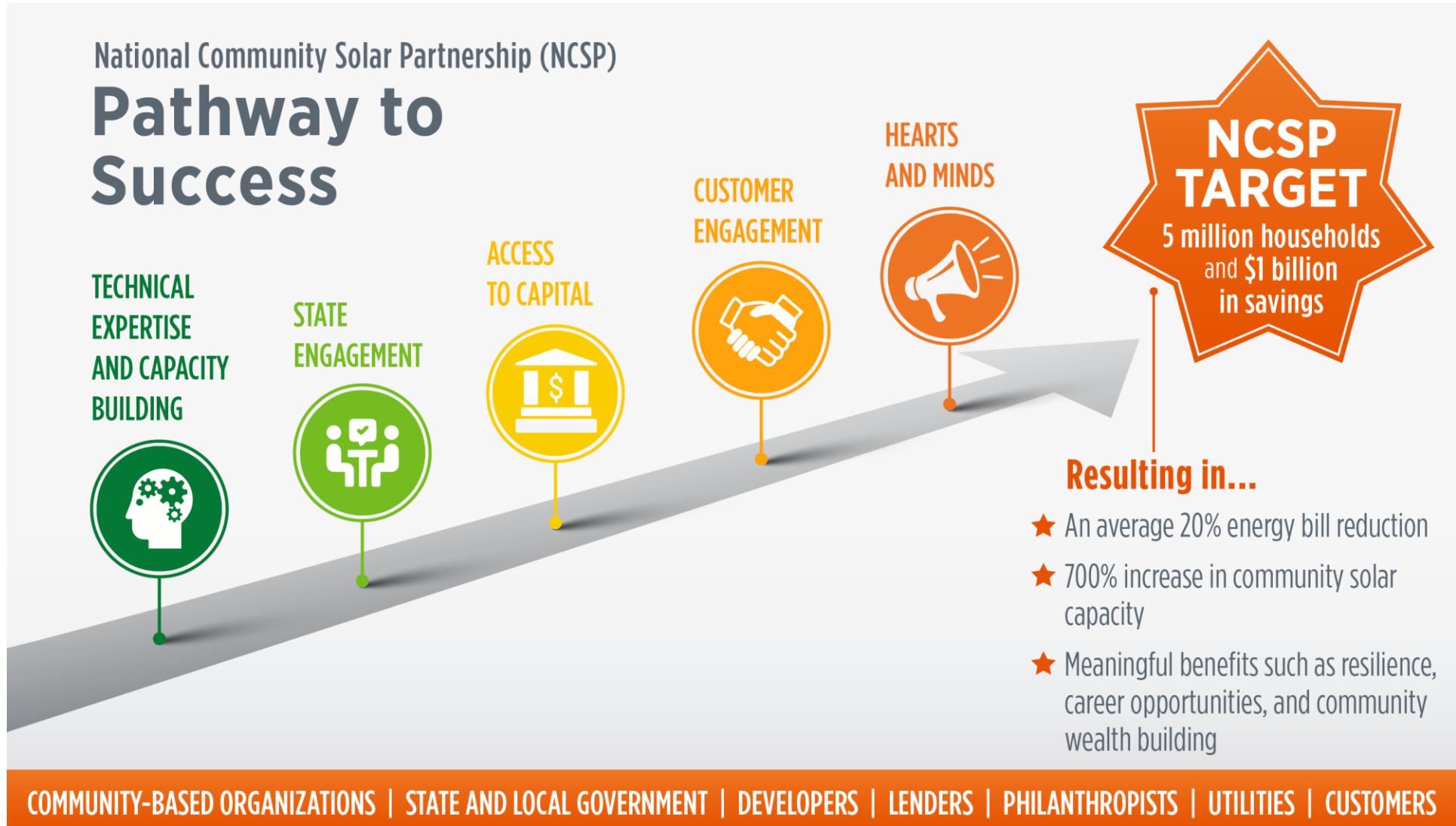
BY **2025**

Represents an increase  
from **3 GW to 20 GW** of  
community solar capacity



\$1 billion in savings  
reflects an average  
**bill reduction of 20%**

# NCSP Pathway to Success





# NCSP Technical Assistance Program

Offered **on-demand** and **at no cost** to NCSP partners  
Application available through the Mobilize Online Platform

## Technical Assistance Subject Areas

Policy,  
Legislation,  
Regulation

Project  
Financing  
Analysis

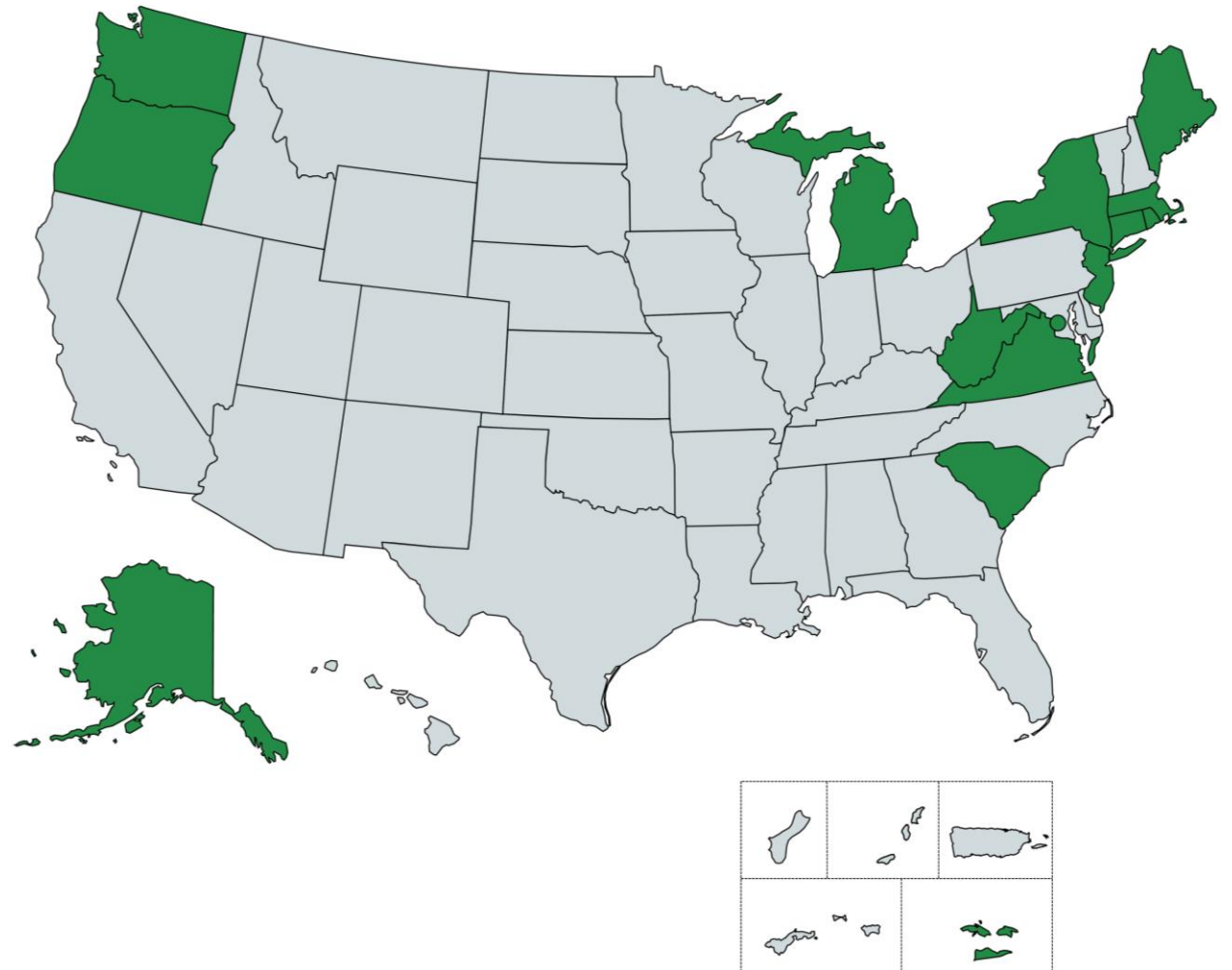
Outreach and  
Engagement  
Strategies

Program  
Design

Technical  
Issues

# States Collaborative

- 15 official state and territory members (see map)
  - Including reps from State Energy Offices, Public Utility Commissions and Statewide implementers
- Goal to support state efforts to expand community solar markets
- Monthly calls to explore topics of interest to states
- Subgroups exploring LMI and Community Ownership, resilience, and siting and interconnection



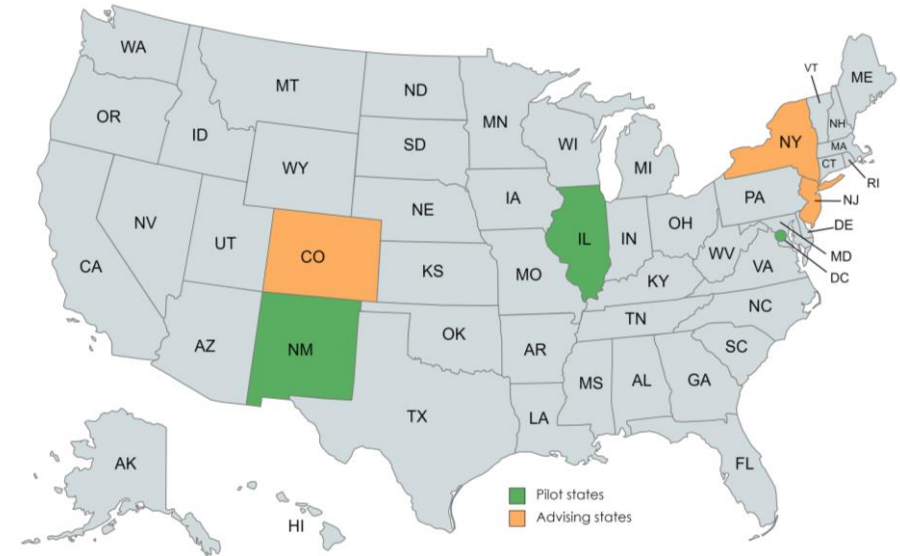
# Credit Ready Network

The NCSP Credit Ready Network aims to increase equitable access to funds through:

- **Standardized lending guidance** that financial institutions, lenders, and investors will commit to for community solar credit application
- **Identify pre-development and gap funding** in partnership with philanthropy
- **Expanded connections with community-based organizations and small developers** to connect them with Credit Ready Solar and NCSP resources
- **Develop Credit Ready Learning Lab** to train program developers, CBOs, and community solar stakeholders on components to develop community solar from site acquisition to leveraging funding
- **Direct technical assistance** to support the completion of the lending guidance
- **Facilitate a Credit Ready Marketplace** that will be an online one-stop-shop to connect lenders, philanthropic organizations, and credit-ready community solar projects

# Low Income Community Solar Subscription Platform

- **Project Goal** – Develop and pilot a digital platform that will serve as a bridge to connect community solar subscriptions with verified savings and related benefits to recipients of the Low-Income Home Energy Assistance Program
- **Project Partners** – U.S. DOE, the U.S. Department of Health and Human Services, National Renewable Energy Laboratory, Lawrence Berkley National Laboratory, National Energy Assistance Directors Association and National Association of State Energy Officials
  - **Pilot States and Districts:** Illinois, New Mexico, Washington, DC; **Advising States:** Colorado, New Jersey, New York
- **Request for Information Responses due September 16!**  
<https://www.energy.gov/communitysolar/request-information-low-income-community-solar-subscription-platform>



Learn more about the project at  
<https://www.energy.gov/communitysolar/community-solar-subscription-platform>

# Meaningful Benefits of Community Solar



**Low- and Moderate-  
Income Access**

**Energy Burden  
Reduction**

**Resilience & Grid  
Benefits**

**Community  
Ownership and  
Wealth Building**

**Local Workforce  
Development**

# Upcoming Opportunities from the National Community Solar Partnership

## Sunny Awards for Equitable Community Solar

- Recognize community solar projects and programs that deliver meaningful benefits
- Up to \$100,000 in prizes
- [Nominations due](#) October 7, 2022 | [Join Launch Webinar](#) August 18, 2022

## Low Income Community Solar Subscription Platform RFI

- Online platform to identify and make community solar subscriptions with verified savings more accessible for households participating in government-run low-income support programs.
- [Respond to Request for Information](#) (RFI) by September 16, 2022

## NCSP Annual Summit

- Tentatively scheduled for January 2023 – join the Partnership to get updates!

Join NCSP! [ncsp.solarinyourcommunity.org](https://ncsp.solarinyourcommunity.org) | Questions: [community.solar@ee.doe.gov](mailto:community.solar@ee.doe.gov)

# Thank you for your attention!

Contact Ariel Drehobl  
([ariel.drehobl@ee.doe.gov](mailto:ariel.drehobl@ee.doe.gov))  
with any additional questions  
or to connect further.

Respond to the RFI and Prize  
applications by the deadlines!

Support the new 2025 target  
of 5 million community energy  
subscribers with a billion  
dollars of savings!



Register to Join NCSP:

<https://ncsp.solarinyourcommunity.org/registrations/groups/39758>

# CESA's Report: Solar for Manufactured Homes An Assessment of the Opportunities and Challenges in 14 States



**Wafa May Elamin**  
Project Manager  
Clean Energy States Alliance

## Community Solar for Manufactured Homes

September 14, 2022





# Scaling Up Solar for Under-Resourced Communities

CESA is leading a wide-ranging initiative to accelerate the development of solar projects that benefit low-and-moderate-income (LMI) households and communities.

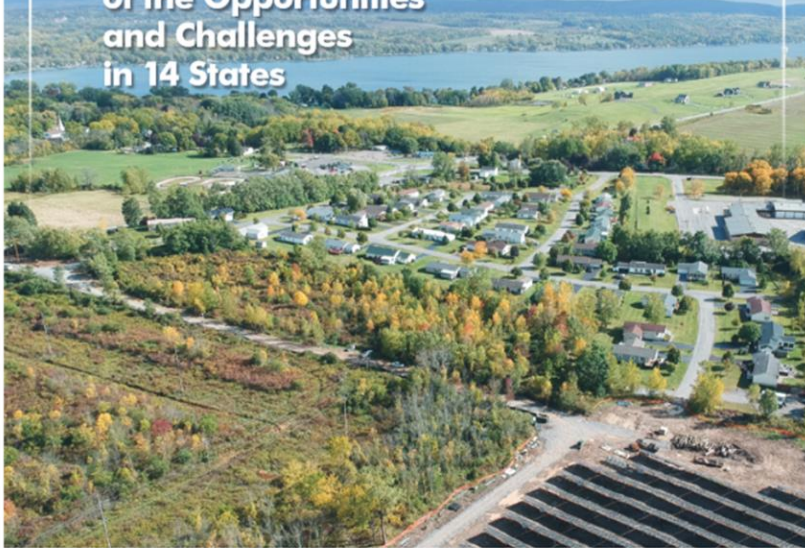
The project is made possible through a funding award from the US Department of Energy Solar Energy Technologies Office.

[www.cesa.org/projects/scaling-up-solar-for-under-resourced-communities/](http://www.cesa.org/projects/scaling-up-solar-for-under-resourced-communities/)



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Summary of  
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14 States for  
Solar for  
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**Working group  
open for state  
agencies and  
utilities to join**

**14 States: AZ, CA, GA, KY, ME, MI, MO, NM, NC, OH, SC, TX, VA**

[www.cesa.org/resource-library/resource/solar-for-manufactured-homes](http://www.cesa.org/resource-library/resource/solar-for-manufactured-homes)

# Purposes of the Report

- Understand how best to use solar to power manufactured homes
- A potential solar market that has received little attention
- A housing market sector that is often ignored
- Report on 14 states
- Leading to a learning network and a working group
- Accelerate the development of low- and moderate-income (LMI) solar projects for manufactured homes

# How we researched the subject

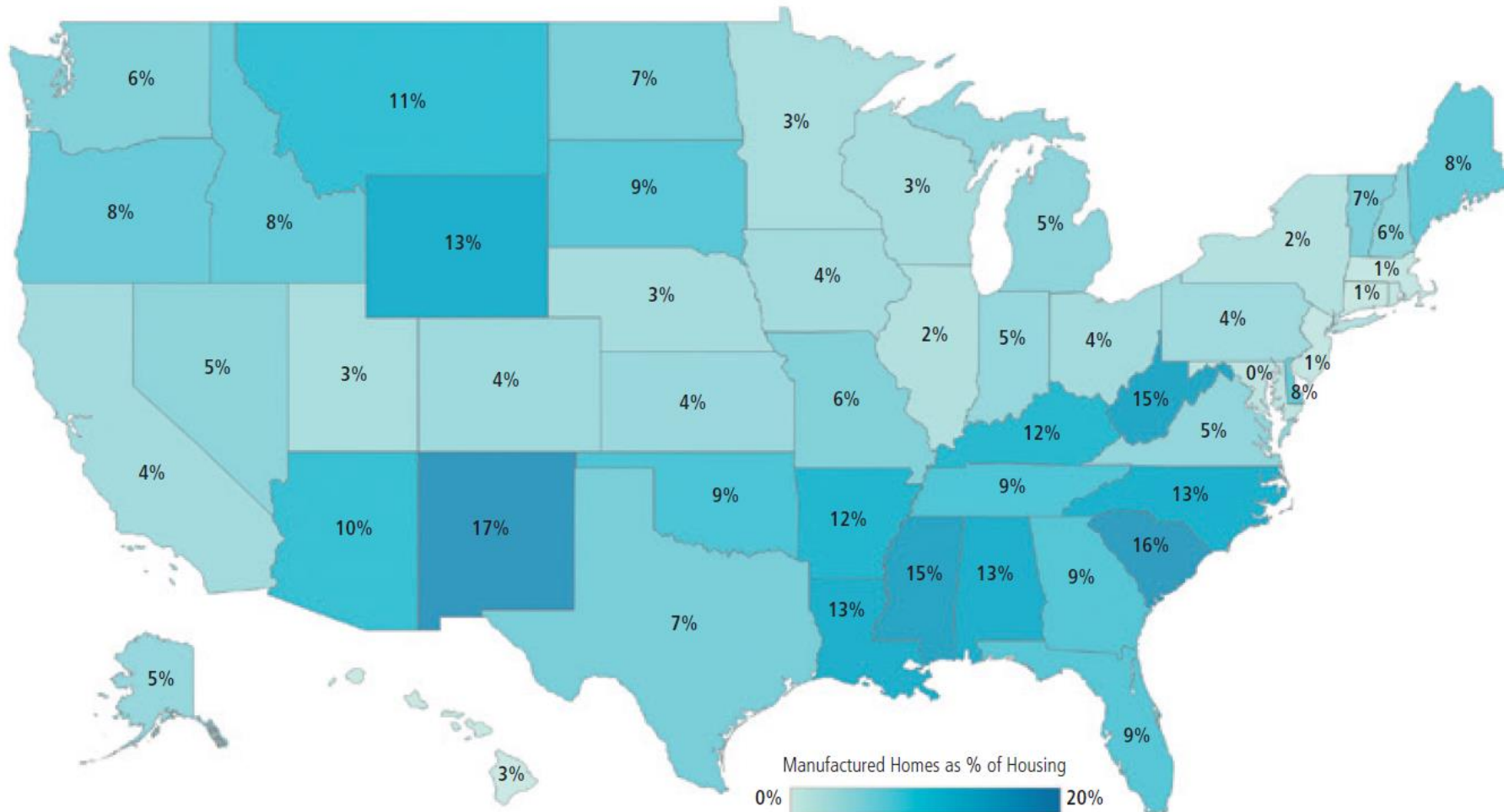
- For manufactured home communities (i.e., mobile home parks), used Datacomp proprietary database
  - Largest provider of manufactured home value reports and appraisal reports
  - Data on the location, size, rental prices, housing costs, and other characteristics of dedicated communities of manufactured homes
  - 24,391 communities in 14 target states
  - Information collected over time, so not all current

# How we researched the subject

- Linked Datacomp data to census household income data and to utility service territories
- Surveys and interviews of solar installers
- Survey responses from 170 manufactured home households
- A significant margin of error in statistics, but still a more complete picture than previously



# Manufactured Homes Across the Nation



- Dramatic differences among states
- Share of total housing stock: 1-17%

# Why Solar for Manufactured Homes?

- LMI solar is essential for equity and to ensure solar retains public support
- Relieve high energy burden
- Greatest progress potential
- When LMI solar market is not seen as an undifferentiated sector, but rather as a collection of sub-markets
- Significant share of housing stock : 8.5 million homes, 6.1% of homes nationally
- Higher percentage of LMI housing stock, Large share of unsubsidized affordable housing
- Most residents own their home

# Barriers that prompt the need for Community Solar

## LMI Solar Barriers

- Initial cost of a PV system
- Must be risk-free
- Inability to use federal tax credits
- Ignored by solar marketers
- Inexperience navigating the audience

## Manufactured Homes Barriers

- Many roofs cannot support a PV system
- Limited Space for ground mounted
- Residents in Manufactured Homes Communities usually do not own the land



# The Data in the Report: Case Studies of Nine Promising Projects



# Community Solar in New Hampshire: Mascoma Meadows



ReVision Energy

**Location:** Lebanon, New Hampshire

**Date Started and Completed:**

January- December 2018

**PV System Size:** 100 Kilowatts

**Number of Households Benefitting:** 45

The first resident owned community (ROC) of 50- manufactured homes in Colorado to be powered by a community solar array

- 45 of the homes in the ROC participate in the solar array
- Savings of \$20-\$25 in housing lot rent reduction / month

# Community Solar in New Hampshire: Mascoma Meadows

- **Location and Land:** half-acre of land donated by neighboring Abundant Life Church of God
- **Stakeholders and partners**
  - *ReVision Energy* Selected through a competitive Bidding Process
  - *Vermont Law School of Energy Clinic:* Pro- bono legal Services and project design
  - *New Hampshire Community Loan Fund* : Guidance received from ROC-NH, a program Fund
- **System Size, Capacity, and Benefits:** 100 kilowatt array of 384 Solar panels
  - Installed in November 2018 and interconnection completed in December
  - No financial risk for the LMI participants; \$20-\$25 monthly savings on lot rental
  - Non monetary benefits: educational opportunities to enhance residents' understanding of energy use and lowering carbon emissions, and overcomes the perception that solar is for affluent communities

# Community Solar in New Hampshire: Mascoma Meadows

- **Financing and Costs:** leverages an investor's ability to take advantage of the Federal Investment Tax Credit that is inaccessible to LMI Customers
  - Financing provided by a private impact investor through a Power Purchase Agreement. ReVision Solar Impact Investors owns the array for five years.
    - After 5 years (in 2023) Mascoma Meadows will have the option to purchase the community solar array from NH Community Loan fund low interest financing
  - \$168,000 grant from the NH Low-Moderate Income Community Solar Grant Program (part of the Renewable Energy Fund managed by the New Hampshire Public Utilities Commission)

# Community Solar in New York: Lakeville Village



Anne Radesi

**Location:** Geneseo, New York

**Date Started and Completed:** 2017-2021

Broke ground July 2020, online in 2021

**PV System Size:** 4 Megawatts

**Number of Households Benefitting:** 50

A community-led community solar project at Lakeville Village, a Resident Owned Community of persons 55 years of age and above. This project utilized 10 acres of land that the community owns to develop a 4 MW Community Solar Project.

# Community Solar in New York: Lakeville Village

- **Location and Land:** Lakeville Village Inc purchased the 20 acres to become a ROC, 10 acres being used for the solar array
- **Stakeholders and partners**
  - *Lakeville Village Incorporated* – ROC
  - *Larsen Engineering and Pathstone:* Engineers and community development organization specializing in solar
  - *RER Energy Group* Selected through competitive bid process
- **System Size, Capacity, and Benefits:**
  - 4 megawatts
  - Lease with RER group for \$850 /acre/year



# Community Solar in New York: Lakeville Village



**The Process: Before added Solar**

# Community Solar in New York: Lakeville Village



**The Process: During the Solar Installation**



# Community Solar in New York: Lakeville Village



## **Solar Installed**

It has benefited the community

# Community Solar in Colorado: Ponderosa Mobile Home Park and Low Income Rental Housing

**Location:** Boulder, Colorado

**Date Started and Completed:** 2020-2021

**PV System Size:** 100 Kilowatts + 48 kilowatts in additional subscriptions from a second project

**Number of Households Benefitting:** Up to 48

A solar garden pilot for the Ponderosa Mobile Home Park, which could be expanded to other manufactured home and affordable housing communities, if successful. The city purchased additional subscriptions from Jack's Solar Garden, a local privately owned project to ensure subscriptions for all Ponderosa residents.



# Community Solar in Colorado: Ponderosa Mobile Home Park and Low Income Rental Housing

- **Location and Land Use:** Municipal land near Boulder Reservoir, one of the oldest parks in Colorado that was folded into the Revitalization Plan
  - Part of a \$4.2 Million to purchase Ponderosa Mobil Home Park from Boulder's Affordable Housing Fund, (*HUD's Community Development Block Grant—Disaster Recovery Fund* )
- **Stakeholders and partners**
  - *The City of Boulder: Energy Impact Offset Fund*
  - *Boulder county Regional Housing Partnership* set a goal of making 12% of Boulders housing inventory affordable for LMI households
  - Second project to add subscriptions
    - BQUEST Foundation—providing the low-interest loan
    - Boulder Housing Partners serves as the subscriber on behalf of their residents

# Community Solar in Colorado: Ponderosa Mobile Home Park and Low Income Rental Housing

- **System Size, Capacity, and Benefits:**
  - 100 kilowatt solar garden to provide subscriptions to LMI residents
  - City developed a Manufactured Housing Strategy to identify and implement options to benefit manufactured home communities
  - Revitalized the park, addresses energy burden, and increases access to affordable housing
  - Supporting Boulder's 100% Renewable electricity by 2030
- **Financing and Costs: *City of Boulder's Energy Impact Offset Fund***
  - \$4.2 million investment from the city's programs and Funds (*HUD Grants*)
  - Second project: 1.2 million from BQUEST Foundation, private equity, and grants

# Strategies for Advancing Community Solar for Manufactured Homes

1. Assess the manufactured housing stock in the state or utility service territory
2. Start with modest targeted efforts
  - Produce a track record of success by focusing on the low-hanging fruit
3. Recognize that special funding or incentives will be necessary
  - Ensure financial benefits are flowing to the residents
4. Find the best venues for pursuing a “solarize” community solar strategy (community-based education/marketing campaign with group discount pricing)
  - Can address residents’ limited understanding with solar
  - Well matched to large manufactured home communities and informal subdivisions

# Strategies for Advancing Community Solar for Manufactured Homes

5. Target resident-owned communities (ROCs) and other nonprofit communities (e.g., community land trusts, housing agencies)

- With ROCs, the land is owned by the residents
- Easier to ensure savings flow to residents

6. Promote certain types of large community-scale solar arrays

- For community facilities and common loads
- Dedicated projects for a MH community
- Look to MH residents when seeking to fill state mandates



# Strategies for Advancing Community Solar for Manufactured Homes

7. Ensure consumers are not being placed at financial risk
  - Support efforts to incorporate solar into new manufactured homes
  - Recognize the limitations (94,000 new manufactured homes annually)
8. Consider third-party ownership, on-bill payments, and other special financing options



# Thank you for attending our webinar

**Wafa May Elamin**  
Project Manager  
Clean Energy States Alliance  
[wafamay@cleanegroup.org](mailto:wafamay@cleanegroup.org)

Learn more about the **Scaling Up Solar for Under-Resourced Communities Project** at  
[www.cesa.org/projects/scaling-up-solar-for-under-resourced-communities](http://www.cesa.org/projects/scaling-up-solar-for-under-resourced-communities)





# Upcoming Webinar

## Solving the Grid Connection Problem

Wednesday, September 28, 3-4pm ET

As the energy transition accelerates, an unprecedented number of clean energy projects have applied to connect to the power grid. FERC has opened a rulemaking to revamp the grid connection process.

Read more and register: [www.cesa.org/webinars](http://www.cesa.org/webinars)