

CleanEnergy
States Alliance

Using Community Solar to Cut Energy Burdens in Manufactured (Mobile) Home Communities

Wednesday, September 18, 2024

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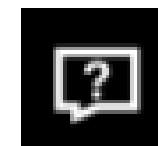
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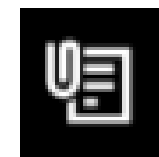
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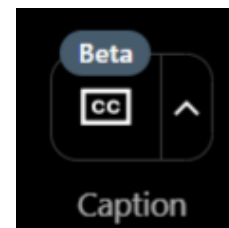
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Speaker bios available in the “Materials” section



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Celebrating 20 Years of State Leadership



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.

CleanEnergy States Alliance

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GOVERNOR'S
Energy Office



Maryland
Energy
Administration



NYSERDA

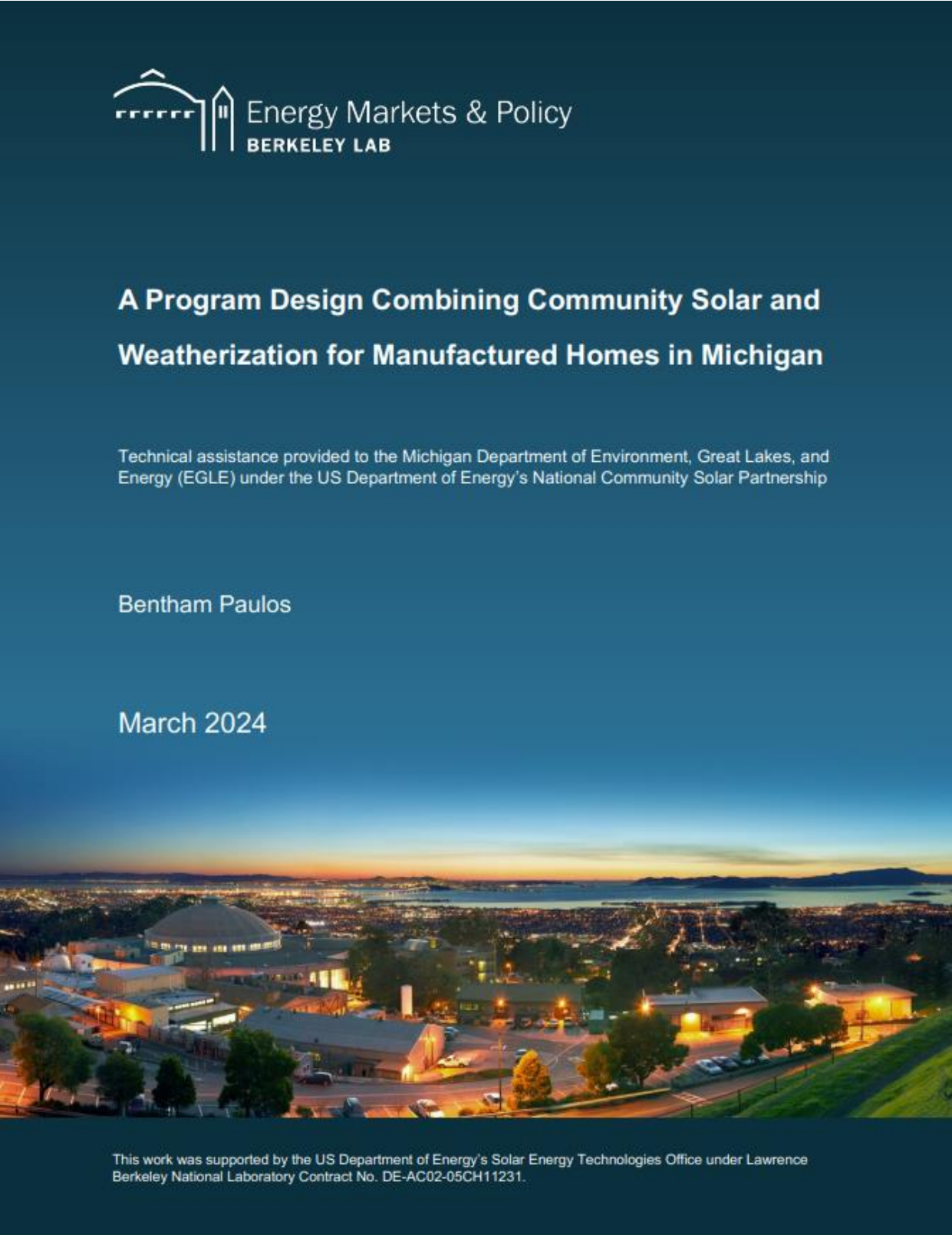




A Program Design Combining Community Solar and Weatherization for Manufactured Homes in Michigan

March 2024

Bentham Paulos / Berkeley Lab



National Community Solar Partnership (NCSP)

Pathway to Success

TECHNICAL
EXPERTISE
AND CAPACITY
BUILDING



STATE
ENGAGEMENT



ACCESS
TO CAPITAL



CUSTOMER
ENGAGEMENT



HEARTS
AND MINDS



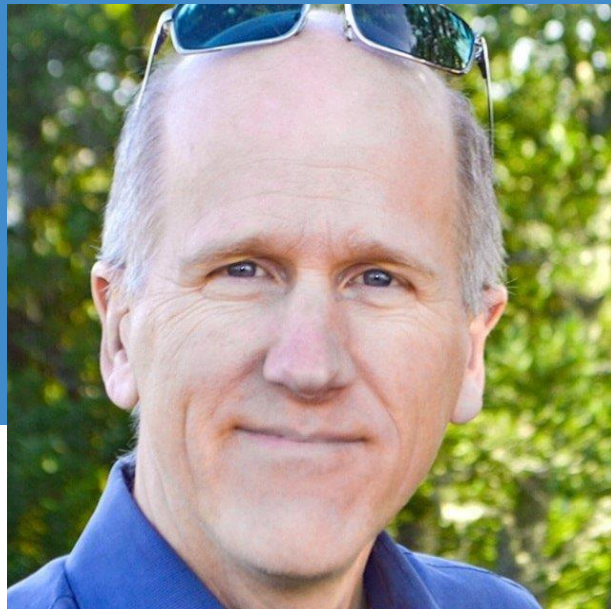
**NCSP
TARGET**

5 million households
and \$1 billion
in savings

Resulting in...

- ★ An average 20% energy bill reduction
- ★ 700% increase in community solar capacity
- ★ Meaningful benefits such as resilience, career opportunities, and community wealth building

Webinar Speakers



Ben Paulos
Berkeley Lab



Jeannie Oliver
New Hampshire
Community Loan Fund



Matt Ohloff
Clean Energy States
Alliance



A Program Design Combining Community Solar and Weatherization for Manufactured Homes in Michigan

Bentham Paulos

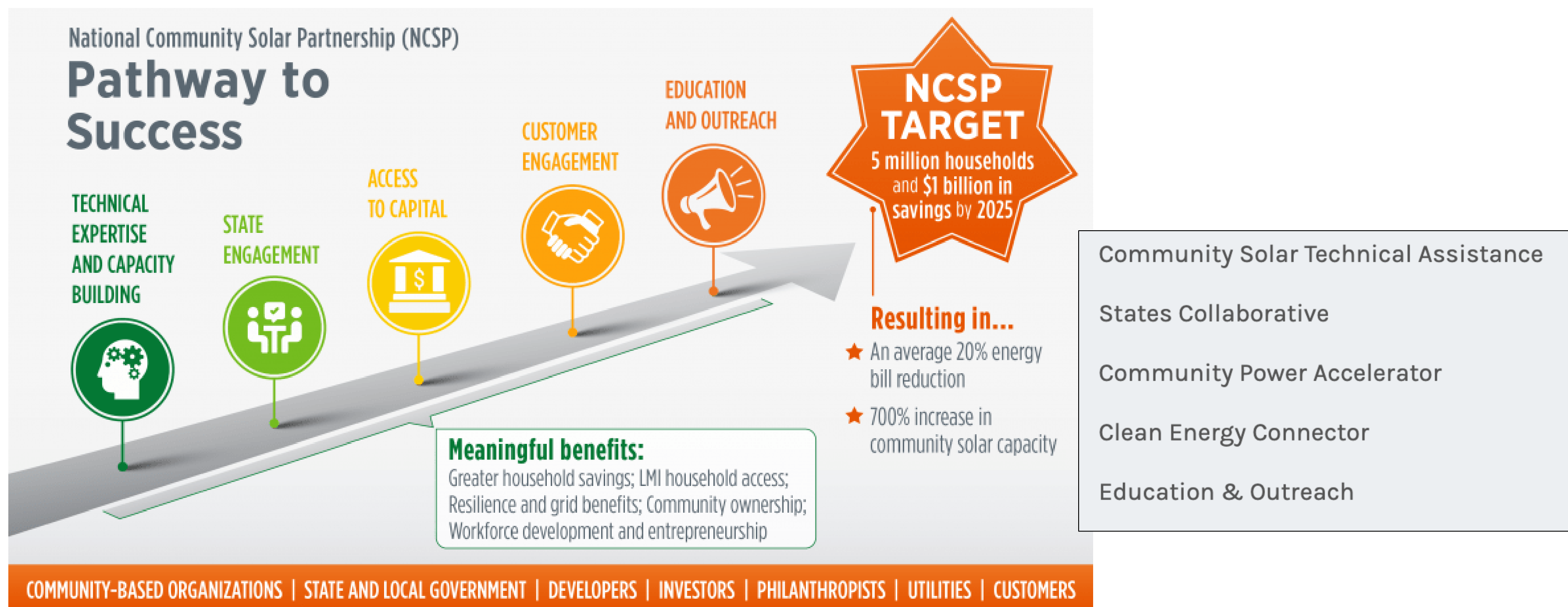
Prepared for the Michigan Department of Environment, Great Lakes, and Energy
Under the DOE National Community Solar Partnership (NCSP)

September 2024

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National Community Solar Partnership +



www.energy.gov/communitysolar



Community Solar and Energy Assistance in Michigan

- Request from EGLE to combine community solar + manufactured homes (MH)
- Manufactured (mobile) homes are “naturally occurring” affordable housing
- Almost 250k MHs in Michigan, many in large manufactured home communities (MHCs)
- Incomes of MH residents are just over **one-third** that of residents of single family detached homes.



Michigan CELICA projects



Phase I – Co-op Utility

- Partners: Energy Services, formerly under the Michigan Energy Office (MEO), Michigan Department of Health and Human Services (DHHS), Local Electric Utility, & Local Community Action Agency (CAA)
- Subscribers: 50 households. Previously weatherized, income-qualified (at or below 200% FPL) households, within electric utility territory
- Each household received the credits for the energy produced by 9 solar panels



Phase II – Municipal Utility

- Partners: Energy Services, Michigan DHHS, Village of L'Anse , & Baraga Houghton Keweenaw Community Action Agency (BHK)
- Subscribers: 25 households. Previously weatherized, income-qualified (at or below 200% FPL) households
- The panels are paid for by contributions from Energy Services and a subscriber on-bill fee of \$.90/panel/month



Phase III – Investor-Owned Utility

- Partners: Energy Services, Michigan DHHS, Capital Area Community Services, & Consumers Energy Company (CEC)
- Subscribers: 50 households. Newly weatherized, Gas and Electric CEC customers, income-qualified (at or below 200% FPL) households
- Partners signed the agreement in 2021, households will be enrolled in the Solar Gardens program

Three projects

IOU, muni, co-op
+ CAPs

125 households



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

CELICA Results

- 10% drop in late payments, less stress, more comfort
- Integrated with Weatherization program
- Better understanding of participants through surveys
- Created an income verification method
- Analysis by University of Michigan
- Proved a replicable model, guidebook for other communities



Program Design Combines Three Elements

Community Solar

+

Electrification of
Manufactured Homes

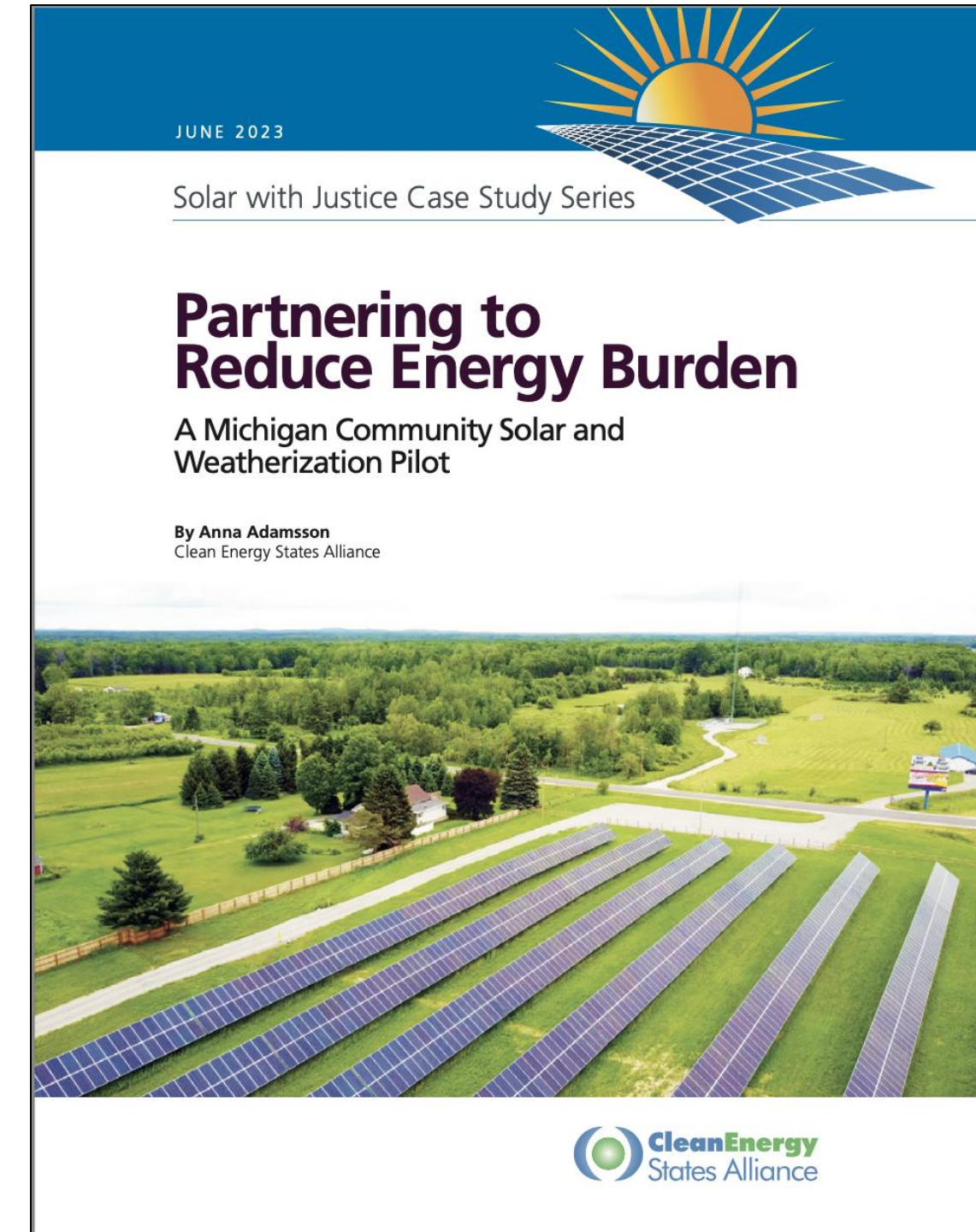
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Managing Solar Bill Credits to
Reduce Winter Heating Bills



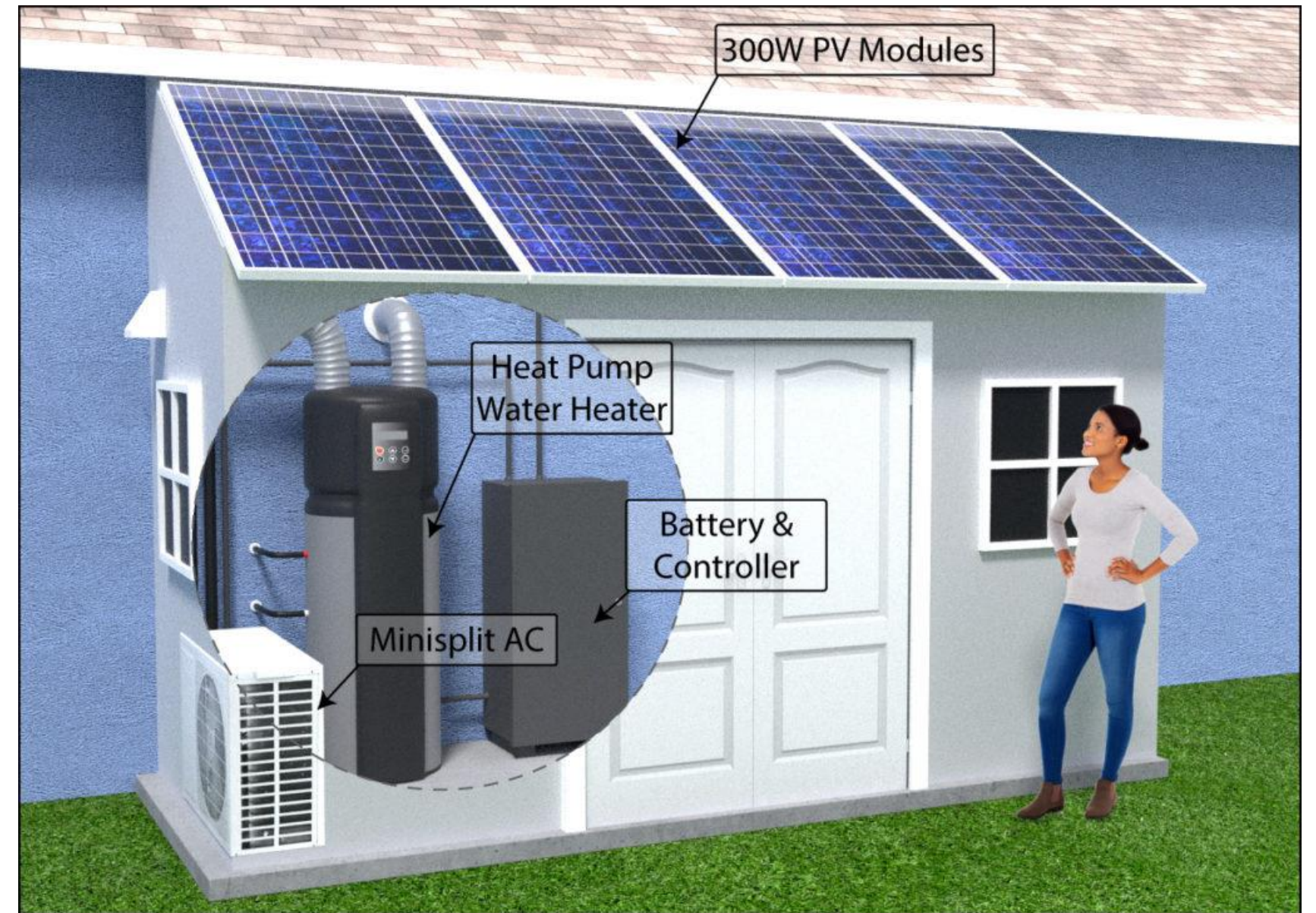
1. Community Solar

- EGLE did three pilot projects under DOE's Clean Energy for Low- to Moderate- Income Communities Accelerator (CELICA) program
- In line with Michigan focus on environmental justice and MI Solar Access program
- In line with the Five Meaningful Benefits of the DOE National Community Solar Partnership (NCSP) -- delivering savings to low-income households and disadvantaged communities
- In line with EPA Solar For All program



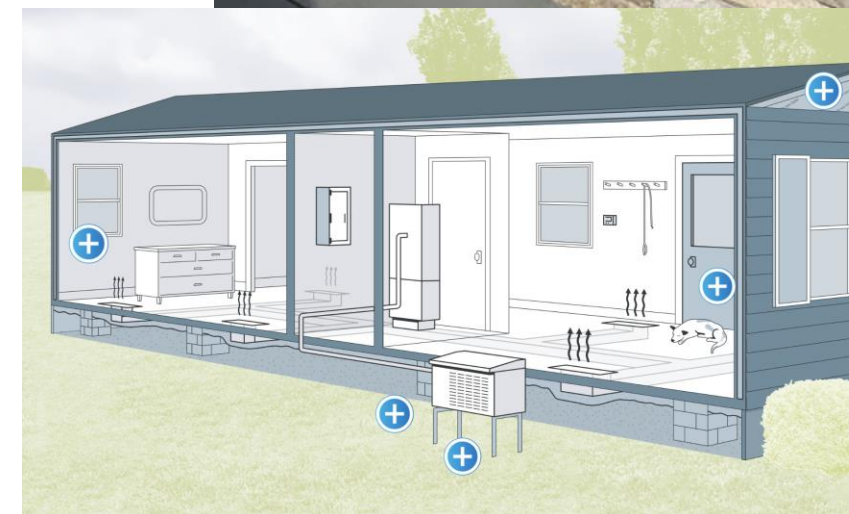
2. Electrification of Manufactured Homes

- Make the most of the solar electricity
- Focus on air-source mini-split heat pump to address winter heating bills and get around difficulties of weatherizing manufactured homes
- Inspired by the PV GEMS program from the Florida Solar Energy Center (FSEC) –



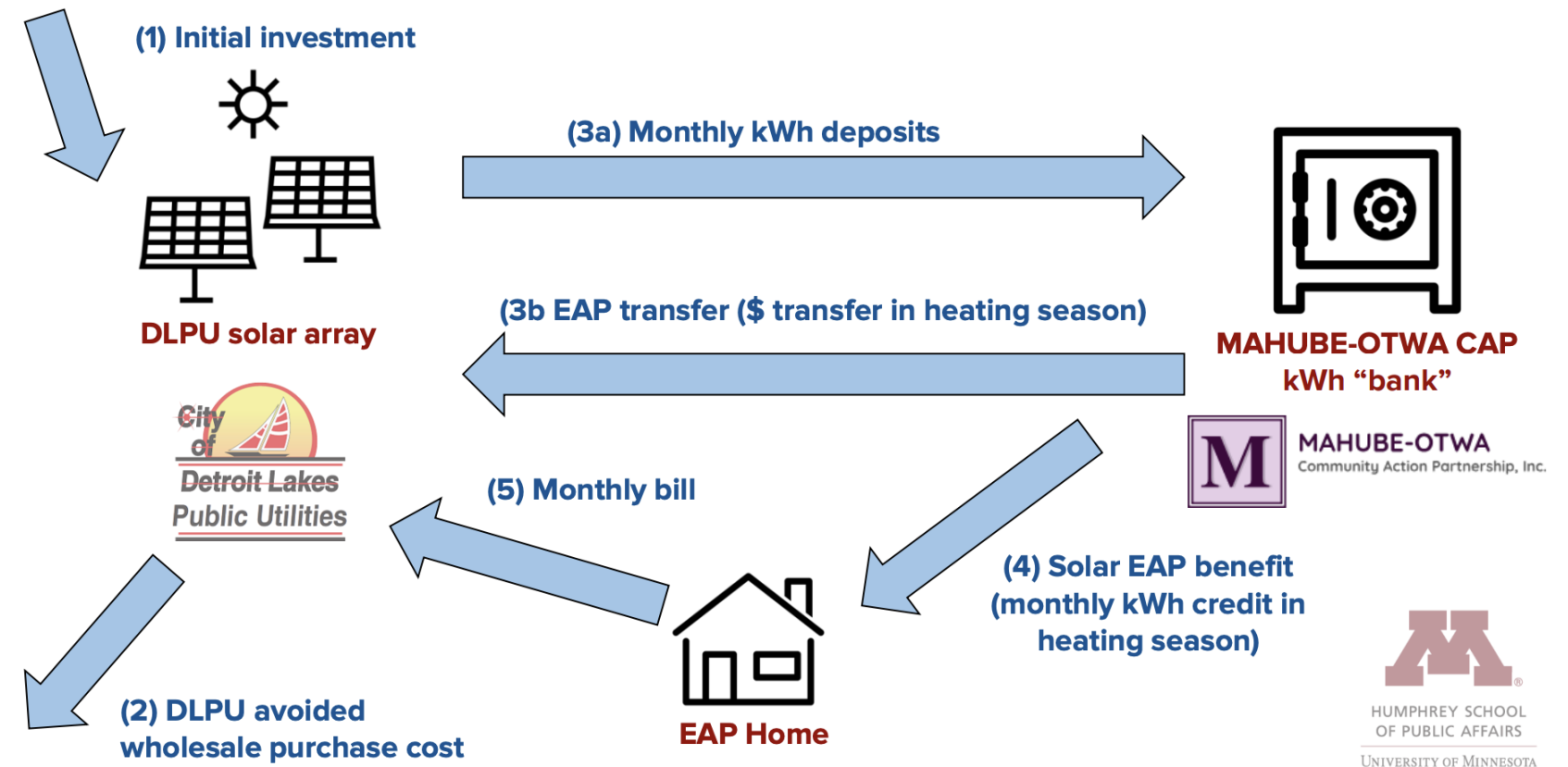
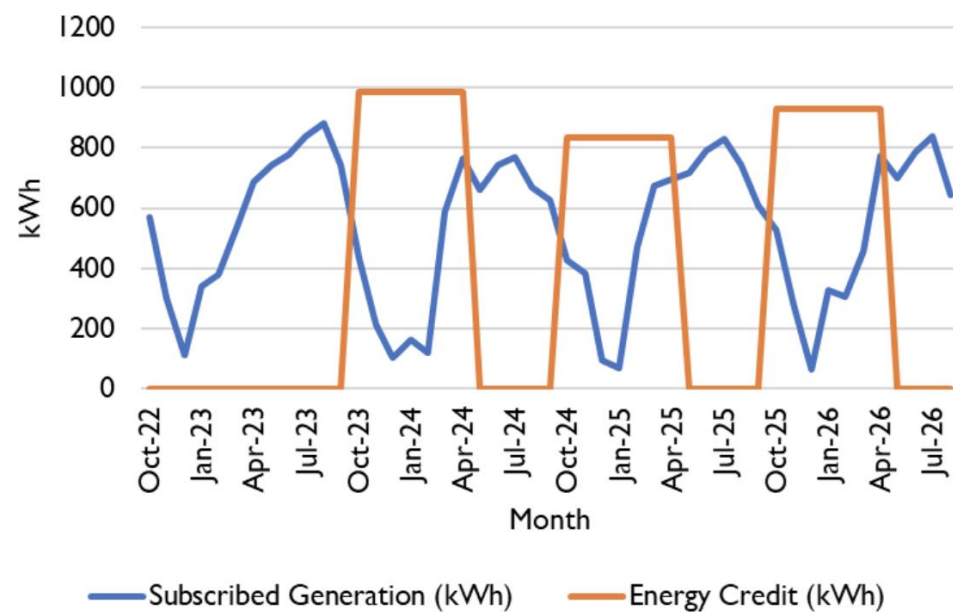
2. Electrification of Manufactured Homes

- ❑ Older homes especially can have thin 2x2 walls that don't allow for insulation, limited space for ductwork, and roof structures that don't support rooftop solar installations
- ❑ Air-source heat pump can be high efficiency replacement for electric resistance, propane, or heating oil systems. Plus more efficient than old air conditioners.
- ❑ **Question:** will ASHP keep up with Michigan winters? Keep old system in place as backup?



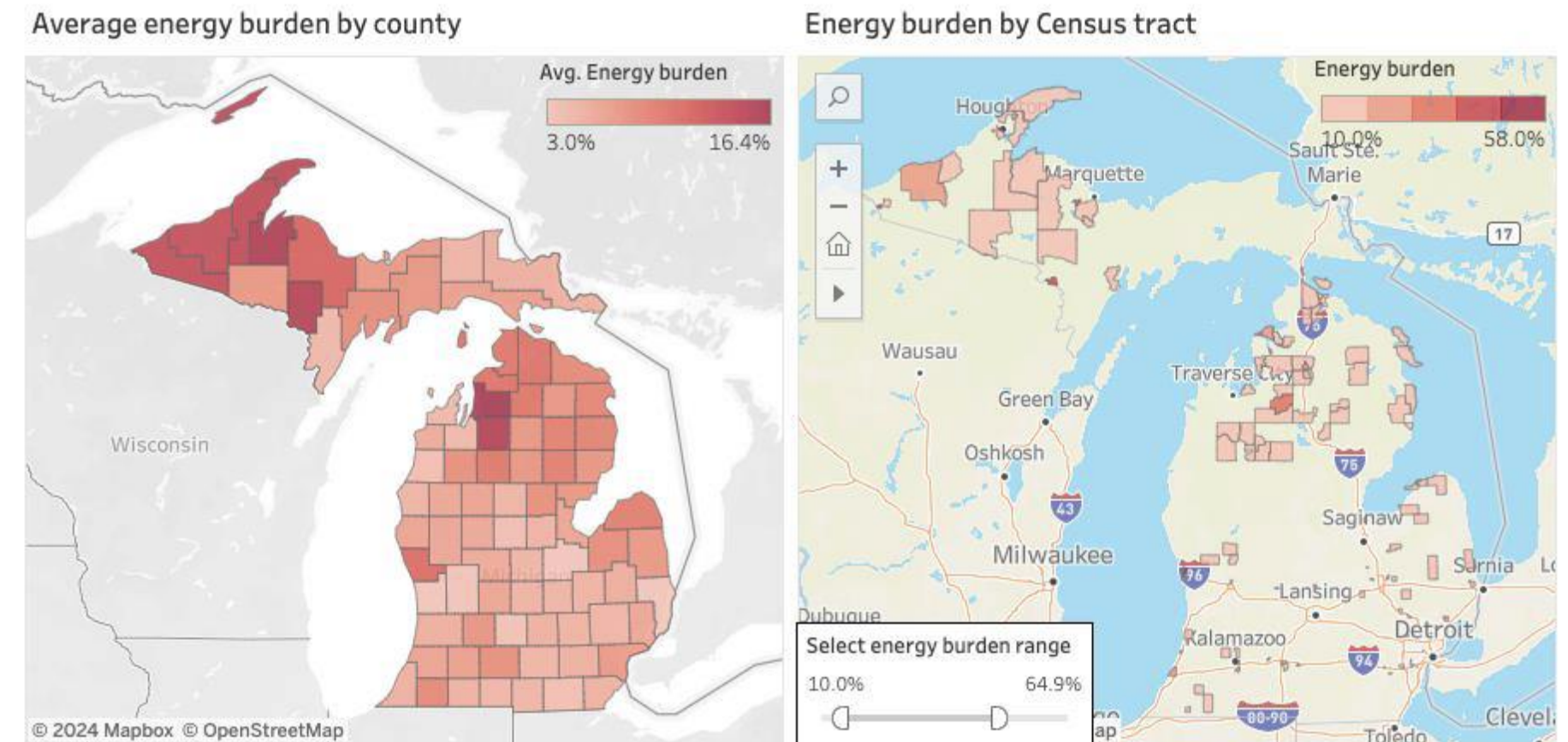
3. Managing Solar Bill Credits to Reduce Winter Heating Bills

- Inspired by pilot project from the MAHUBE-OTWA Community Action Partnership in Minnesota
- Winter heating bills were the biggest problem, but not aligned with summer solar output
- **Solution:** bank solar credits and deliver them in winter bill season



Selecting High Value Participants

- Prioritize homes with electric resistance, propane, and heating oil (not natural gas)
- Prioritize households with high energy burdens, frequent arrearages, other factors
- Prioritize disadvantaged communities (CEJST) and ITC bonus areas
- **In a hot climate?** – less heating load, more cooling load



Due to limited data on manufactured homes, a number of Census tracts have no or incomplete data and are not shown. Source: LEAD Tool.



\$\$\$ Leveraging Options

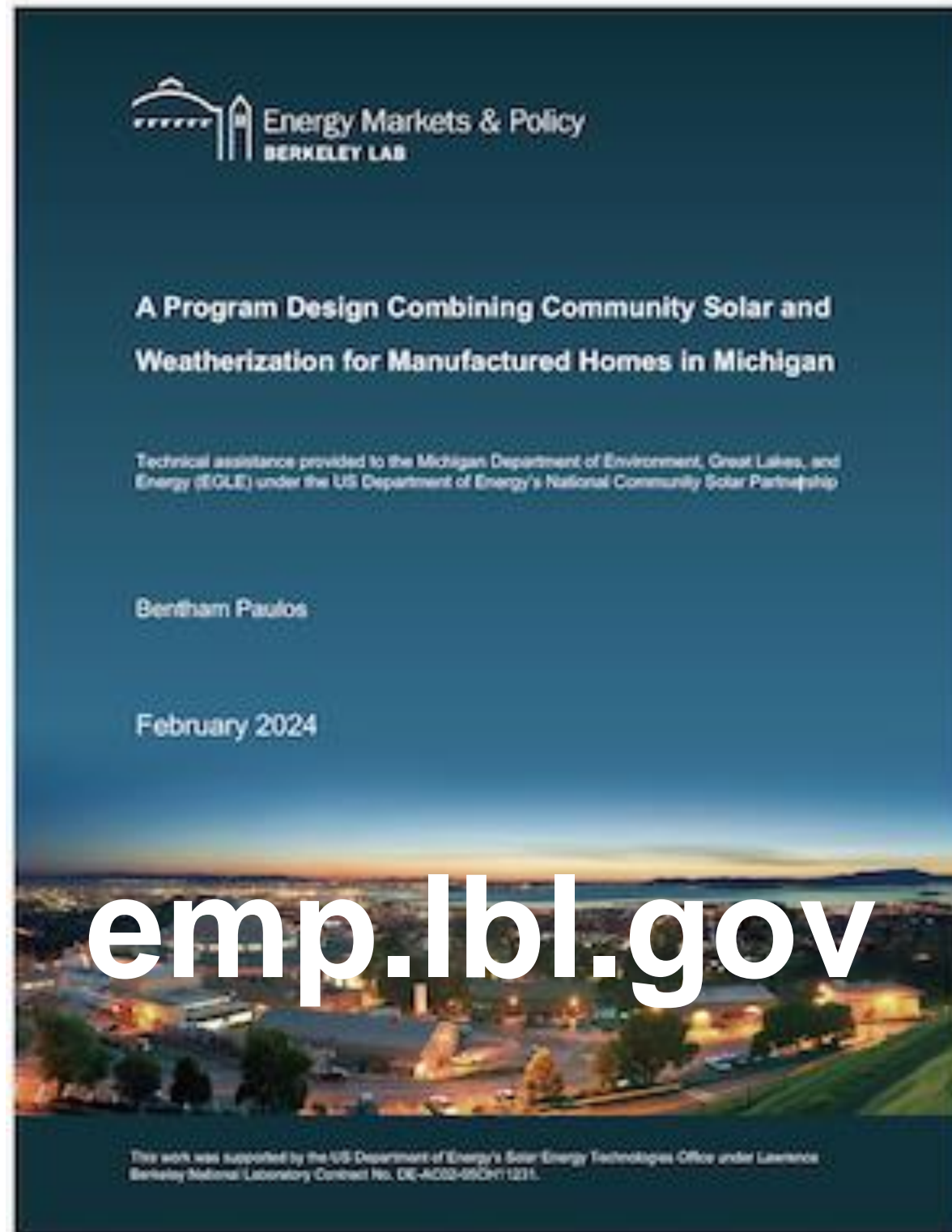
Community solar

- ITC plus bonuses (30% +)
- Direct Pay options for non-taxable organizations
- EPA Solar For All programs
- State green banks under the federal Greenhouse Gas Reduction Fund
- USDA Rural Energy for America Program (REAP)

HVAC heat pump

- Federal tax credits
- State green banks
- Federal Home Energy Rebate programs
- State Housing and Community Development Funds
- WAP Sustainable Energy for Consumers (SERC) Awards
- HUD's Preservation and Reinvestment Initiative for Community Enhancement (PRICE) program





Contacts

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For more information

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Acknowledgements

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New Hampshire
COMMUNITY
LOAN FUND

Community Solar Projects in NH's Resident Owned Manufactured Housing Communities (ROCs)

September 18, 2024

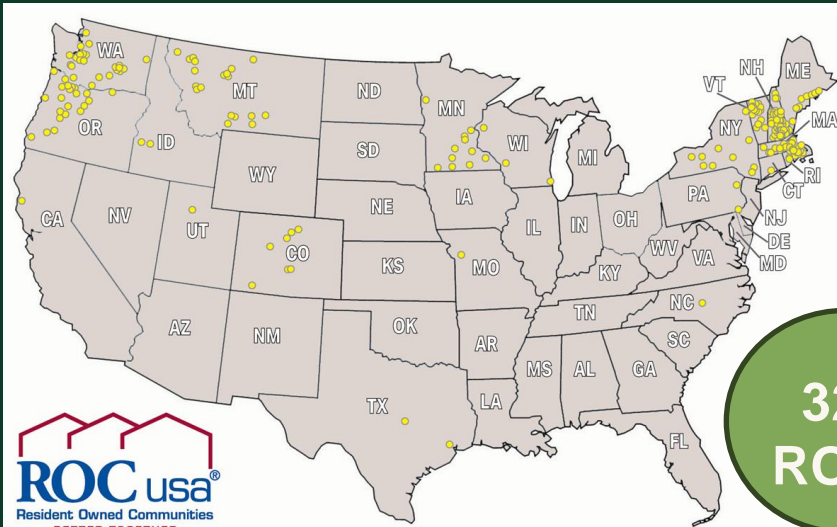
Jeannie Oliver, Vice President of ROC-NH and Energy Solutions

NH Community Loan Fund: Opportunity for All

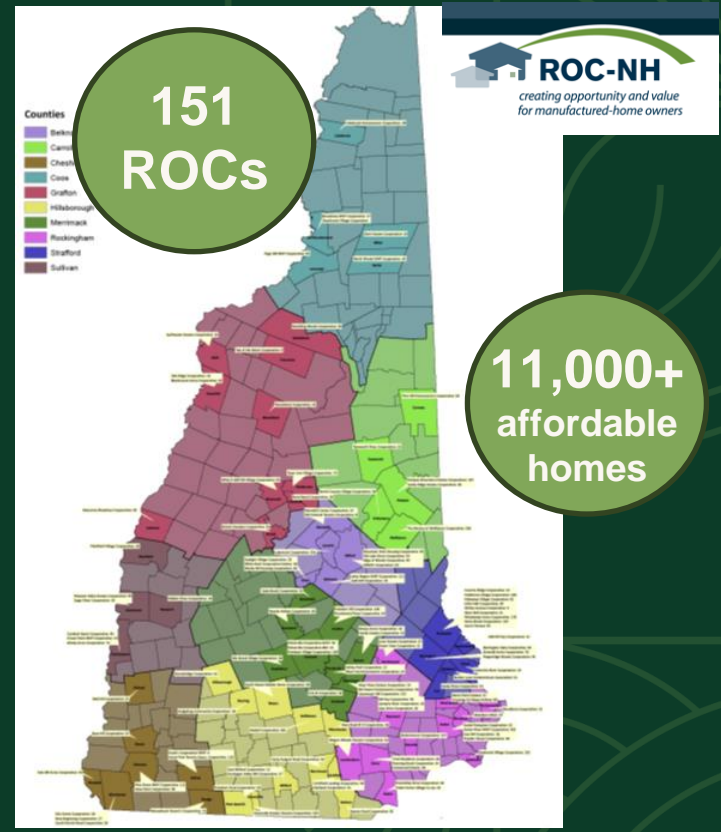
- The NH Community Loan Fund is a Community Development Financial Institution (**CDFI**).
- A non-profit lender with a 40+ year history of providing **mission-based lending** and **technical assistance** to individuals and organizations to create opportunity and economic stability.



Resident Owned Communities (ROCs)



329
ROCs



ROC Community Solar Projects Mitigate Households' Energy Burden

- ❑ Multiple ROC households sharing the benefits of a single solar array
- ❑ Enabled through state group net metering program
- ❑ Supported by state low-moderate income community solar programs and NH's Renewable Energy Fund
- ❑ Community support, technical Assistance, collaboration, and partnerships are key to success



ROC Community Solar Projects

3 Complete

PROVIDING CLEAN ENERGY TO NEARLY
100 LMI HOUSEHOLDS

\$11 Million

SOLAR FOR ALL FUNDING DEDICATED TO
ROC COMMUNITY SOLAR PROJECTS IN
NH. EXPECT 10-20 NEW PROJECTS

4 In Progress

IN VARIOUS STAGES OF DEVELOPMENT TO
SERVE 100+ ADDITIONAL HOUSEHOLDS

\$28–\$55

AVERAGE MONTHLY SAVING PER
HOUSEHOLD FROM SOLAR PROJECT

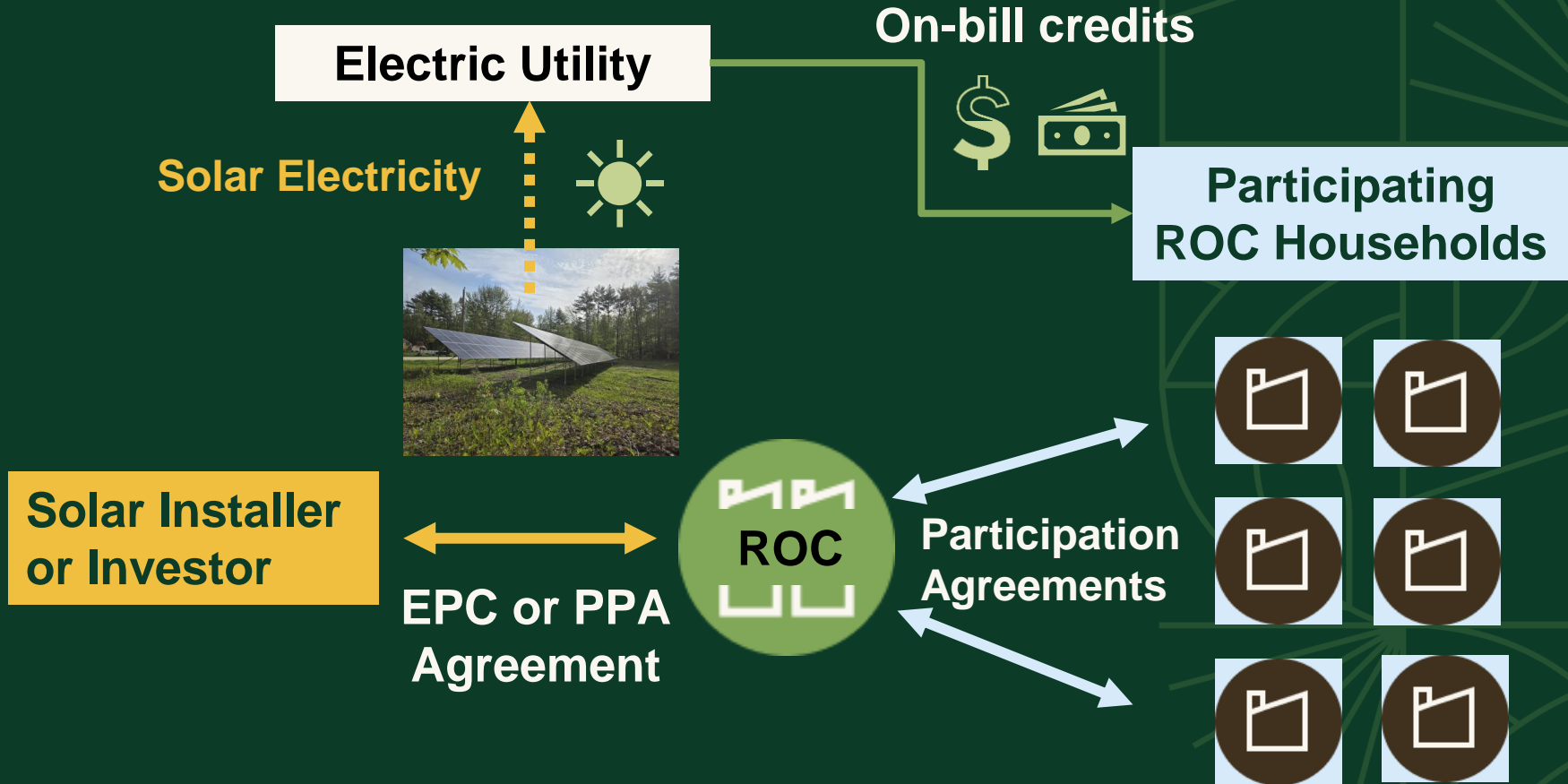
ROC Community Solar Models

Community Owned

Solar array is owned by the ROC. Participants receive all the financial and environmental benefits from the solar array. ROC is responsible for cost of operating and maintaining the solar array. Challenge: ROCs cannot leverage ITC.

Investor Owned/PPA

Solar array is owned and operated by an investor. The ROC makes periodic payments to project owner (PPA payment). Participants receive a pre-negotiated percentage of the benefits from the solar array; the investor receives the rest. Typically provides an opportunity to purchase the solar array in the future.



Mascoma Meadows, Lebanon NH

- 100 kW AC; 45 participating households
- Partially grant funded by the NH Renewable Energy Fund
- PPA Model
- Land donated by neighboring church
- Production = approximately 73% of households' electricity use
- \$20/month lot rent reduction with annual “true up” – average \$28/month savings



White Rock, Tilton NH

- 66 kW AC; 25 participating households
- Fully grant funded by the NH Renewable Energy Fund
- ROC owned project
- Production = approximately 73% of households' electricity use
- Mix of Lot-Rent Credit and On-bill credits (25%), leveraging LMI Adder
- \$206 on-bill credit/household/year; \$11,000 offset lot rent increases



Pine Hill, North Conway NH

- 50 kW AC; 15 participating households
- Fully grant funded by the NH Renewable Energy Fund
- ROC owned project
- Production = approximately 80% of households' electricity use
- 100% On-bill credits, leveraging LMI Adder
- Expected savings: \$380/household/year; \$31/month with full participation (25 households)



ROC Community Solar Projects in Progress

Aberdeen West, Stratham NH

- 62 kW AC; 23 households
- Fully grant funded by the NH Renewable Energy Fund; ROC owned
- 75% of financial benefits go to LMI households

Pine Gate, Plymouth NH

- 100 kW AC; 32 households
- Fully grant funded by the NH Renewable Energy Fund; ROC owned
- 75% of financial benefits go to LMI households

Rambling Woods, Bethlehem NH

- 100 kW AC; 23 households
- Partially grant funded by the NH Renewable Energy Fund; ROC owned
- At least 50% of financial benefits must go to LMI households

North Woods, Berlin NH

- 100 kW AC; 45 households
- ROC owned
- Combined with Weatherization and Beneficial Electrification
- Funded by BIL WAP E&I Grant

North Woods MHP, Berlin NH: Weatherization, Electrification, and Community Solar

- Weatherization audits and retrofits by Tri County CAP; installation of cold climate heat pumps by Tri County CAP
- Installation of 100 kW AC community solar array
- Highly coordinated technical assistance team from multiple organizations: Clean Energy NH Circuit Riders; VLGS Energy Clinic; ROC-NH; Tri County CAP
- Collection of data and impact stories to inspire future comprehensive ROC sustainable energy projects



Conclusion

1. The ROC model lends itself to leveraging solar opportunities for low-income households
2. Community solar projects, and other sustainable energy and infrastructure projects, help stabilize affordable housing communities and improve quality of life
3. State and Federal funding and programs are helping to scale up low-moderate income renewable energy, energy efficiency, and weatherization efforts along with other critical infrastructure projects
4. Technical assistance, collaborations, and partnerships are key to successfully implementing ROC sustainable energy projects

Thank You

Jeannie Oliver

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New Hampshire
COMMUNITY
LOAN FUND