



Principles and Policies for Low and Moderate Income Solar

Course overview: This four-hour course will cover the basics of low and moderate income (LMI) solar policy and principles. It will cover financing strategies, direct incentives, consumer education, community engagement, solar+storage, and community solar, and will include case studies of successful programs. The material will be presented in two two-hour webinars, with each two-hour webinar divided into four 30-minute segments. Recommended readings for each segment will help participants gain a fuller understanding of the topics. Presenters will be available for questions and discussion during virtual “office hours” after the webinars. The course is coordinated by the Clean Energy States Alliance (CESA). This content is being provided to assist teams participating in the Solar in Your Community Challenge, a prize program sponsored by the U.S. Department of Energy SunShot Initiative. The content is free for general public use.

Learning objectives:

Participants will:

1. Understand the barriers that have prevented LMI people and communities from accessing the benefits of solar.
2. Understand the most promising approaches to overcoming these barriers.
3. Be familiar with a range of current and recent LMI solar programs and projects.
4. Understand a range of ways that programs and projects can be designed to serve different needs or different segments of the LMI community.

Course Coordinator’s Contact:

Diana Chace
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Office Hours

For Solar in Your Community teams that have questions about the presentations or would like to discuss the subjects covered in the webinars with the speakers, office hours are available by appointment.

Contact Diana Chace at diana@cleanegroup.org.

Course Presenters

- Diana Chace, Clean Energy States Alliance
- Nate Hausman, Clean Energy States Alliance
- Warren Leon, Clean Energy States Alliance
- Todd Olinsky-Paul, Clean Energy States Alliance
- Ben Paulos, Paulos Analysis
- Melanie Santiago-Mosher, Vote Solar

Detailed Topics Outline:

Session 1 – Friday, October 6

1. LMI solar: opportunities and challenges – *Warren Leon*
 - A. Learning objectives:
 - i. To understand the importance of using solar to benefit LMI residents and communities.
 - ii. To understand the potential for solar to benefit LMI residents and LMI communities.
 - iii. To understand the challenges that can make solar adoption by LMI residents and LMI communities difficult.
 - B. Core reading
 - i. Groundswell: [From Power to Empowerment: Plugging Low-Income Communities into the Clean Energy Economy](#)
 - C. Additional reading
 - i. California Public Utility Commission: [Barriers to Low-Income Energy Efficiency and Renewables](#)
2. Case studies of LMI solar programs – *Nate Hausman*
 - A. Learning objectives
 - i. To be familiar with several examples of LMI solar programs.

- ii. To learn about different program scales, funding sources, types of stakeholders, and other variables for LMI solar programs.

B. Core readings

- i. California's SASH Program
(<http://www.gosolarcalifornia.ca.gov/affordable/sash.php>)
- ii. Buffalo's Fruit Belt Neighborhood Solar Demonstration
(<https://bnmc.org/app/uploads/2016/04/Executive-Summary-Neighborhood-Solar-Demonstration-Project-1.pdf>)
- iii. Alpine Bank Community Solar
(<https://www.greentechmedia.com/articles/read/community-banks-and-community-solar-to-serve-the-low-moderate-income-commun>)

3. Financing options for LMI solar – *Ben Paulos*

A. Learning objectives

- i. To understand the difficulties in financing LMI solar projects.
- ii. To be familiar with some solutions that have been implemented or proposed for financing low-income solar.

B. Core reading

- i. Pages 38-48 of CESA: [Bringing the Benefits of Solar Energy to Low-Income Consumers](#)

C. Additional reading

- i. CESA: [Publicly Supported Solar Loan Programs: A Guide for States and Municipalities](#)
- ii. Rocky Mountain Institute: [Breaking Ground: New Models that Deliver Energy Solutions to Low-Income Customers](#)

4. Direct incentives that can be used for LMI solar – *Ben Paulos*

A. Learning objectives

- i. To understand what types of direct incentives are available for distributed solar.
- ii. To understand how these incentives do and don't work for LMI customers.

B. Core reading

- i. Pages 33-38 of CESA: [Bringing the Benefits of Solar Energy to Low-Income Consumers](#)

Session 2 – Friday, November 17

5. Presenting solar information to LMI consumers – *Warren Leon*
 - A. Learning objectives
 - i. To understand how well-presented consumer information can increase LMI solar adoption and customer satisfaction.
 - ii. To understand how to present consumer information in the most useful ways.
 - B. Core reading
 - i. CESA: [Solar Information for Consumers: A Guide for States](#)

6. Engaging LMI communities – *Melanie Santiago-Mosher*
 - A. Learning objectives
 - i. To understand the need for community engagement when developing or marketing solar in LMI communities.
 - ii. To understand effective community engagement strategies.
 - B. Core readings
 - i. [Tips for Engaging Diverse and Underserved Communities](#)
 - ii. Pages 1-6 of Center for Social Inclusion: [People Powered Policy: Communities of Color Lead on Climate Change and Solar Energy in Oakland, California](#)
 - iii. [Illinois Solar for All: Creating a Low-Income Solar Program from the Ground up](#)

7. Solar+storage for LMI communities – *Todd Olinsky-Paul*
 - A. Learning objectives
 - i. To understand the opportunities, challenges, and benefits of solar+storage in LMI communities.
 - ii. To be familiar with some examples of solar+storage development in low-income communities.
 - B. Core readings
 - i. McKnight Lane Redevelopment Project (<http://www.cleangroup.org/ceg-projects/resilient-power-project/featured-installations/mcknight-lane/>)
 - ii. Marcus Garvey apartments (<http://www.cleangroup.org/ceg-projects/resilient-power-project/featured-installations/marcus-garvey-apartments/>)

C. Additional readings

- i. CESA: [Solar+Storage for Low- and Moderate-Income Communities: A Guide for States and Municipalities](#)
- ii. Other low-income solar+storage projects (<http://www.cleangroup.org/ceg-projects/resilient-power-project/featured-installations/>)

8. Community solar for LMI consumers – *Diana Chace*

A. Learning objectives

- i. To understand the opportunities and barriers for LMI community solar.
- ii. To be familiar with different approaches to making community solar accessible to LMI consumers.

B. Core reading

- i. Lotus Engineering and Sustainability: [Analysis of the Fulfillment of the Low-Income Carve-Out for Colorado Community Solar Subscriber Organizations](#)

C. Additional reading

- i. CESA: [Consumer Protection for Community Solar: A Guide for States](#)

Other Resources

California Public Utility Commission: [Single-Family Affordable Solar Homes Program](#) and [Multi-Family Affordable Solar Housing Program](#) Semiannual Progress Reports

These progress reports detail the status, successes and remaining challenges for California’s two largest affordable housing solar programs. Single-Family Affordable Solar Homes program is structured to promote and provide energy efficiency, workforce development and green jobs training opportunities, and broad community engagement with solar in low-income communities. The SASH incentive provides low-income families with free or low-cost solar photovoltaic (PV) systems that significantly reduce household energy expenses and allow families to direct those savings toward other basic needs.

Clean Energy States Alliance: [A Directory of State Clean Energy Programs and Policies for Low-Income Residents](#)

This summary document surveys past, current and planned activities of states across the country. It focuses primarily on clean energy generation, but also covers some energy-efficiency and low-income weatherization programs that include new clean energy generation. As low- and moderate-income renewable energy programs have spread over the last couple of years, this directory has revised its focus. Some types of programs that can enable low-income residents to benefit from solar, including

commercial property assessed clean energy (C-PACE) and community solar, have now been implemented in many states. This guide does not attempt to describe every C-PACE or community solar program in the country. Rather, it provides a sample of interesting and innovative programs.

GRID Alternatives: [Low-Income Solar Policy Guide](#)

This policy guide explores various policy tools including compensation mechanisms, direct incentives, and financing that can be combined to create programs that address the unique access issues of low-income residents and communities. Case studies on single-family rooftop solar models, multifamily housing, community solar, and workforce development dive into the specifics of programs in several states.

Interstate Renewable Energy Council: [Shared Renewable Energy for Low- to Moderate-Income Consumers: Policy Guidelines and Model Provisions](#)

This document provides information and tools for policymakers, regulators, utilities, shared renewable energy developers, program administrators and others to support the adoption and implementation of shared renewables programs specifically designed to provide tangible benefits to LMI individuals and households. It also serves as IREC's recommendations for state, local and utility programs that aim to provide more equitable access to shared renewable energy to more customers.

National Renewable Energy Laboratory: [Low-Moderate-Income Solar Policy Basics](#)

This document outlines the background, implementation issues and best design practices for implementing distributed solar resources to reach low-moderate income consumers. It also covers potential financing mechanisms, funding sources, while also looking to the future of challenges and next steps.

US Housing & Urban Development: [Increasing Renewable Energy for Low-Income Families](#)

This document provides an overview of HUD's Renew300 initiative, outlines strategies, provides additional resources, and highlights best practices through case studies. By allowing community and shared solar, interested building owners and residents can now participate towards this goal, regardless of whether their properties are suited for on-site renewable energy generation systems.

CESA WEBINARS

[Low-Income Solar, Part 1: Lessons Learned from Low-Income Energy Efficiency Programs](#)

In this webinar, Lawrence Berkeley National Laboratory researcher Ian Hoffman discussed the lessons learned from low-income energy efficiency programs, and how they can be applied to low-income solar programs. Topics covered include how programs can be tailored to different segments of the low-income population, such as multifamily vs. single-family housing, as well as what obstacles have been encountered and what new solutions are proposed.

[Low-Income Solar, Part 2: Using the Tools of Low-Income Energy Efficiency Financing](#)

In this webinar, Lawrence Berkeley National Laboratory researcher Greg Leventis reviewed low-income energy efficiency financing products and discussed how different financing products can address different barriers to low-income energy improvements.

[Crowd-Financing Solar for Nonprofits Serving Low-Income Communities](#)

In this webinar, Andreas Karelis, the Executive Director of RE-volv, and Todd Bluechel, the Vice President of Marketing and Sales at CollectiveSun, presented two models that rely on crowd-funding to enable nonprofits to adopt solar. Karelis discussed RE-volv's model, which allows for crowd-sourced donations. Bluechel discussed "CrowdLending," one of CollectiveSun's financing options that facilitates loans to fund solar projects after tax credits have been applied.

[Community Solar for Low- and Moderate-Income Consumers](#)

In this webinar, guest speakers from Solstice and from Alpine Bank presented two financially sustainable models for making community solar more available to LMI consumers. Kelly Roache from Solstice discussed their efforts to develop new underwriting practices that might help moderate-income customers qualify for community solar, while keeping risk low for the large investors who provide the initial funding. David Miller and Noel Hansen from Alpine Bank discussed a project in which the bank bought shares in a community solar project and donated them to a community organization, which in turn allotted the monthly bill credits to low-income households.

[Utility-Driven Solar Projects for Low-Income Customers](#)

This webinar features two utility pilot projects that are installing solar panels on rooftops in low-income neighborhoods. Paul Tyno of Buffalo Niagara Medical Campus in Buffalo, New York presented on National Grid's Fruit Belt Neighborhood Solar Partnership, a project which is installing 500kW of rooftop solar in the Fruit Belt neighborhood of Buffalo. David Castro of the Los Angeles Department of Water and Power (LADWP) in California discussed LADWP's Solar Rooftops Program, which is installing up to 1MW of residential rooftop solar in Los Angeles, focusing on neighborhoods that have had low penetration of distributed solar.