



Community-Based Solar Lending: Bringing Clean Energy to Low-Income Communities

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Carsey School of Public Policy

Carsey's Academic Programs

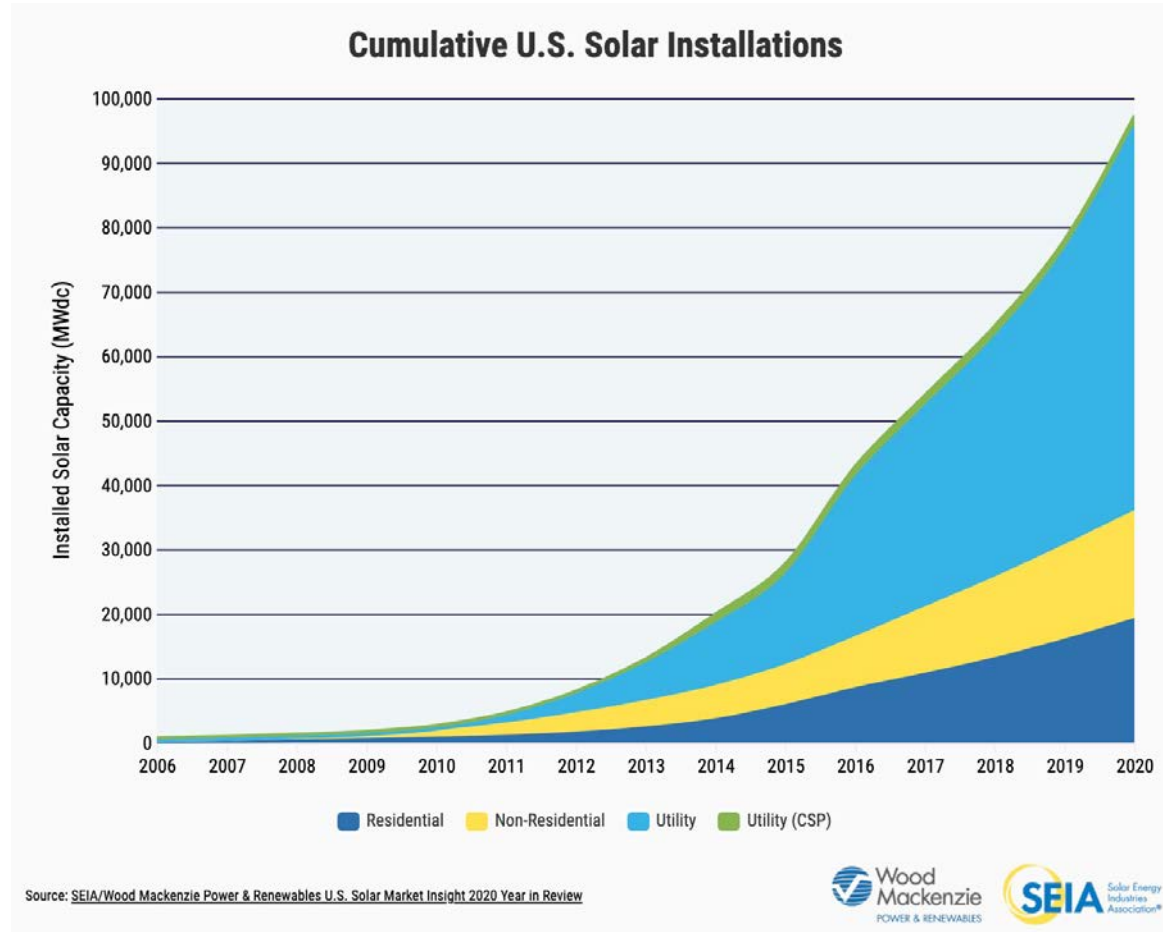


Public Service Master's Degree Programs:

- Master in Community Development (MCD)
- Master of Public Administration (MPA)
- Master in Public Policy (MPP)



The solar industry is taking off...



...but not all solar projects are alike

- Is the energy **resilient**?
- Is it **affordable**?
- Who gets to **build wealth** from it?
- Who owns it? Can you **trust** them?
- Does it create **quality job** opportunities for low-income workers?



How I got into solar





Barrio San Salvador - Caguas, Puerto Rico





- **San Salvador Community:**
 - Rural, mountainous terrain
 - Population 3,000
 - Poverty Rate 34%
 - Median household income \$23,000
 - Unemployment in Caguas: 13%

Maria's path through Puerto Rico



Track and position as of 5 p.m. AST Wednesday

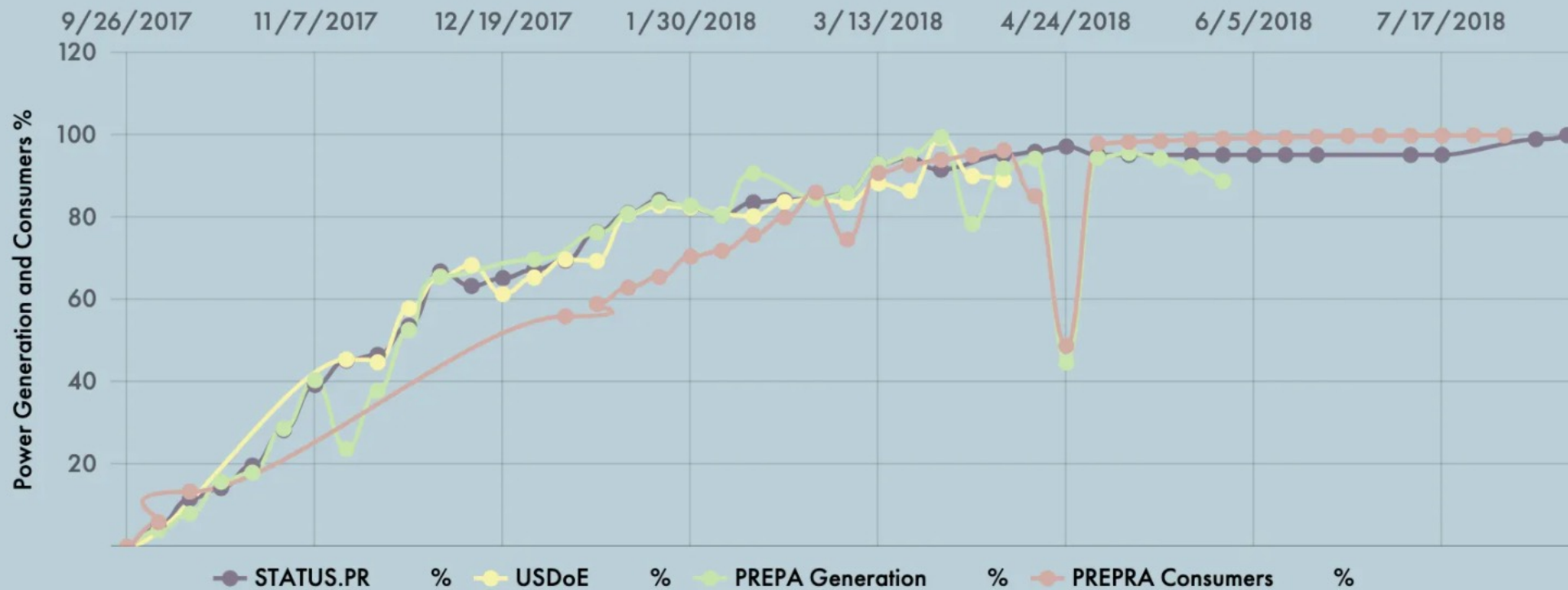
Sources: Mapzen, OpenStreetMap, NOAA

Angelica Quintero / @latimesgraphics



Power Outages lasted 3 – 10 months

Post-María Power Restoration



Source: Resilient Power Puerto Rico, Rocky Mountain Institute



Puerto Rico Electricity Sector Context

- Public utility – Puerto Rico Electric Power Authority (PREPA)
- Filed for bankruptcy in 2017, \$9 billion in debt
- Long-standing corruption and management issues
- Power plants are old (44 years old, vs. industry average of 18) and poorly located
- 96% of generation is from fossil fuels
- Electricity rates roughly twice the US average (\$0.24 versus \$0.13/ kWh)
- Electricity generation, transmission and distribution are now being privatized







Emergency Solar Kit Components



Early Strategies in San Salvador

- Pilot rooftop installation and training for local electricians
- Community center solar + storage



Marketing a consumer solar loan



Cooperativa Jesús Obrero:

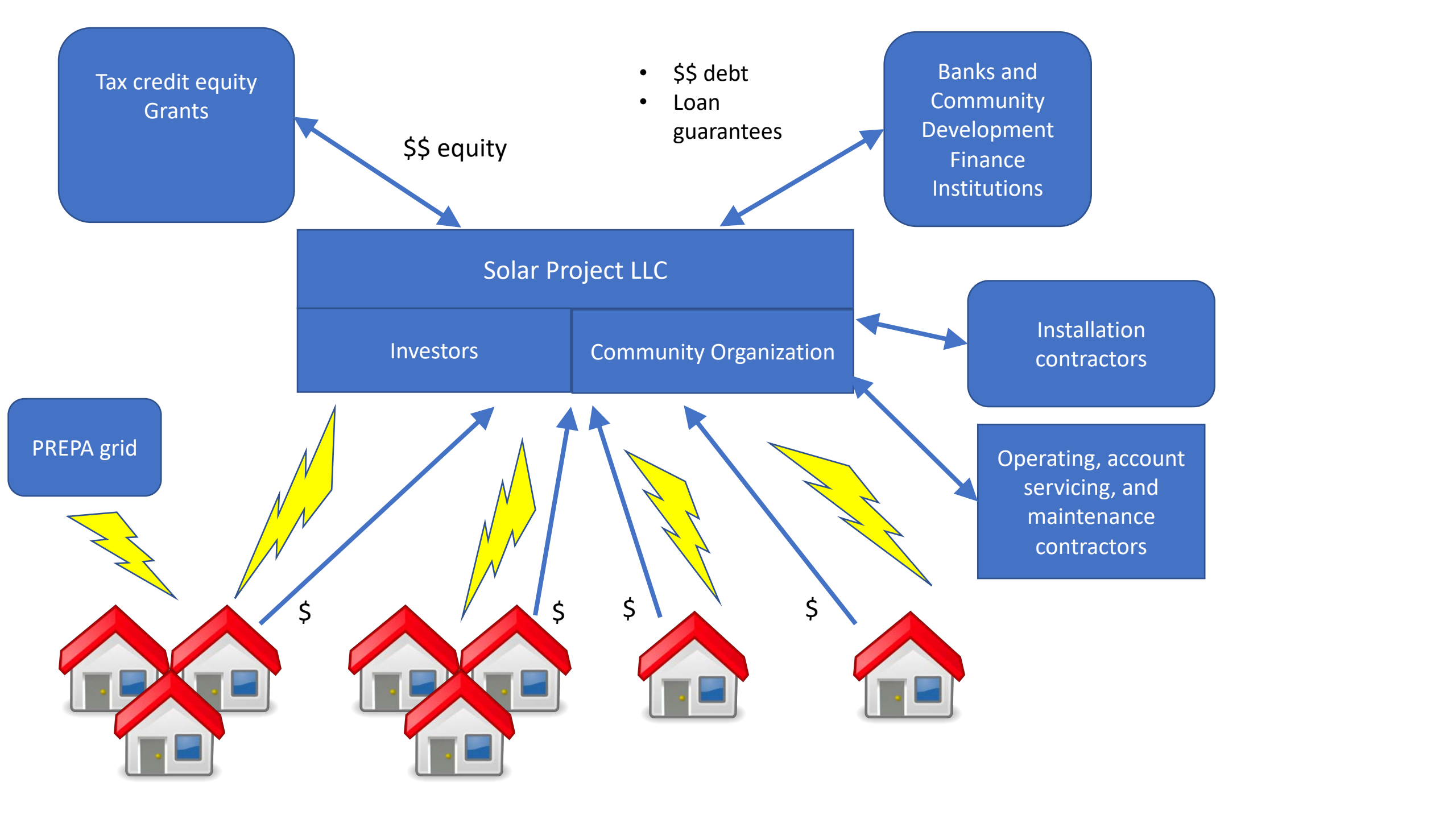
- Low-Income Credit Union
- Community Development Finance Institution
- Offers an unsecured consumer loan for solar panels + battery storage
- Term of 8 years, interest rate 5-6% at the time
- Has had very strong credit performance



Limitations of the consumer loan approach

- Uptake in San Salvador was low because of affordability challenges
- Loan term is shorter than the asset life
- Batteries are expensive
- Federal tax credits subsidize 26% of project cost, but aren't available if:
 - You are low-income and therefore don't have a federal tax burden
 - You live in Puerto Rico
- No state subsidies or Renewable Energy Credits available; net metering is at wholesale rates
- Rooftop solar isn't feasible if your roof is shaded or you don't own your roof
- 2 Years after Hurricane Maria, fewer than 20,000 Puerto Ricans have access to solar & storage

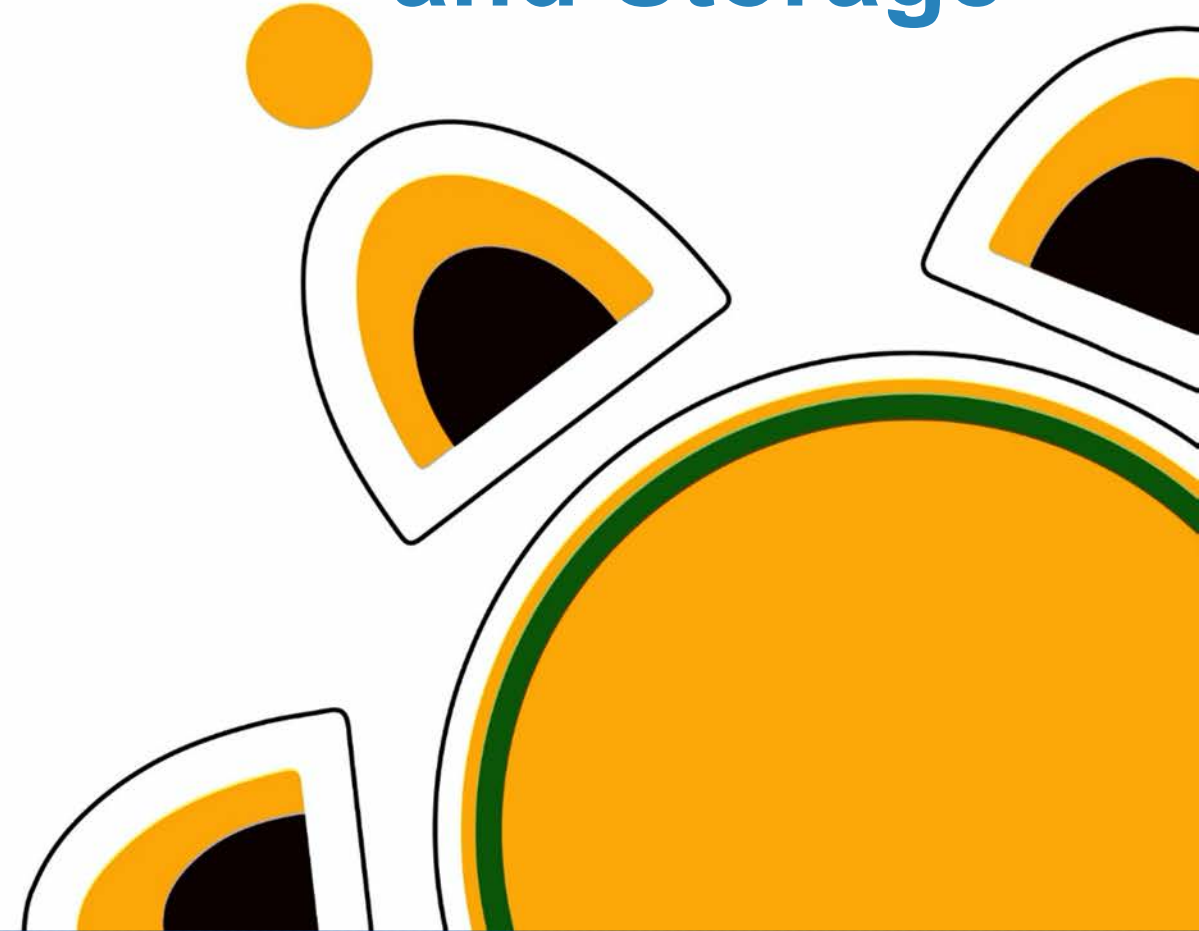




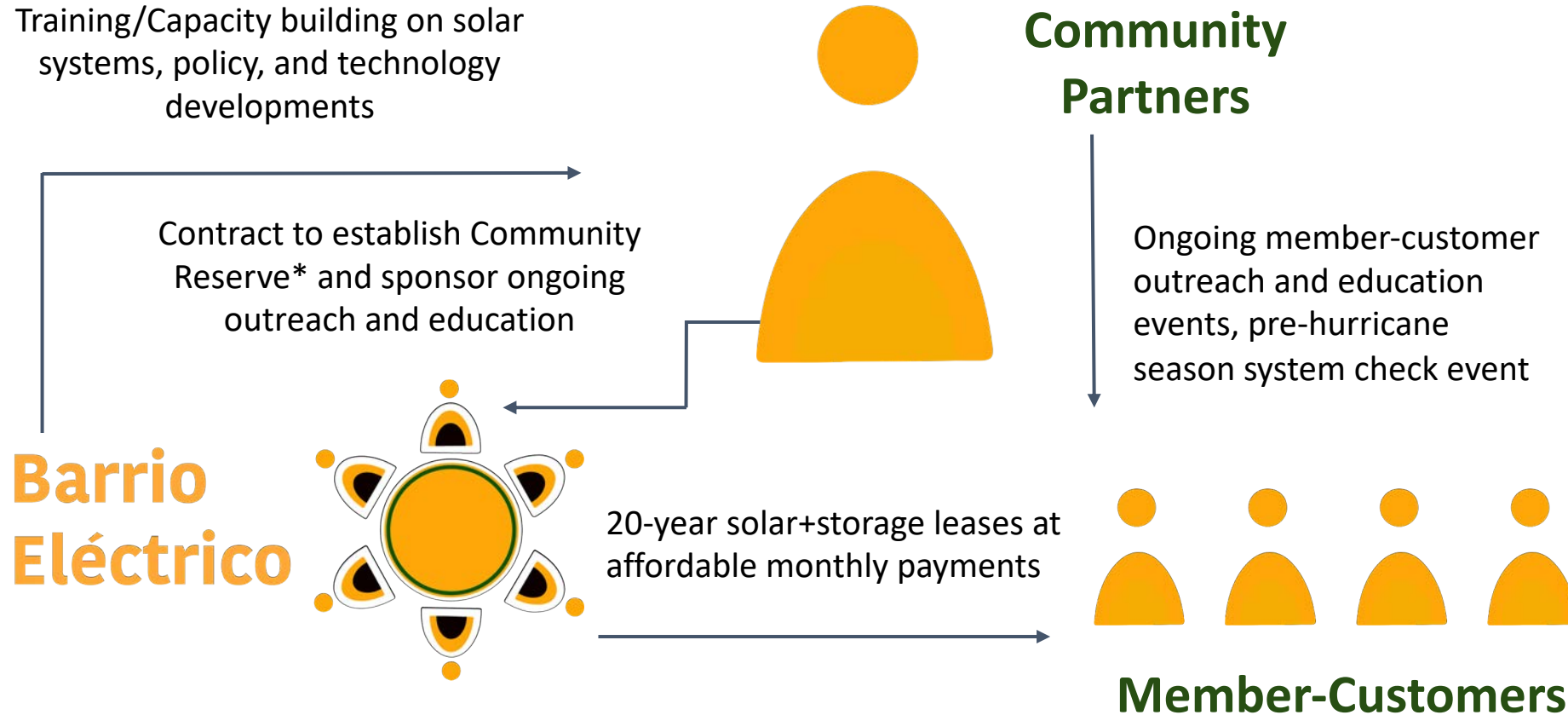
Community- Powered Distributed Solar and Storage



Barrio Eléctrico



A Shared Mission: Energy Equity and Resiliency for Rural Puerto Rico



*Funds for Member-Customer assistance with lease obligations.

Financing challenges for community-driven solar projects

FINANCING BARRIERS

- **Transaction costs:** Enormous costs associated with accessing investors for tax credit equity – legal, accounting, investor relations
- **Deal size:** Many investors are not interested in smaller projects
- **Real and perceived credit risk:** Investors do not trust projects that sell power to low-income households
- **Sponsor track record and balance sheet:** Neither tax equity investors nor lenders trust project developers that are new on the scene (but there are very few mission-driven project developers)
- **Need for long-term financing:** Community-driven projects require longer financing terms for debt, which many mission-driven lenders struggle to provide



Financing challenges for community-driven solar projects

AFFORDABILITY REQUIREMENTS

- Additional subsidies beyond tax credits may be needed to make energy affordable
- Especially true if resilience is a goal, which requires battery storage

COMMUNITY ENGAGEMENT NEEDS

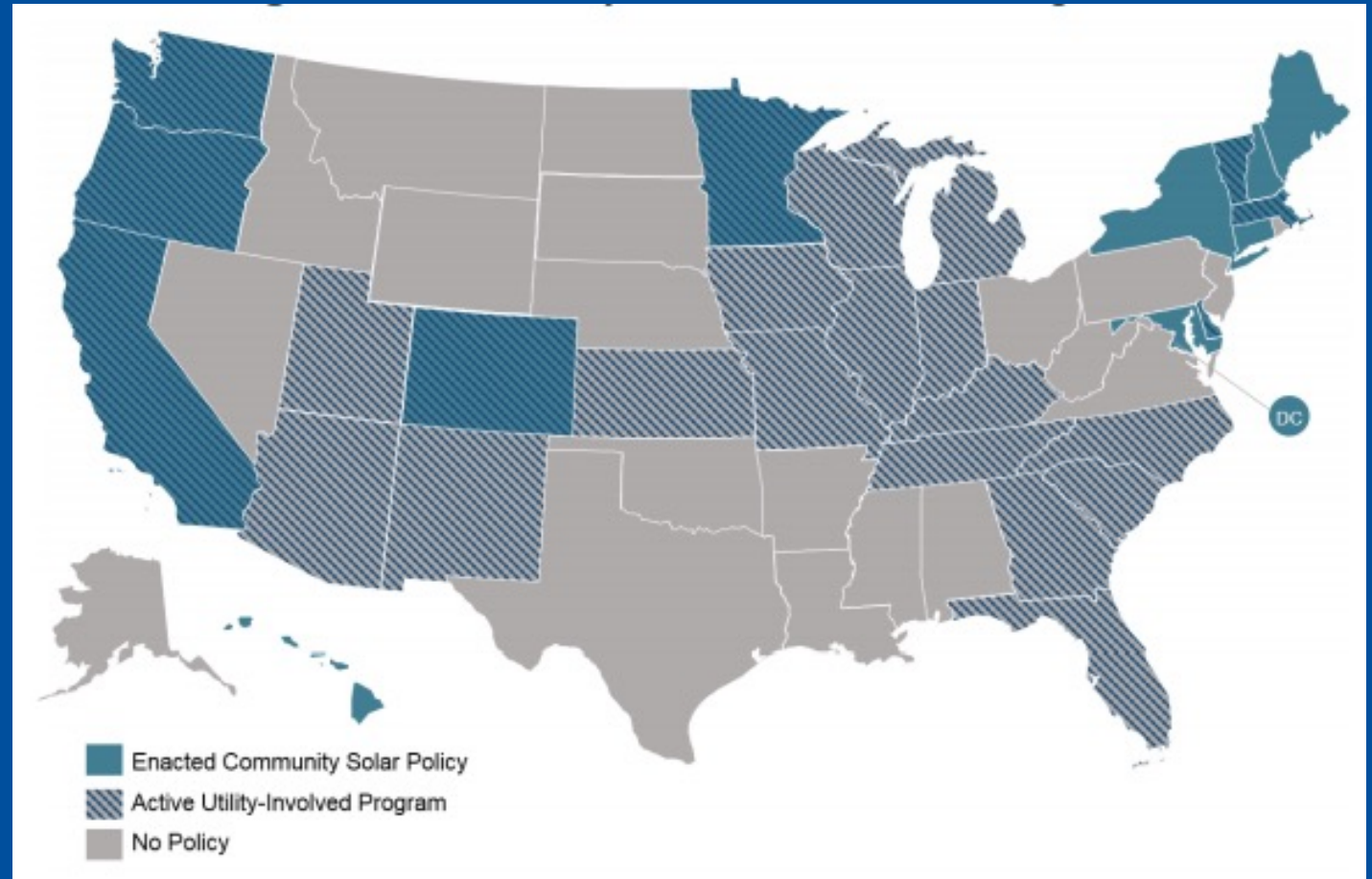
- Unfunded needs for community outreach, organizing, education, technical assistance, trust building



Financing challenges for community-driven solar projects

POLITICAL OPPOSITION AND REGULATORY BARRIERS

- Many utilities oppose projects that they do not own themselves
- As a result, many states do not even allow certain types of community-driven projects to be developed



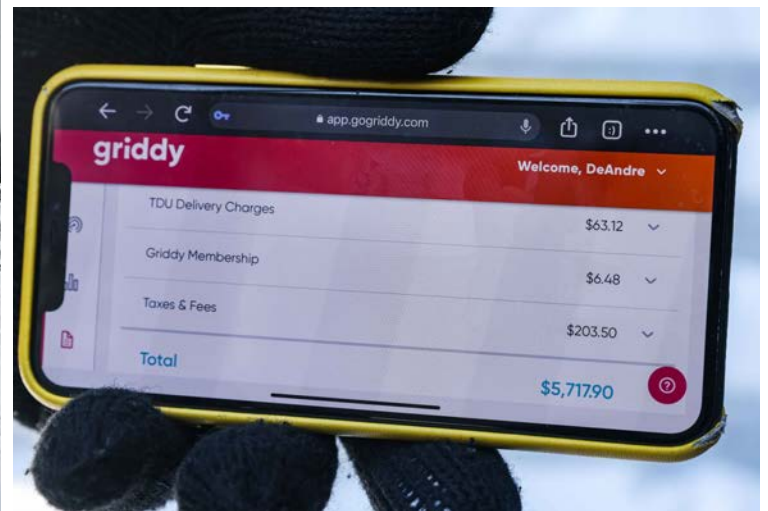
Source: NREL



Does our solar energy development and financing system “pass the Puerto Rico test”?

- Is the energy **resilient**?
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Is Puerto Rico an exception?



UNH Solar Finance Project

TRAINING

TRAINING for community-based lenders in solar finance for LMI communities

CONVENING

CONVENING developers, lenders, investors and policy makers around equitable solar finance

PLATFORMS

DEVELOPING PLATFORMS to make it easier for mission-driven lenders to raise and deploy capital to low-income solar projects

BCC BRIGHT
COMMUNITY
CAPITAL

CEI



INCLUSIVE
PROSPERITY CAPITAL

/ inclusiv /



Policy Convening – Financial Innovations Roundtable

Creating a policy and financing environment that supports mission-driven solar projects

- Exploring how Community Development Financial Institutions and Green Banks can work together
- Refundability or grant-in-lieu for solar Investment Tax Credit
- Design and funding of the proposed national Clean Energy and Sustainability Accelerator
- Expanding and redesigning credit enhancements
- Engaging federal agencies, foundations and major financial institutions in supporting systems change
- Lower state-level utility regulatory policy barriers



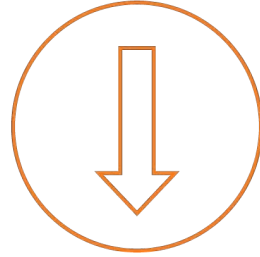


Thank you!
Questions?



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**[https://carsey.unh.edu/center-
for-impact-finance](https://carsey.unh.edu/center-for-impact-finance)**

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